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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

TECHNICAL COMMITTEE

Forty-Second Session
Geneva, April 3 to 5, 2006

PUBLICATION OF VARIETY DESCRIPTIONS

Document prepared by the Office of the Union

1. At its forty-first session, held in Geneva from April 4 to 6, 2005, the Technical Committee (TC) considered document TC/41/9, which provided a report on the progress in the model studies, as reported to the Technical Working Parties (TWPs) at their sessions in 2004. That report provided summaries of the data from all the model studies as reported to the TWPs in 2004 and also reported the comments made by the TWPs.

2. The purpose of this document is to report on developments in the *Ad hoc* Working Group on the Publication of Variety Descriptions (WG-PVD) and the TWPs in 2005. This document also sets out recommendations of the WG-PVD for consideration by the TC.

Ad hoc Working Group on the Publication of Variety Descriptions (WG-PVD)

3. The WG-PVD held a meeting in Geneva on April 6, 2005. In addition to the members of the WG-PVD, the meeting was attended by Mr. Chris Barnaby (Chairman of the Technical Working Party for Ornamental Plants and Forest Trees), Mr. Erik Schulte (Chairman of the Technical Working Party for Fruit Crops), Mr. Baruch Bar-Tel (Coordinator for the Model Study on Strawberry), Mr. Henk Bonthuis (joint Coordinator for the Model Study on Potato) and Mr. Kees van Ettekoven (Chairman of the Technical Working Party for Vegetables and Coordinator for the Model Study on Lettuce).

Model Study

4. The WG-PVD based its discussions on document TC/41/9 and oral reports from Mr. Baruch Bar-Tel (Coordinator for the Model Study on Strawberry), Mr. Henk Bonthuis (joint Coordinator for the Model Study on Potato), Mr. Gerhard Deneken (Coordinator for the Model Study on Barley) and Mr. Kees van Ettekoven (Coordinator for the Model Study on Lettuce).

5. Mr. Uwe Meyer (Chairman of the Technical Working Party on Automation and Computer Programs (TWC)) provided a report on the statistical guidance which the TWC had developed to assist coordinators of the model studies in the analysis and reporting of the results.

6. The participants exchanged thoughts on the initial results of the model studies and how far these provided indications in relation to one of the aims of the project i.e. whether it might be possible "to use appropriate elements of the variety description, in the process of examining distinctness, to eliminate varieties which do not require further comparison and to identify those varieties against which a further comparison is required".

7. The initial results of the model studies indicated that the level of variation in variety descriptions obtained from different sources could be related, for example, to the type of variety and species, the type of characteristic, the geographical region where the variety was described and the way in which the characteristics were observed. It was noted that some measures might be possible to develop variety descriptions which had less variation e.g. selecting characteristics which had a low level of variation, using descriptions from within a region and improving the clarity of characteristics in the UPOV Test Guidelines. Thereafter, multivariate analysis, such as that provided by the GAIA software, might have potential as a useful tool to handle descriptions from different sources.

8. Nevertheless, it was noted that, whilst minimizing variation between variety descriptions obtained from different sources was desirable, it would be impossible to eliminate variation completely. It was also recognized that there would need to be confidence that the benefits of any measures to reduce variation would outweigh the costs involved.

9. It was recalled that an important form of harmonization within UPOV was the designation of asterisked characteristics in the Test Guidelines, which, in general, should always be examined for DUS and included in the variety description by all members of the Union. It was noted that such harmonization was particularly relevant for the exchange and purchase of DUS reports, irrespective of variations in variety descriptions.

10. On the basis of the discussions, the WG-PVD recommended that:

(a) the model studies should be completed;

(b) the TWPs and the TC should:

(i) review the results of the model studies and seek to draw conclusions on the sources and types of variation (e.g. regional variation, method of examination of characteristics);

(ii) draw conclusions in relation to the aim of the project concerning the possibility "to use appropriate elements of the variety description, in the process of examining distinctness, to eliminate varieties which do not require further comparison and to identify those varieties against which a further comparison is required";

(iii) draw conclusions in relation to possible improvements in other relevant aspects of UPOV's work e.g. in relation to the development of Test Guidelines;

(c) the WG-PVD should consider the conclusions of the TWPs and the TC at its next meeting.

Administrative, Legal and Financial Considerations

11. It is recalled that, at its meeting held in Geneva, on March 31, 2004, the WG-PVD agreed that, at that stage, there were no administrative, legal or financial barriers to the model studies and no urgent matters concerning administrative, legal and financial issues that needed to be addressed.

Date of Next Meeting

12. The next meeting of the WG-PVD will take place on Wednesday, April 5, 2006. As previously agreed by the WG-PVD, an invitation has been extended to the Coordinators of the Model Studies and the Chairpersons of the TWPs where their participation is possible in conjunction with attendance at the session of the TC. A list of the members of the WG-PVD, the Coordinators of the Model Studies and the Chairpersons of the TWPs is attached as Annex I.

Technical Working Parties (TWPs)

Technical Working Party for Vegetables (TWV)

13. At its thirty-ninth session, held in Nitra, Slovakia, from June 6 to 10, 2005, the TWV considered document TWV/39/6, which set out the recommendations of the WG-PVD (see paragraph 10, above), and document TWV/39/7, introduced by Mr. Mitsuo Yuasa (Japan), Coordinator for the Model Study on Chinese Cabbage. The information in document TWV/39/7, presenting the analysis of the data received for the model study on Chinese Cabbage, is reproduced as Annex II to this document.

14. The representative of the International Seed Federation (ISF) expressed some concern at the results of the model studies and the variation in variety descriptions in relation to a paper-based system where a decision on distinctness could be based on descriptions. The expert from Israel observed that the intention of the project was to consider adding variety description information in the UPOV-ROM Plant Variety Database as a means of aiding DUS examiners to identify relevant varieties. In that respect, he suggested that the information on grouping characteristics might represent a practical first step. He noted that the intention was not to replace growing trials and also observed that each provider would be responsible for the data provided and each user would be responsible for the use made of the data.

15. The expert from Spain noted that it was not known if the same sample was used for the descriptions and observed that the results of the model studies demonstrated the importance of retaining an official sample for identifying a variety. With regard to lettuce, he noted that there were only two qualitative grouping characteristics ("Seed: color" and "Leaf: anthocyanin coloration") which could reliably be used on an international basis. The expert from France noted the potential value of disease resistance characteristics for reliable grouping of varieties.

16. Experts from Poland and Romania supported the project and considered the availability of variety descriptions information would be very helpful.

17. The Chairman, Mr. Kees van Ettekoven (Netherlands), noted the interest in having variety description information available in a database. He observed that including only information on grouping characteristics would mean that data from those characteristics would have to be extracted from other data, a process which would require additional effort. Furthermore, he wondered if the grouping characteristic information would prove sufficiently discriminatory to be of practical assistance. An alternative approach would be to accept that descriptions of varieties would vary and to publish the data on the restricted area of the UPOV website with a suitable warning. Users would then be able to decide which, if any, data to use, e.g. according to source of the data and type of characteristic, and how to use the data. He emphasized that the aim of the project was not to allow a decision on distinctness on the basis of descriptions in the database.

18. With regard to the results of the study on Chinese Cabbage, an expert from the Netherlands noted that it would be difficult to harmonize descriptions for quantitative and pseudo-qualitative characteristics. The expert from Israel noted that care was needed in selecting grouping and technical questionnaire characteristics. The TWV also heard that the results in some model studies indicated that some users of the UPOV Test Guidelines did not understand that, when the notes 3, 5, 7 were used for quantitative characteristics, it was possible to use all notes from 1 to 9.

19. The Chairman noted that ring tests in conjunction with a trial-based meeting of experts was an important means of harmonizing variety descriptions and also of identifying and rectifying weaknesses in Test Guidelines. He accepted that such ring tests would take around two years to complete in a UPOV context and would also involve costs, in particular in relation to traveling to view the trials. He wondered if this might be mitigated in some cases by arranging ring tests in advance of revisions of Test Guidelines and by the hosts of the TWV arranging trials of the species concerned. Alternatively, funds could be sought to support such work. The experts from the Czech Republic and Hungary endorsed the usefulness of ring-tests and referred to the ring test on pepper, being organized by Hungary. The expert from France reported that a ring test on carrot had proved very useful. The expert

from Mexico noted that he would be able to prepare a trial in relation to the revision of the Test Guidelines for Husk Tomato.

20. In conclusion, the TWV supported the availability of variety descriptions, whilst noting the limitations of publishing full variety descriptions, which meant that it would be difficult to publish variety descriptions at the UPOV level for the foreseeable future. It agreed that, if a project went ahead, it would be practical to concentrate any initiatives on grouping characteristics in the first instance. The TWV expressed its strong support for ring tests in conjunction with a trial-based meeting as a means for developing a clear interpretation of Test Guidelines and for preparing for revisions to Test Guidelines. It also agreed that the Test Guidelines should explain the use of the 3, 5, 7 notes in the 1-9 scale for quantitative characteristics and proposed that TGP/7 be revised accordingly.

Technical Working Party on Automation and Computer Programs (TWC)

21. At its twenty-third session held from June 13 to 16, 2005, in Ottawa, Canada, the TWC considered document TWC/23/6, which set out the recommendations of the WG-PVD (see paragraph 10, above), and document TWC/23/17 "Description of varieties in different UPOV countries", prepared by experts from France with data provided on barley via Mr. Joël Guiard (France) and Mr. Gerhard Deneken (Denmark), and introduced by Mr. Sylvain Grégoire (France). Document TWC/23/17 is reproduced as Annex III to this document.

22. The TWC also received a brief report on discussions and conclusions of the thirty-ninth session of the TWV.

23. An expert from France briefly reported on the joint project between France, Germany and Spain on the databasing of maize inbred lines. That project had demonstrated that the scales used in different countries could shift according to the range of varieties in their variety collections. The project, which was accompanied by joint trial visits by DUS examiners from the participating countries, had been very useful in identifying variations in the interpretation of characteristics. It had also been possible to use the results to identify characteristics with more consistent descriptions for a given variety across the countries involved. The results identified some such characteristics which had been expected to produce consistent descriptions. However, some characteristics which were expected to behave in a consistent way were not as consistent as expected and some others, which were not expected to behave in a consistent way, had produced relatively consistent results. The expert noted that there was a need to adopt a step-by-step approach to achieve closer correspondence in variety descriptions and the approach needed to be done on a characteristic-by-characteristic and country-by-country basis.

Technical Working Party for Fruit Crops (TWF)

24. At its thirty-sixth session, held in Kôfu, Japan, from September 5 to 9, 2005, the TWF considered document TWF/36/6, which set out the recommendations of the WG-PVD (see paragraph 10, above), and received an oral report from Mr. Baruch Bar-Tel (Israel) on the work on the Model Study for Strawberry. It was agreed that the results of the Model Study for Strawberry should be presented at the thirty-seventh session of the TWF and, at that time, the issues raised in document TWF/36/8 could be considered further.

Technical Working Party for Ornamental Plants and Forest Trees (TWO)

25. At its thirty-eighth session, held in Seoul, Republic of Korea, from September 12 to 16, 2005, the TWO considered document TWO/38/6, which set out the recommendations of the WG-PVD (see paragraph 10, above), and TWO/38/11 "Model Study on Alstroemeria", introduced by Mr. Joost Barendrecht (Netherlands). The information provided in document TWO/38/11 is reproduced as Annex IV to this document.

26. With regard to the recommendations of the WG-PVD, the TWO noted that the Model Study on Alstroemeria demonstrated that there were areas where the previous version of the Test Guidelines had needed to be improved in order to improve the observation of characteristics. In particular, it was noted that good illustrations were very important. It was noted that the abbreviation of the 1-9 quantitative characteristic scale to 3, 5, 7 had caused confusion with regard to the states which could be used. It was noted that the growing conditions had affected the expression of some characteristics, notably color and that caution was needed when comparing colors when observed in different locations. However, it was noted that color characteristics could still provide useful grouping information as there was generally a good agreement on the color group to which varieties belonged across locations.

Technical Working Party for Agricultural Crops (TWA)

27. At its thirty-fourth session, held in Christchurch, New Zealand, from October 31 to November 4, 2005, the TWA considered document TWA/34/6, which set out the recommendations of the WG-PVD (see paragraph 10, above) and document TWA/34/13 "Harmonization of descriptions of varieties of barley". The information provided in document TWA/34/13 is reproduced as Annex V of this document. The TWA also received presentations from Mr. Gerhard Deneken (Denmark), Coordinator for the Model Study for Barley, and Mr. Henk Bonthuis (Netherlands), Joint Coordinator for the Model Study for Potato. Copies of those presentations are presented as Annex VI and Annex VII, respectively, to this document.

28. The TWA noted that caution was needed in the interpretation of the scatter diagrams included in the presentations by Mr. Deneken and Mr. Bonthuis. In particular, it was recalled that the points in the scatter diagrams became less meaningful where there were only small numbers of variety comparisons and the effects could be due to chance.

29. The TWA concluded that the model studies indicated that published variety descriptions might be used in a limited way for selecting varieties for inclusion in the growing trial but, in order to use such an approach, it was important for the user of the descriptions to have a detailed knowledge of the level of harmonization of variety descriptions in relation to the descriptions to be used and to understand the basis for variation in variety descriptions. If that condition was not fulfilled, there was a risk of making a wrong assessment of distinctness. With regard to possible improvements in other relevant aspects of UPOV's work, it was agreed that the use of ring tests and the use of example varieties was important with regard to the calibration of descriptions and that quality control measures were valuable in improving harmonization. It was considered that, at the UPOV level, the development of tools, such as CD-ROMs containing photographs, could enhance the understanding of the characteristics used in the Test Guidelines and thereby reduce observer error.

Recommendations of the WG-PVD for Consideration by the TC

30. As explained in paragraph 10 (b), the WG-PVD has suggested that the TWPs and the TC :

(i) review the results of the model studies and seek to draw conclusions on the sources and types of variation (e.g. regional variation, method of examination of characteristics);

(ii) draw conclusions in relation to the aim of the project concerning the possibility "to use appropriate elements of the variety description, in the process of examining distinctness, to eliminate varieties which do not require further comparison and to identify those varieties against which a further comparison is required"; and

(iii) draw conclusions in relation to possible improvements in other relevant aspects of UPOV's work e.g. in relation to the development of Test Guidelines.

31. With regard to point (iii) above, the TC may wish to note that the following points, raised in discussions in the TWPs, have been included as aspects which might be considered as a part of a revision of document TGP/7/1 "Development of Test Guidelines" (see agenda item 6 of document TC/42/1 and document TC/42/5, paragraph 23):

(a) the Test Guidelines should explain the use of the 3, 5, 7 abbreviated notes in the 1-9 scale for quantitative characteristics (see document TC/42/5 Annex I: Annex 1: TG Template 6.3); and

(b) to consider the development of tools such as CD-ROMs containing photographs to enhance the understanding of the characteristics used in the Test Guidelines and thereby reduce observer error (see document TC/42/5 Annex I: Annex 4: Collection of Approved Characteristics").

32. The TC is invited:

(a) to review the results of the model studies and draw conclusions in accordance with paragraph 30, and

(b) to note the aspects, set out in paragraph 31, which might be considered as part of a revision of TGP/7/1 "Development of Test Guidelines".

[Annexes follow]

ANNEX I

LIST OF WG-PVD, MODEL STUDY COORDINATORS AND TWP CHAIRPERSONS (I.E. THOSE INVITED TO WG-PVD MEETING TO BE HELD IN GENEVA ON APRIL 5, 2006)

Members of the WG-PVD

Ms. Julia Borys (TC Chairperson)
Ms. Nicole Bustin (France)
Mr. Gerhard Deneken (Denmark)
Mr. Krieno Fikkert (CAJ Chairman)
Mr. Joël Guiard (France)
Mr. Bart Kiewiet / Mr. José Elena (European Community)
Mr. Uwe Meyer (Germany)
Mr. Doug Waterhouse (Australia)
Ms. Sally Watson (TWC Chairman)

WG-PVD Model Study Coordinators

Mr. Joost Barendrecht (Netherlands) – (TWO) (Alstroemeria)
Mr. Baruch Bar-Tel (Israel) – (TWF) - (Strawberry)
Mr. Henk Bonthuis (Netherlands) – (TWA) - (Potato)
Mr. Gerhard Deneken (Denmark) – (TWA) - (Barley)
Mr. Kees van Ettekoven (Netherlands) – (TWV) - (Lettuce)
Ms. Alison Lean (United Kingdom) - (TWF) - (Apple)
Mrs. Andrea Menne (Germany) – (TWO) - (Petunia)
Mr. Dirk Theobald (European Community) – (TWA) - (Potato)
Mr. Mitsuo Yuasa (Japan) – (TWV) - (Chinese Cabbage)

Chairpersons of the Technical Working Parties

Mr. Alejandro Barrientos Priego (Mexico) – Chairman of the TWF
Mr. Henk Bonthuis (Netherlands) – Chairman of the BMT
Ms. Sandy Marshall (Canada) – Chairperson of the TWO
Mr. Niall Green (United Kingdom) – Chairman of the TWV
Mrs. Beate Rücker (Germany) – Chairperson of the TWA
Mrs. Sally Watson (United Kingdom) – Chairperson of the TWC

[Annex II follows]

ANNEX II

PROJECT TO CONSIDER THE PUBLICATION OF VARIETY DESCRIPTIONS (REPORT OF THE COORDINATOR FOR CHINESE CABBAGE)

1. This Annex presents the analysis of the data received for the Model Study on Chinese Cabbage.

2. The analysis can be summarized as follows:

Pseudo-Qualitative Characteristics

Averages of "Number of frequency" range between 1.23 and 1.64.

Quantitative Characteristics

Averages of "Number of frequency" range between 1.37 and 2.00.

Average of "Number of frequency" of "Head: width" is the smallest, 1.37, and "Time of bolting" is the largest, 2.00.

Averages of "Range" range between 0.37 and 2.50. Average of "Range" of "Head: width" is the smallest, 0.37, and "Time of bolting" is the largest, 2.50.

Averages of "Standard Deviation" range between 0.26 and 1.77. Average of "Standard Deviation" of "Head: width" is the smallest, 0.26, and "Time of bolting" is the largest, 1.77.

Analysis of variety description: Chinese Cabbage

Analysis of variety description for individual characteristics

(1) Pseudo-qualitative characteristics

Characteristic:	Outer leaf: shape						TG/105/3 Char. 4				
Variety	Number of descriptions provided	obovate	broad obovate	broad obovate to broad elliptic	broad elliptic	elliptic					Average 1.43 Number of frequencies
		1	2	3	4	5					
Chinlee (Barum)	2		2								1
Bilko	2		2								1
Chiko	2	2									1
Chorus	2		1		1						2
Darek	2	1	1								2
Disco = Disko	2		1	1							2
Elliot	2										
Green Rocket	3	2			1						2
Kingdom 65	2	1			1						2
Manoko	2		2								1
Nagaoka King(Oushou)	2										
Nekita	2		2								1
Nerva	2		1		1						2
Obelisk(Harumaki-gokuwase	2										
Optiko	2				2						1
Osiris(Taibyo-60nichi)	2										
Parkin	3		2	1							2
Regina(50nichi)	2										
Solado	2		2								1
Sprinkin(Norang manjeom	2	1		1							2
Storkin	2		2								1
Taranko	2	1	1								2
Victor	2		2								1
Vitimo	2		2								1
Yamiko	2		2								1
Yuki	2		2								1

Characteristic:	Outer leaf: color							TG/105/3 Char. 7				
Variety	Number of descriptions provided	yellow green	green	grey green								Average 1.23 Number of frequencies
		1	**2**	**3**								
Chinlee (Barum)	2		2									1
Bilko	2		2									1
Chiko	2		2									1
Chorus	2		2									1
Darek	2		2									1
Disco = Disko	2	1	1									2
Elliot	2		2									1
Green Rocket	3		3									1
Kingdom 65	2		2									1
Manoko	2		2									1
Nagaoka King(Oushou)	2	1	1									2
Nekita	2		2									1
Nerva	2		2									1
Obelisk(Haruma ki-gokuwase	2	2										1
Optiko	2	1	1									2
Osiris(Taibyo-60nichi)	2	1	1									2
Parkin	3		3									1
Regina(50nichi)	2	1	1									2
Solado	2		2									1
Sprinkin(Norang manjeom	2		2									1
Storkin	2		2									1
Taranko	2	1	1									2
Victor	2		2									1
Vitimo	2		2									1
Yamiko	2		2									1
Yuki	2		2									1

Characteristic:	Outer leaf : shape of midrib in cross section						TG/105/3 Char. 15				
Variety	Number of descriptions provided	flat	concave								Average 1.78 Number of frequencies
		1	**2**								
Chinlee (Barum)	2	1	1								2
Bilko	2	1	1								2
Chiko	2										
Chorus	2	1	1								2
Darek	2		2								1
Disco = Disko	2	1	1								2
Elliot	2										
Green Rocket	2		2								1
Kingdom 65	2										
Manoko	2	1	1								2
Nagaoka King(Oushou)	2										
Nekita	2	1	1								2
Nerva	2										
Obelisk(Harumaki-gokuwase	2										
Optiko	2	1	1								2
Osiris(Taibyo-60nichi)	2										
Parkin	3		3								1
Regina(50nichi)	2										
Solado	2		2								1
Sprinkin(Norang manjeom	2	1	1								2
Storkin	2	1	1								2
Taranko	2	1	1								2
Victor	2	1	1								2
Vitimo	2	1	1								2
Yamiko	2	1	1								2
Yuki	2	1	1								2

Characteristic:	Head: formation											
Variety	Number of descriptions provided	open	half-open	closed			TG/105/3	Char. 20			Average	
											1.64	
											Number of frequencies	
		1	**2**	**3**								
Chinlee (Barum)	2		2								1	
Bilko	2			2							1	
Chiko	2		1	1							2	
Chorus	2			2							1	
Darek	2		1	1							2	
Disco = Disko	2		1	1							2	
Elliot	2		2								1	
Green Rocket	3	1		2							2	
Kingdom 65	2			2							1	
Manoko	2		1	1							2	
Nagaoka King(Oushou)	2		1	1							2	
Nekita	2		1	1							2	
Nerva	2		2								1	
Obelisk(Harumaki-gokuwase	2		1	1							2	
Optiko	2		1	1							2	
Osiris(Taibyo-60nichi)	2		1	1							2	
Parkin	3		2	1							2	
Regina(50nichi)	2	1		1							2	
Solado	2		1	1							2	
Sprinkin(Norangmanjeom	2											
Storkin	2		2								1	
Taranko	2	1	1								2	
Victor	2		1	1							2	
Vitimo	2		1	1							2	
Yamiko	2		2								1	
Yuki	2		2								1	

Characteristic:	Head: color of wrapper leaf						TG/105/3 Char. 21				
Variety	Number of descriptions provided	yellow	yellow green	green							Average 1.40 Number of frequencies
		1	**2**	**3**							
Chinlee (Barum)	2		1	1							2
Bilko	2			2							1
Chiko	2		2								1
Chorus	2			2							1
Darek	2			2							1
Disco = Disko	2		1	1							2
Elliot	2		1	1							2
Green Rocket	3			3							1
Kingdom 65	2			2							1
Manoko	2		2								1
Nagaoka King(Oushou)	2			2							1
Nekita	2		1	1							2
Nerva	2		1	1							2
Obelisk(Harumaki-gokuwase	2		1	1							2
Optiko	2		1	1							2
Osiris(Taibyo-60nichi)	2			2							1
Parkin	3			3							1
Regina(50nichi)	2			2							1
Solado	2			2							1
Sprinkin(Norangmanjeom	2										
Storkin	2			2							1
Taranko	2		1	1							2
Victor	2		1	1							2
Vitimo	2			2							1
Yamiko	2		1	1							2
Yuki	2			2							1

Characteristic:	Head: internal color										
Variety	Number of descriptions provided	white	light yellow	medium yellow	dark yellow						Average
											1.50
											Number of frequencies
		1	2	3	4						
Chinlee (Barum)	2		1	1							2
Bilko	2			2							1
Chiko	2										
Chorus	2										
Darek	2		1		1						2
Disco = Disko	2		1	1							2
Elliot	2		2								1
Green Rocket	3										
Kingdom 65	2										
Manoko	2		1	1							2
Nagaoka King(Oushou)	2										
Nekita	2			2							1
Nerva	2										
Obelisk(Harumaki-gokuwase	2										
Optiko	2		2								1
Osiris(Taibyo-60nichi)	2										
Parkin	3		1	2							2
Regina(50nichi)	2										
Solado	2										
Sprinkin(Norangmanjeom	2			2							1
Storkin	2		2								1
Taranko	2		1	1							2
Victor	2		2								1
Vitimo	2			1	1						2
Yamiko	2			2							1
Yuki	2		1	1							2

(2) Quantitative characteristics													
Characteristic:	Plant: height						TG/105/3		Char. 1				
Variety	Number of descriptions provided			short		medium		tall			AVERAGE		
											1.62	0.73	0.51
											Number of frequencies	Range	Standard Deviation
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**			
Chinlee (Barum)	2				1	1					2	1	0.71
Bilko	2				1	1					2	1	0.71
Chiko	2							2			1	0	0.00
Chorus	2					2					1	0	0.00
Darek	2				1	1					2	1	0.71
Disco = Disko	2					1	1				2	1	0.71
Elliot	2			2							1	0	0.00
Green Rocket	3							2	1		2	1	0.58
Kingdom 65	2					1	1				2	1	0.71
Manoko	2					2					1	0	0.00
Nagaoka King(Oushou)	2					1	1				2	1	0.71
Nekita	2					2					1	0	0.00
Nerva	2				2						1	0	0.00
Obelisk(Harumaki-gokuwase	2				1	1					2	1	0.71
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2			1		1					2	2	1.41
Parkin	3				1	2					2	1	0.58
Regina(50nichi)	2				1	1					2	1	0.71
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2			1		1					2	2	1.41
Storkin	2				1	1					2	1	0.71
Taranko	2						1	1			2	1	0.71
Victor	2				1	1					2	1	0.71
Vitimo	2			2							1	0	0.00
Yamiko	2			1		1					2	2	1.41
Yuki	2					2					1	0	0.00

Characteristic:	Outer leaf: attitude						TG/105/3		Char.2				
Variety	Number of descriptions provided	Notes		erect		semi-erect		horizontal			AVERAGE		
											1.58	0.81	0.57
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					2					1	0	0.00
Bilko	2			1		1					2	2	1.41
Chiko	2			2							1	0	0.00
Chorus	2				1	1					2	1	0.71
Darek	2				1	1					2	1	0.71
Disco = Disko	2					2					1	0	0.00
Elliot	2					1	1				2	1	0.71
Green Rocket	3			2	1						2	1	0.58
Kingdom 65	2			1		1					2	2	1.41
Manoko	2			1		1					2	2	1.41
Nagaoka King(Oushou)	2				1	1					2	1	0.71
Nekita	2					2					1	0	0.00
Nerva	2					1	1				2	1	0.71
Obelisk(Harumaki-gokuwase	2					2					1	0	0.00
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2			1		1					2	2	1.41
Parkin	3					3					1	0	0.00
Regina(50nichi)	2			1	1						2	1	0.71
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2			1		1					2	2	1.41
Taranko	2			2							1	0	0.00
Victor	2				1	1					2	1	0.71
Vitimo	2				1	1					2	1	0.71
Yamiko	2			1		1					2	2	1.41
Yuki	2					2					1	0	0.00

Characteristic:	Outer leaf: size						TG/105/3	Char. 3					
Variety	Number of descriptions provided	Notes		small		medium		large			AVERAGE		
											1.58	0.81	0.56
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					1	1				2	1	0.71
Bilko	2					1	1				2	1	0.71
Chiko	2					1		1			2	2	1.41
Chorus	2					1		1			2	2	1.41
Darek	2					1	1				2	1	0.71
Disco = Disko	2					1		1			2	2	1.41
Elliot	2					2					1	0	0.00
Green Rocket	3					1		2			2	2	1.15
Kingdom 65	2					1	1				2	1	0.71
Manoko	2					2					1	0	0.00
Nagaoka King(Oushou)	2						2				1	0	0.00
Nekita	2					2					1	0	0.00
Nerva	2					1		1			2	2	1.41
Obelisk(Harumaki-gokuwase	2				1		1				2	2	1.41
Optiko	2					1	1				2	1	0.71
Osiris(Taibyo-60nichi)	2				1	1					2	1	0.71
Parkin	3						2	1			2	1	0.58
Regina(50nichi)	2					2					1	0	0.00
Solado	2							2			1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2					2					1	0	0.00
Taranko	2					1	1				2	1	0.71
Victor	2					2					1	0	0.00
Vitimo	2				1	1					2	1	0.71
Yamiko	2					2					1	0	0.00
Yuki	2						2				1	0	0.00

Characteristic:	Outer leaf: blistering						TG/105/3		Char. 5				
Variety	Number of descriptions provided	Notes		weak		medium		strong			AVERAGE		
											1.65	1.04	0.72
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					2					1	0	0.00
Bilko	2						1	1			2	1	0.71
Chiko	2			2							1	0	0.00
Chorus	2	1				1					2	4	2.83
Darek	2				1			1			2	3	2.12
Disco = Disko	2				2						1	0	0.00
Elliot	2					2					1	0	0.00
Green Rocket	3			2	1						2	1	0.58
Kingdom 65	2			1		1					2	2	1.41
Manoko	2					1		1			2	2	1.41
Nagaoka King(Oushou)	2				2						1	0	0.00
Nekita	2			1		1					2	2	1.41
Nerva	2			1	1						2	1	0.71
Obelisk(Harumaki-gokuwase	2					1	1				2	1	0.71
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2			1		1					2	2	1.41
Parkin	3					2	1				2	1	0.58
Regina(50nichi)	2					1	1				2	1	0.71
Solado	2					1	1				2	1	0.71
Sprinkin(Norangmanjeom	2					1	1				2	1	0.71
Storkin	2			2							1	0	0.00
Taranko	2			2							1	0	0.00
Victor	2				1	1					2	1	0.71
Vitimo	2							2			1	0	0.00
Yamiko	2			1		1					2	2	1.41
Yuki	2					1	1				2	1	0.71

Characteristic:	Outer leaf: size of blister						TG/105/3		Char. 6				
Variety	Number of descriptions provided	Notes		small		medium		strong			AVERAGE		
											1.55	0.75	0.53
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					1	1				2	1	0.71
Bilko	2				1	1					2	1	0.71
Chiko	2			1		1					2	2	1.41
Chorus	2												
Darek	2					1	1				2	1	0.71
Disco = Disko	2					2					1	0	0.00
Elliot	2					2					1	0	0.00
Green Rocket	2				1	1					2	1	0.71
Kingdom 65	2					1		1			2	2	1.41
Manoko	2				1	1					2	1	0.71
Nagaoka King(Oushou)	2												
Nekita	2					1		1			2	2	1.41
Nerva	2					2					1	0	0.00
Obelisk(Harumaki-gokuwase	2												
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2												
Parkin	2				1	1					2	1	0.71
Regina(50nichi)	2												
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2					2					1	0	0.00
Taranko	2			1		1					2	2	1.41
Victor	2												
Vitimo	2					2					1	0	0.00
Yamiko	2					2					1	0	0.00
Yuki	2					1	1				2	1	0.71

Characteristic:	Outer leaf: intensity of color						TG/105/3		Char.8				
Variety	Number of descriptions provided	Notes		light		medium		dark			AVERAGE		
											1.58	0.77	0.52
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					2					1	0	0.00
Bilko	2							2			1	0	0.00
Chiko	2						2				1	0	0.00
Chorus	2					2					1	0	0.00
Darek	2				1		1				2	2	1.41
Disco = Disko	2					2					1	0	0.00
Elliot	2					1	1				2	1	0.71
Green Rocket	3					1	1	1			3	2	1.00
Kingdom 65	2				1			1			2	3	2.12
Manoko	2					2					1	0	0.00
Nagaoka King(Oushou)	2					1	1				2	1	0.71
Nekita	2						2				1	0	0.00
Nerva	2			1	1						2	1	0.71
Obelisk(Harumaki-gokuwase	2				1	1					2	1	0.71
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2				1		1				2	2	1.41
Parkin	3						1	2			2	1	0.58
Regina(50nichi)	2					1	1				2	1	0.71
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2					1		1			2	2	1.41
Taranko	2					2					1	0	0.00
Victor	2					2					1	0	0.00
Vitimo	2						1	1			2	1	0.71
Yamiko	2						1	1			2	1	0.71
Yuki	2					1	1				2	1	0.71

Characteristic:	Outer leaf: glossiness						TG/105/3		Char.9				
Variety	Number of descriptions provided	Notes		weak		medium		strong			AVERAGE		
											1.84	1.63	1.15
											Number of frequencies	**Range**	**Standard Deviation**
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**			
Chinlee (Barum)	2				1			1			2	3	2.12
Bilko	2						1	1			2	1	0.71
Chiko	2												
Chorus	2					1	1				2	1	0.71
Darek	2				1			1			2	3	2.12
Disco = Disko	2					1	1				2	1	0.71
Elliot	2				1	1					2	1	0.71
Green Rocket	3												
Kingdom 65	2												
Manoko	2					1	1				2	1	0.71
Nagaoka King(Oushou)	2				1			1			2	3	2.12
Nekita	2				1		1				2	2	1.41
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2					1	1				2	1	0.71
Osiris(Taibyo-60nichi)	2												
Parkin	2						2				1	0	0.00
Regina(50nichi)	2						2				1	0	0.00
Solado	2					1	1				2	1	0.71
Sprinkin(Norangmanjeom	2				1	1					2	1	0.71
Storkin	2			2							1	0	0.00
Taranko	2			1			1				2	3	2.12
Victor	2												
Vitimo	2			1				1			2	4	2.83
Yamiko	2			1		1					2	2	1.41
Yuki	2				1			1			2	3	2.12

Characteristic:	Outer leaf: hairiness						TG/105/3		Char. 10				
Variety	Number of descriptions provided	Notes		weak		medium		strong			AVERAGE		
											1.82	1.53	1.08
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					1	1				2	1	0.71
Bilko	2		1			1					2	3	2.12
Chiko	2												
Chorus	2					2					1	0	0.00
Darek	2				1	1					2	1	0.71
Disco = Disko	2			1		1					2	2	1.41
Elliot	2				1	1					2	1	0.71
Green Rocket	3												
Kingdom 65	2												
Manoko	2			1		1					2	2	1.41
Nagaoka King(Oushou)	2												
Nekita	2			1			1				2	3	2.12
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2			1			1				2	3	2.12
Osiris(Taibyo-60nichi)	2												
Parkin	2			1		1					2	2	1.41
Regina(50nichi)	2												
Solado	2				1	1					2	1	0.71
Sprinkin(Norangmanjeom	2			1		1					2	2	1.41
Storkin	2					1		1			2	2	1.41
Taranko	2				1	1					2	1	0.71
Victor	2												
Vitimo	2					2					1	0	0.00
Yamiko	2					2					1	0	0.00
Yuki	2				1		1				2	2	1.41

Characteristic:	Outer leaf: curvature in longitudinal section						TG/105/3		Char. 11				
Variety	Number of descriptions provided	Notes		concave		flat		convex			AVERAGE		
											1.83	2.33	1.65
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2			1		1					2	2	1.41
Bilko	2			1				1			2	4	2.83
Chiko	2												
Chorus	2												
Darek	2				2						1	0	0.00
Disco = Disko	2												
Elliot	2												
Green Rocket	3												
Kingdom 65	2												
Manoko	2												
Nagaoka King(Oushou)	2												
Nekita	2												
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2												
Osiris(Taibyo-60nichi)	2												
Parkin	3												
Regina(50nichi)	2												
Solado	2												
Sprinkin(Norangmanjeom	2					1		1			2	2	1.41
Storkin	2		1		1						2	2	1.41
Taranko	2												
Victor	2												
Vitimo	2			1				1			2	4	2.83
Yamiko	2												
Yuki	2												

Characteristic:	Outer leaf: undulation of margin						TG/105/3		Char. 12				
Variety	Number of descriptions provided	absent or very weak		very weak		medium		strong		very strong	AVERAGE		
											1.92	1.88	1.28
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2				1	1					2	1	0.71
Bilko	2			1		1					2	2	0.71
Chiko	2			1				1			2	4	2.83
Chorus	2	1		1							2	2	1.41
Darek	2	1				1					2	4	2.83
Disco = Disko	2			1		1					2	2	1.41
Elliot	2			1	1						2	1	0.71
Green Rocket	3				1		1	1			3	3	1.53
Kingdom 65	2	1				1					2	4	2.83
Manoko	2	1		1							2	2	1.41
Nagaoka King(Oushou)	2	1			1						2	3	2.83
Nekita	2			1	1						2	1	0.71
Nerva	2	1		1							2	2	1.41
Obelisk(Harumaki-gokuwase	2			1		1					2	2	1.41
Optiko	2				1	1					2	1	0.71
Osiris(Taibyo-60nichi)	2					2					1	0	0.00
Parkin	3			2		1					2	2	0.58
Regina(50nichi)	2			1		1					2	2	1.41
Solado	2			1		1					2	2	1.41
Sprinkin(Norangmanjeom	2			2							1	0	0.00
Storkin	2		1	1							2	1	0.71
Taranko	2					1			1		2	3	2.12
Victor	2			2							1	0	0.00
Vitimo	2			1		1					2	2	1.41
Yamiko	2			1	1						2	1	0.71
Yuki	2				1		1				2	2	1.41

Characteristic:	Outer leaf: incision of margin (at distal part)						TG/105/3		Char.13				
Variety	Number of descriptions provided	absent or very weak		weak		medium		strong		very strong	AVERAGE		
											1.79	1.67	1.11
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2												
Bilko	2	1		1							2	2	1.41
Chiko	2	1		1							2	2	1.41
Chorus	2	2									1	0	0.00
Darek	2		1			1					2	3	2.12
Disco = Disko	2			2							1	0	0.00
Elliot	2												
Green Rocket	3	1		1		1					3	5	2.12
Kingdom 65	2	2									1	0	0.00
Manoko	2	1		1							2	2	1.41
Nagaoka King(Oushou)	2	1	1								2	1	0.71
Nekita	2	1	1								2	1	0.71
Nerva	2	2									1	0	0.00
Obelisk(Harumaki-gokuwase	2	1		1							2	2	1.41
Optiko	2	1		1							2	2	1.41
Osiris(Taibyo-60nichi)	2	1			1						2	3	2.12
Parkin	3		2	1							2	1	0.58
Regina(50nichi)	2	1				1					2	4	2.83
Solado	2		2								1	0	0.00
Sprinkin(Norangmanjeom	2			2							1	0	0.00
Storkin	2	1	1								2	1	0.71
Taranko	2			1		1					2	2	1.41
Victor	2		1	1							2	1	0.71
Vitimo	2	1				1					2	4	2.83
Yamiko	2	1		1							2	2	1.41
Yuki	2	1		1							2	2	1.41

Characteristic:	Outer leaf: serration of margin(at base)						TG/105/3		Char. 14				
Variety	Number of descriptions provided	absent or very weak		weak		medium		strong		very strong	AVERAGE		
											1.92	2.58	1.65
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2						1	1			2	1	0.71
Bilko	2					1		1			2	2	1.41
Chiko	2												
Chorus	2												
Darek	2			1				1			2	4	2.83
Disco = Disko	2												
Elliot	2				1			1			2	3	2.12
Green Rocket	3												
Kingdom 65	2												
Manoko	2					1		1			2	2	1.41
Nagaoka King(Oushou)	2												
Nekita	2			1				1			2	4	2.83
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2												
Osiris(Taibyo-60nichi)	2												
Parkin	3												
Regina(50nichi)	2												
Solado	2			1				1			2	4	2.83
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2					1		1			2	2	1.41
Taranko	2												
Victor	2												
Vitimo	2					1		1			2	2	1.41
Yamiko	2			1				1			2	4	2.83
Yuki	2				1			1			2	3	0.00

Characteristic:	Outer leaf : width of midrib (at base)						TG/105/3		Char.16				
Variety	Number of descriptions provided	Notes		narrow		medium		broad			AVERAGE		
											1.69	1.15	0.81
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2				1		1				2	2	1.41
Bilko	2					1		1			2	2	1.41
Chiko	2												
Chorus	2												
Darek	2						1		1		2	2	1.41
Disco = Disko	2												
Elliot	2					2					1	0	0.00
Green Rocket	2					2					1	0	0.00
Kingdom 65	2												
Manoko	2					1		1			2	2	1.41
Nagaoka King(Oushou)	2												
Nekita	2					2					1	0	0.00
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2												
Osiris(Taibyo-60nichi)	2												
Parkin	2					1	1				2	1	0.71
Regina(50nichi)	2												
Solado	2					1		1			2	2	1.41
Sprinkin(Norangmanjeom	2					1	1				2	1	0.71
Storkin	2					1	1				2	1	0.71
Taranko	2												
Victor	2												
Vitimo	2					2					1	0	0.00
Yamiko	2					1		1			2	2	1.41
Yuki	2												

Characteristic:	Head : height						TG/105/3		Char. 17				
Variety	Number of descriptions provided	Notes		short		medium		tall			AVERAGE		
											1.94	1.39	0.96
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2				1	1					2	1	0.71
Bilko	2					2					1	0	0.00
Chiko	2												
Chorus	2												
Darek	2				1		1				2	2	1.41
Disco = Disko	2					2					1	0	0.00
Elliot	2			1		1					2	2	1.41
Green Rocket	2							1	1		2	1	0.71
Kingdom 65	2												
Manoko	2			1		1					2	2	1.41
Nagaoka King(Oushou)	2												
Nekita	2			1		1					2	2	1.41
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2			1			1				2	3	2.12
Osiris(Taibyo-60nichi)	2												
Parkin	3			1	1	1					3	2	1.00
Regina(50nichi)	2												
Solado	2				1	1					2	1	0.71
Sprinkin(Norangmanjeom	2			1		1					2	2	1.41
Storkin	2			1	1						2	1	0.71
Taranko	2					1	1				2	1	0.71
Victor	2				1	1					2	1	0.71
Vitimo	2			1	1						2	1	0.71
Yamiko	2			1		1					2	2	1.41
Yuki	2				1	1					2	1	0.71

Characteristic:	Head: width						TG/105/3		Char.18				
Variety	Number of descriptions provided	Notes		narrow		medium		broad			AVERAGE		
											1.37	0.37	0.26
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2						2				1	0	0.00
Bilko	2					2					1	0	0.00
Chiko	2			1	1						2	1	0.71
Chorus	2												
Darek	2					1	1				2	1	0.71
Disco = Disko	2					1	1				2	1	0.71
Elliot	2					2					1	0	0.00
Green Rocket	2			2							1	0	0.00
Kingdom 65	2												
Manoko	2				1	1					2	1	0.71
Nagaoka King(Oushou)	2												
Nekita	2				1	1					2	1	0.71
Nerva	2												
Obelisk(Harumaki-gokuwase	2												
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2												
Parkin	3					3					1	0	0.00
Regina(50nichi)	2												
Solado	2							2			1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2					2					1	0	0.00
Taranko	2					2					1	0	0.00
Victor	2					2					1	0	0.00
Vitimo	2					1	1				2	1	0.71
Yamiko	2					2					1	0	0.00
Yuki	2					1	1				2	1	0.71

Characteristic:	Head : shape in longitudinal section						TG/105/3		Char.19				
Variety	Number of descriptions provided	oblong	elliptic	broad elliptic	circular	ovate	broad ovate				AVERAGE		
											1.58	0.92	0.62
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2		1	1							2	1	0.71
Bilko	2		2								1	0	0.00
Chiko	2	2									1	0	0.00
Chorus	2			1		1					2	2	1.41
Darek	2		1	1							2	1	0.71
Disco = Disko	2		2								1	0	0.00
Elliot	2			2							1	0	0.00
Green Rocket	3	3									1	0	0.00
Kingdom 65	2			1	1						2	1	0.71
Manoko	2	1	1								2	1	0.71
Nagaoka King(Oushou)	2			2							1	0	0.00
Nekita	2	1	1								2	1	0.71
Nerva	2		1			1					2	3	2.12
Obelisk(Harumaki-gokuwase	2				1	1					2	1	0.71
Optiko	2		2								1	0	0.00
Osiris(Taibyo-60nichi)	2			2							1	0	0.00
Parkin	3		2	1							2	1	0.58
Regina(50nichi)	2			2							1	0	0.00
Solado	2	1		1							2	2	0.71
Sprinkin(Norangmanjeom	2	1	1								2	1	0.71
Storkin	2		2								1	0	0.00
Taranko	2	2									1	0	0.00
Victor	2		1			1					2	3	2.12
Vitimo	2		1				1				2	4	2.83
Yamiko	2	1	1								2	1	0.71
Yuki	2		1	1							2	1	0.71

Characteristic:	Head : intensity of color of wrapper leaf						TG/105/3		Char. 22				
Variety	Number of descriptions provided	Notes		light		medium		dark			AVERAGE		
											1.76	1.08	0.71
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2				1	1					2	1	0.71
Bilko	2					2					1	0	0.00
Chiko	2			1		1					2	2	1.41
Chorus	2				1	1					2	1	0.71
Darek	2					1	1				2	1	0.71
Disco = Disko	2			1		1					2	2	1.41
Elliot	2			2							1	0	0.00
Green Rocket	3					1	1	1			3	2	0.71
Kingdom 65	2			1			1				2	3	2.12
Manoko	2			1		1					2	2	1.41
Nagaoka King(Oushou)	2			1	1						2	1	0.71
Nekita	2			1		1					2	2	1.41
Nerva	2			1	1						2	1	0.71
Obelisk(Harumaki-gokuwase	2												
Optiko	2			1	1						2	1	0.71
Osiris(Taibyo-60nichi)	2			1		1					2	2	1.41
Parkin	3					2	1				2	1	0.00
Regina(50nichi)	2			1	1						2	1	0.71
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2					2					1	0	0.00
Storkin	2				1	1					2	1	0.71
Taranko	2			2							1	0	0.00
Victor	2				1	1					2	1	0.71
Vitimo	2					2					1	0	0.00
Yamiko	2			1		1					2	2	1.41
Yuki	2					2					1	0	0.00

Characteristic:	Head: blistering of wrapper leaf						TG/105/3		Char, 23				
Variety	Number of descriptions provided	absent or very weak		weak		medium		strong		very strong	AVERAGE		
											1.91	1.77	1.24
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2				1	1					2	1	0.71
Bilko	2					1		1			2	2	1.41
Chiko	2			1				1			2	4	2.83
Chorus	2				1			1			2	3	2.12
Darek	2					1	1				2	1	0.71
Disco = Disko	2						1	1			2	1	0.71
Elliot	2				1			1			2	3	2.12
Green Rocket	3			2	1						2	1	0.58
Kingdom 65	2			1		1					2	2	1.41
Manoko	2							2			1	0	0.00
Nagaoka King(Oushou)	2												
Nekita	2				1			1			2	3	2.12
Nerva	2						1	1			2	1	0.71
Obelisk(Harumaki-gokuwase	2												
Optiko	2					1		1			2	2	1.41
Osiris(Taibyo-60nichi)	2												
Parkin	3					2		1			2	2	1.15
Regina(50nichi)	2												
Solado	2				1			1			2	3	2.12
Sprinkin(Norangmanjeom	2					1	1				2	1	0.71
Storkin	2			1				1			2	4	2.83
Taranko	2					1	1				2	1	0.71
Victor	2				1	1					2	1	0.71
Vitimo	2							2			1	0	0.00
Yamiko	2					1		1			2	2	1.41
Yuki	2						1	1			2	1	0.71

Characteristic:	Head : firmness (at harvest maturity)						TG/105/3		Char. 25				
Variety	Number of descriptions provided	very weak		weak		medium		strong		very strong	AVERAGE		
											1.65	1.22	0.86
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2						2				1	0	0.00
Bilko	2			1		1					2	2	1.41
Chiko	2				1			1			2	3	2.12
Chorus	2					1	1				2	1	0.71
Darek	2						1	1			2	1	0.71
Disco = Disko	2					2					1	0	0.00
Elliot	2				1		1				2	2	1.41
Green Rocket	2			1			1				2	3	2.12
Kingdom 65	2					1	1				2	1	0.71
Manoko	2					2					1	0	0.00
Nagaoka King(Oushou)	2				1				1		2	4	2.83
Nekita	2					2					1	0	0.00
Nerva	2						1	1			2	1	0.71
Obelisk(Harumaki-gokuwase	2												
Optiko	2					2					1	0	0.00
Osiris(Taibyo-60nichi)	2												
Parkin	2					1	1				2	1	0.71
Regina(50nichi)	2							1	1		2	1	0.71
Solado	2					2					1	0	0.00
Sprinkin(Norangmanjeom	2					1		1			2	2	1.41
Storkin	2					1		1			2	2	1.41
Taranko	2					2					1	0	0.00
Victor	2												
Vitimo	2						1	1			2	1	0.71
Yamiko	2					2					1	0	0.00
Yuki	2			1			1				2	3	2.12

Characteristic:	Head: length of internal stem						TG/105/3		Char. 26				
Variety	Number of descriptions provided	Notes		short		medium		long			AVERAGE		
											1.64	1.41	1.01
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2			1	1						2	1	0.71
Bilko	2			1			1				2	3	2.12
Chiko	2	1						1			2	6	4.24
Chorus	2			1	1						2	1	0.71
Darek	2			1	1						2	1	0.71
Disco = Disko	2			2							1	0	0.00
Elliot	2			2							1	0	0.00
Green Rocket	3	1					1			1	2	5	4.04
Kingdom 65	2	1			1						2	3	2.12
Manoko	2			2							1	0	0.00
Nagaoka King(Oushou)	2												
Nekita	2		1	1							2	1	0.71
Nerva	2	1		1							2	2	1.41
Obelisk(Harumaki-gokuwase	2												
Optiko	2			2							1	0	0.00
Osiris(Taibyo-60nichi)	2												
Parkin	3			2		1					2	2	1.15
Regina(50nichi)	2												
Solado	2			2							1	0	0.00
Sprinkin(Norangmanjeom	2			2							1	0	0.00
Storkin	2			2							1	0	0.00
Taranko	2			1		1					2	2	1.41
Victor	2				1	1					2	1	0.71
Vitimo	2			1	1						2	1	0.71
Yamiko	2			2							1	0	0.00
Yuki	2			1		1					2	2	1.41

Characteristic:	Time of head formation							TG/105/3	Char.27				
Variety	Number of descriptions provided	very early		early		medium		late		very late	AVERAGE		
											1.69	1.35	0.96
											Number of frequencies	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2					2					1	0	0.00
Bilko	2					2					1	0	0.00
Chiko	2			1				1			2	4	2.83
Chorus	2					1		1			2	2	1.41
Darek	2				1			1			2	3	2.12
Disco = Disko	2					2					1	0	0.00
Elliot	2			1		1					2	2	1.41
Green Rocket	3				1	1	1				3	2	1.00
Kingdom 65	2					1	1				2	1	0.71
Manoko	2			2							1	0	0.00
Nagaoka King(Oushou)	2						1		1		2	2	1.41
Nekita	2			1			1				2	3	2.12
Nerva	2	1		1							2	2	1.41
Obelisk(Harumaki-gokuwase	2	1		1							2	2	1.41
Optiko	2			2							1	0	0.58
Osiris(Taibyo-60nichi)	2		1		1						2	2	1.41
Parkin	3							3			1	0	0.00
Regina(50nichi)	2			1	1						2	1	0.71
Solado	2					1	1				2	1	0.71
Sprinkin(Norangmanjeom	2			1		1					2	2	1.41
Storkin	2					1		1			2	2	1.41
Taranko	2						1	1			2	1	0.71
Victor	2					2					1	0	0.00
Vitimo	2		1			1					2	3	2.12
Yamiko	2					2					1	0	0.00
Yuki	2					2					1	0	0.00

Characteristic:	Time of bolting						TG/105/3		Char.28				
Variety	Number of descriptions provided	Notes		early		medium		late			AVERAGE		
											2.00	2.50	1.77
											43.00	Range	Standard Deviation
		1	2	3	4	5	6	7	8	9			
Chinlee (Barum)	2												
Bilko	2												
Chiko	2												
Chorus	2												
Darek	2												
Disco = Disko	2												
Elliot	2												
Green Rocket	3												
Kingdom 65	2												
Manoko	2												
Nagaoka King(Oushou)	2												
Nekita	2												
Nerva	2												
Obelisk(Harumaki-gokuwase	2					1		1			2	2	1.41
Optiko	2												
Osiris(Taibyo-60nichi)	2			1			1				2	3	2.12
Parkin	3												
Regina(50nichi)	2												
Solado	2												
Sprinkin(Norangmanjeom	2												
Storkin	2												
Taranko	2												
Victor	2												
Vitimo	2												
Yamiko	2												
Yuki	2												

(3) Summary TG/105/3

(*) asterisked characteristic
(G) grouping characteristic

(1) Pseudo-qualitative characteristics

UPOV-Number	Characteristic	Average Number of frequencies		
4	Outer Leaf: shape	1.43		
(*) 7	Outer leaf: color	1.23		
15	Outer leaf: shape of midrib in cross section	1.78		
20	Head: formation	1.64		
(*) 21	Head: color of wrapper leaf	1.40		
24	Head: internal color	1.50		
(2) Quantitative characteristics				

UPOV-Number	Characteristic	Average		
		Number of frequencies	Range	Standard Deviation
(*) 1	Plant: height	1.62	0.73	0.51
2	Outer leaf: attitude	1.58	0.81	0.57
3	Outer leaf: size	1.58	0.81	0.56
(*) 5	Outer leaf: blistering	1.65	1.04	0.72
6	Outer leaf: size of blister	1.55	0.75	0.53
8	Outer leaf: intensity of color	1.58	0.77	0.52
9	Outer leaf: glossiness	1.84	1.63	1.15
10	Outer leaf: hairiness	1.82	1.53	1.08
11	Outer leaf: curvature in longitudinal section	1.83	2.33	1.65
(*) 12	Outer leaf: undulation of margin	1.92	1.88	1.28
13	Outer leaf: incision of margin (at distal part)	1.79	1.67	1.11
14	Outer leaf: serration of margin(at base)	1.92	2.58	1.65
16	Outer leaf: width of midrib (at base)	1.69	1.15	0.81

17	Head: height	1.94	1.39	0.96
18	Head: width	1.37	0.37	0.26
(G) (*) 19	Head: shape in longitudinal section	1.58	0.92	0.62
22	Head: intensity of color of wrapper leaf	1.76	1.08	0.71
23	Head: blistering of wrapper leaf	1.91	1.77	1.24
25	Head: firmness (at harvest maturity)	1.65	1.22	0.86
26	Head: length of internal stem	1.64	1.41	1.01
(G) (*) 27	Time of head formation	1.69	1.35	0.96
28	Time of bolting	2.00	2.50	1.77

[Annex III follows]

ANNEX III

DESCRIPTION OF VARIETIES IN DIFFERENT UPOV COUNTRIES

Slide 1

Description of varieties in different UPOV countries

Prepared by experts from France with data provided on barley via

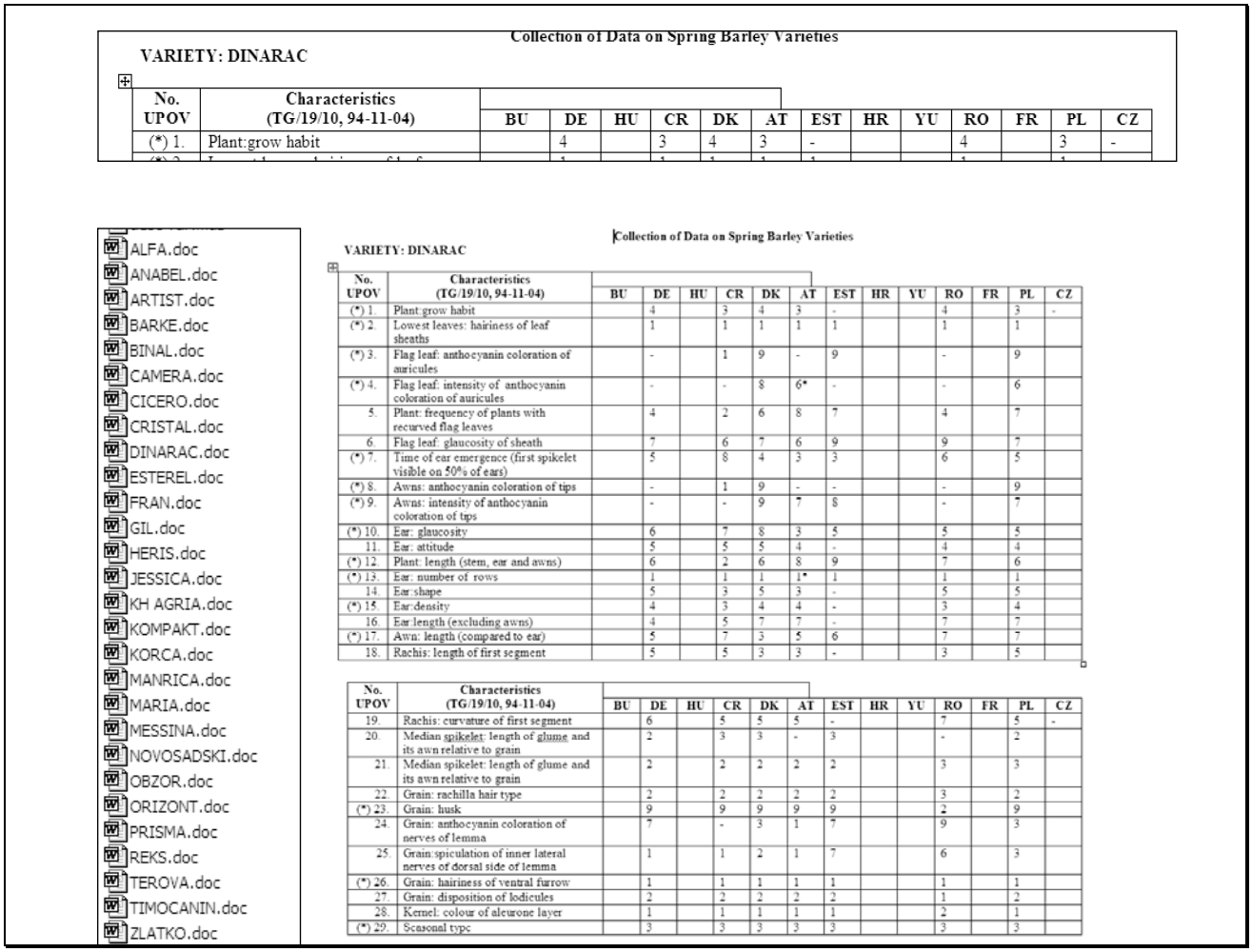
J Guiard and

G Deneken

Slide 2

- A set of varieties has been described by 13 countries in the year 2003
- Notes have been summarised in one Word file per variety

Slide 3



Collection of Data on Spring Barley Varieties

VARIETY: DINARAC

No. UPOV	Characteristics (TG/19/10, 94-11-04)	BU	DE	HU	CR	DK	AT	EST	HR	YU	RO	FR	PL	CZ
(*) 1.	Plant:grow habit		4		3	4	3	-			4		3	-

ALFA.doc
ANABEL.doc
ARTIST.doc
BARKE.doc
BINAL.doc
CAMERA.doc
CICERO.doc
CRISTAL.doc
DINARAC.doc
ESTEREL.doc
FRAN.doc
GIL.doc
HERIS.doc
JESSICA.doc
KH AGRIA.doc
KOMPAKT.doc
KORCA.doc
MANRICA.doc
MARIA.doc
MESSINA.doc
NOVOSADSKI.doc
OBZOR.doc
ORIZONT.doc
PRISMA.doc
REKS.doc
TEROVA.doc
TIMOCANIN.doc
ZLATKO.doc

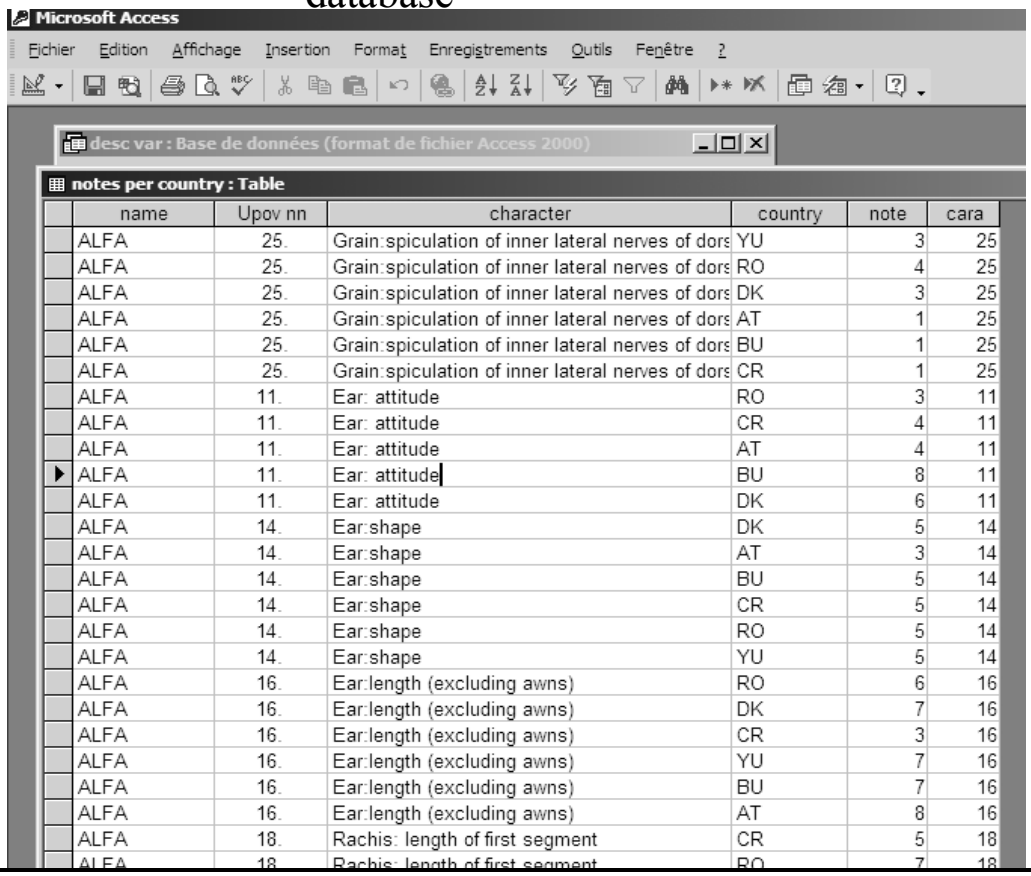
Collection of Data on Spring Barley Varieties

VARIETY: DINARAC

No. UPOV	Characteristics (TG/19/10, 94-11-04)	BU	DE	HU	CR	DK	AT	EST	HR	YU	RO	FR	PL	CZ
(*) 1.	Plant:grow habit		4		3	4	3	-			4		3	-
(*) 2.	Lowest leaves: hairiness of leaf sheaths		1		1	1	1	1			1		1	
(*) 3.	Flag leaf: anthocyanin coloration of auricules		-		1	9	-	9			-		9	
(*) 4.	Flag leaf: intensity of anthocyanin coloration of auricules		-		-	8	6*	-			-		6	
5.	Plant: frequency of plants with recurved flag leaves		4		2	6	8	7			4		7	
6.	Flag leaf: glaucosity of sheath		7		6	7	6	9			9		7	
(*) 7.	Time of ear emergence (first spikelet visible on 50% of ears)		5		8	4	3	3			6		5	
(*) 8.	Awns: anthocyanin coloration of tips		-		1	9	-	-			-		9	
(*) 9.	Awns: intensity of anthocyanin coloration of tips		-		-	9	7	8			-		7	
(*) 10.	Ear: glaucosity		6		7	8	3	5			5		5	
11.	Ear: attitude		5		5	5	4	-			4		4	
(*) 12.	Plant: length (stem, ear and awns)		6		2	6	8	9			7		6	
(*) 13.	Ear: number of rows		1		1	1	1*	1			1		1	
14.	Ear:shape		5		3	5	3	-			5		5	
(*) 15.	Ear:density		4		3	4	4	-			3		4	
16.	Ear length (excluding awns)		4		5	7	7	-			7		7	
(*) 17.	Awn: length (compared to ear)		5		7	3	5	6			7		7	
18.	Rachis: length of first segment		5		5	3	3	-			3		5	
19.	Rachis: curvature of first segment		6		5	5	5	-			7		5	-
20.	Median spikelet: length of glume and its awn relative to grain		2		3	3	-	3			-		2	
21.	Median spikelet: length of glume and its awn relative to grain		2		2	2	2	2			3		3	
22.	Grain: rachilla hair type		2		2	2	2	2			3		2	
(*) 23.	Grain: husk		9		9	9	9	9			2		9	
24.	Grain: anthocyanin coloration of nerves of lemma		7		-	3	1	7			9		3	
25.	Grain:spiculation of inner lateral nerves of dorsal side of lemma		1		1	2	1	7			6		3	
(*) 26.	Grain: hairiness of ventral furrow		1		1	1	1	1			1		1	
27.	Grain: disposition of lodicules		2		2	2	2	2			1		2	
28.	Kernel: colour of aleurone layer		1		1	1	1	1			2		1	
(*) 29.	Seasonal type		3		3	3	3	3			3		3	

Slide 4

All data have been entered in an Access database



name	Upov nn	character	country	note	cara
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	YU	3	25
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	RO	4	25
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	DK	3	25
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	AT	1	25
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	BU	1	25
ALFA	25.	Grain:spiculation of inner lateral nerves of dors	CR	1	25
ALFA	11.	Ear: attitude	RO	3	11
ALFA	11.	Ear: attitude	CR	4	11
ALFA	11.	Ear: attitude	AT	4	11
ALFA	11.	Ear: attitude	BU	8	11
ALFA	11.	Ear: attitude	DK	6	11
ALFA	14.	Ear:shape	DK	5	14
ALFA	14.	Ear:shape	AT	3	14
ALFA	14.	Ear:shape	BU	5	14
ALFA	14.	Ear:shape	CR	5	14
ALFA	14.	Ear:shape	RO	5	14
ALFA	14.	Ear:shape	YU	5	14
ALFA	16.	Ear:length (excluding awns)	RO	6	16
ALFA	16.	Ear:length (excluding awns)	DK	7	16
ALFA	16.	Ear:length (excluding awns)	CR	3	16
ALFA	16.	Ear:length (excluding awns)	YU	7	16
ALFA	16.	Ear:length (excluding awns)	BU	7	16
ALFA	16.	Ear:length (excluding awns)	AT	8	16
ALFA	18.	Rachis: length of first segment	CR	5	18
ALFA	18.	Rachis: length of first segment	RO	7	18

Slide 5

Summary of dataset available

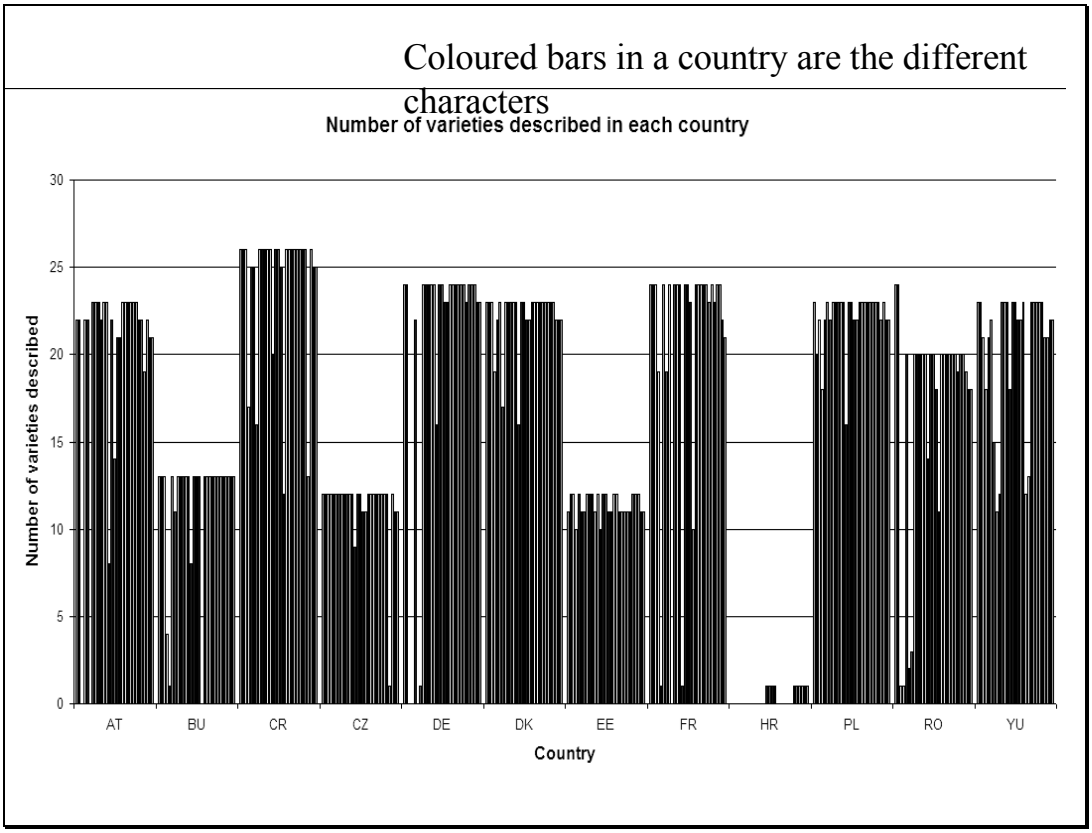
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	**Number of variety descriptions by country and by characteristic (maximum 28 varieties)**															
2																
3	character	*	Upov nn	AT	BU	CR	CZ	DE	DK	EE	FR	HR	PL	RO	YU	
4	Plant:grow habit	Y	1	22	13	26	12	24	23	11	24		23	24	23	*202*
5	Lowest leaves: hairiness of leaf sheaths	Y	2	22	13	26	12	24	23	12	24		20	24	23	*200*
6	Flag leaf: anthocyanin coloration of auricules	Y	3		13	26	12		23	12	24		22	1	21	*133*
7	Flag leaf: intensity of anthocyanin coloration of	Y	4	22	4	17	12		19	10	19		18	1	18	*122*
8	Time of ear emergence (first spikelet visible on 5	Y	7	22	1	25	12	22	22	12	1		22	20	21	*159*
9	Awns: anthocyanin coloration of tips	Y	8		13	25	12		23	11	24		23	2	22	*133*
10	Awns: intensity of anthocyanin coloration of tips	Y	9	23	11	16	12	1	17	11	19		22	3	15	*135*
11	Ear: glaucosity	Y	10	23	13	26	12	24	23	12	24		23	20	11	*200*
12	Plant: length (stem, ear and awns)	Y	12	23	13	26	12	24	23	12			23	20	12	*176*
13	Ear: number of rows	Y	13	22	13	26	12	24	23	12	24		23	20	23	*199*
14	Ear:density	Y	15	23	13	26	12	24	23	11	24		23	20	23	*199*
15	Awn: length (compared to ear)	Y	17	23	13	26	12	24	23	12	24		23	20	23	*200*
16	Median spikelet: length of glume and its awn relat	Y	20	8	8	20	9	16	16	10	1		16	14	18	*118*
17	Grain: rachilla hair type	Y	22	22	13	26	12	24	23	12	24	1	23	20	23	*200*
18	Grain: husk	Y	23	14	13	26	12	24	23	12	24	1	23	20	23	*192*
19	Grain: hairiness of ventral furrow	Y	26	21	13	25	11	23	22	11	23	1	22	18	22	*190*
20	Seasonal type	Y	29	21		12	11	23	22	11	10	1	22	11	22	*144*
21	Plant: frequency of plants with recurved flag leav	N	5	23	13	26	12	24	23	12	24		23	20	23	*200*
22	Flag leaf: glaucosity of sheath	N	6	23	13	26	12	24	23	12	24		23	20	12	*200*
23	Ear: attitude	N	11	23	13	26	12	24	23	11	24		23	20	13	*199*
24	Ear:shape	N	14	23	13	26	12	24	23	11	24		23	20	23	*199*
25	Ear:length (excluding awns)	N	16	23	13	26	12	24	23	11	24		23	20	23	*199*
26	Rachis: length of first segment	N	18	23	13	26	12	24	23	11	23		23	20	23	*198*
27	Rachis: curvature of first segment	N	19	22	13	26	12	23	23	11	24	1	23	19	23	*197*
28	Median spikelet: length of glume and its awn relat	N	21	22	13	26	12	24	23	12	23	1	23	20	23	*199*
29	Grain: anthocyanin coloration of nerves of lemma	N	24	19	13	13	1	24	23	12	24	1	22	20	21	*172*
30	Grain:spiculation of inner lateral nerves of dorsa	N	25	22	13	26	12	24	22	12	24	1	23	19	21	*198*
31	Grain: disposition of lodicules	N	27	21	13	25	11	23	22	11	22	1	22	18	22	*189*
32	Kernel: colour of aleurone layer	N	28	21	13	25	11	23	22	11	21	1	22	18	22	*188*
33				*576*	*336*	*697*	*330*	*586*	*644*	*331*	*594*	*10*	*644*	*492*	*592*	

the number of data points per character is less Variable **118-202**

The number of descriptions is different from country to country **10-697**

Slide 6

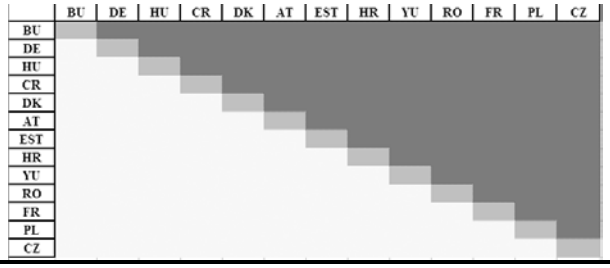
Coloured bars in a country are the different characters



Slide 7

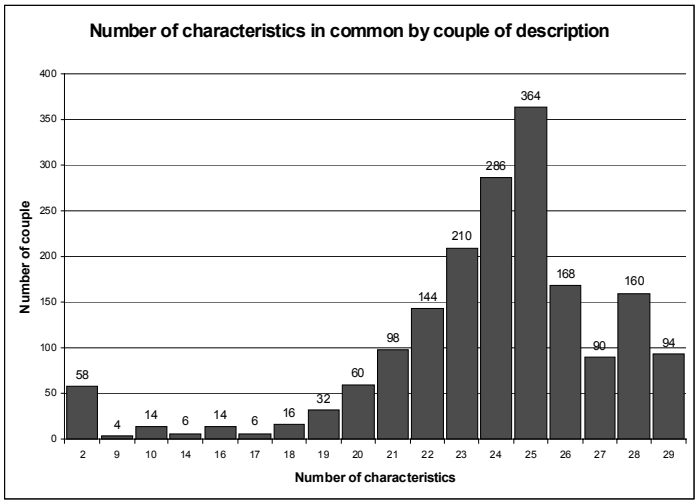
Aim: Compare the description of the same variety in the different countries

- The 28 varieties are not compared, they are distinct
- Only the descriptions of the same variety coming from different countries are compared
- A couple (comparison) = comparing 2 descriptions on a given variety



Slide 8

From 2 to 29 common characters (from 29 in the list)



Slide 9

No description is identical in any couple of countries for any variety

- Data have been entered in GAIA software and the descriptions from different countries compared

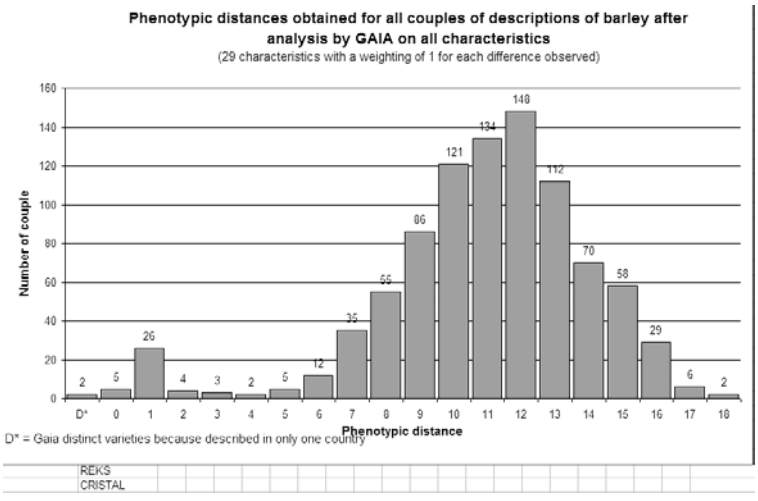
A difference on a characteristic is weighted 1

- all countries all characters
- all countries (*) characters
- DE DK FR (*) characters

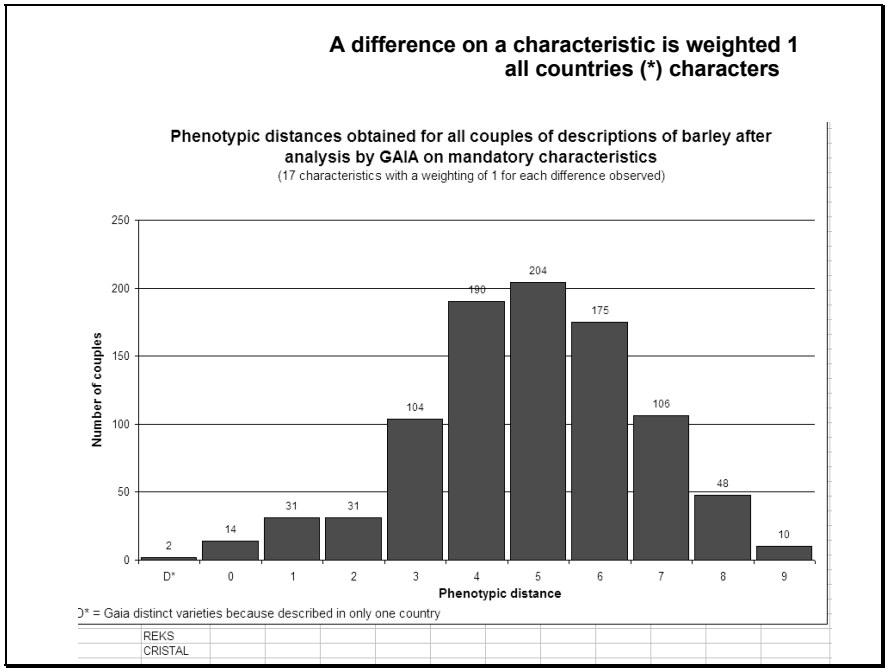
A difference on a characteristic is weighted 1 if the notes differ from 2 (unless 2 notes 1-9 or 1-

Slide 10

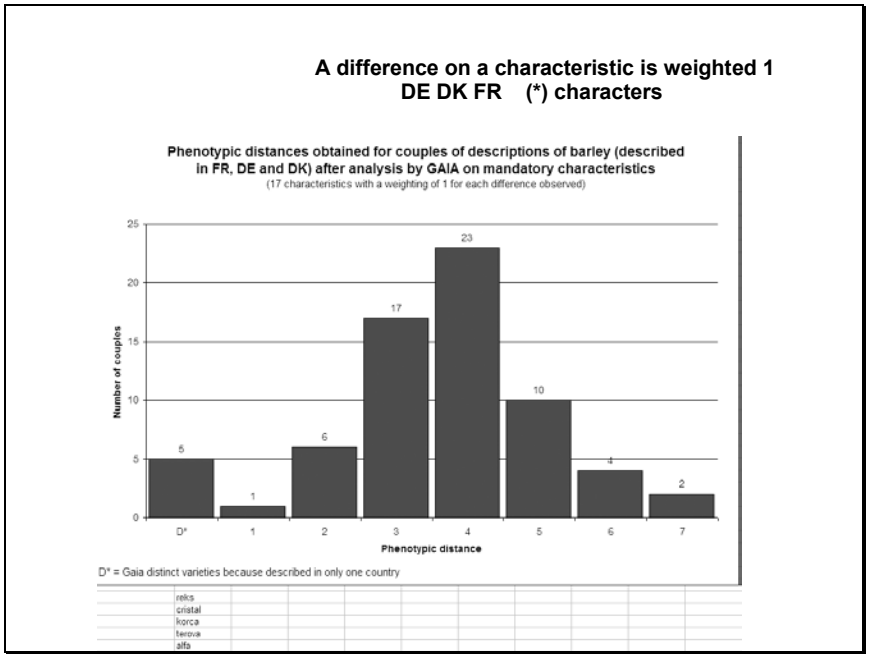
A difference on a characteristic is weighted 1
all countries all characters



Slide 11

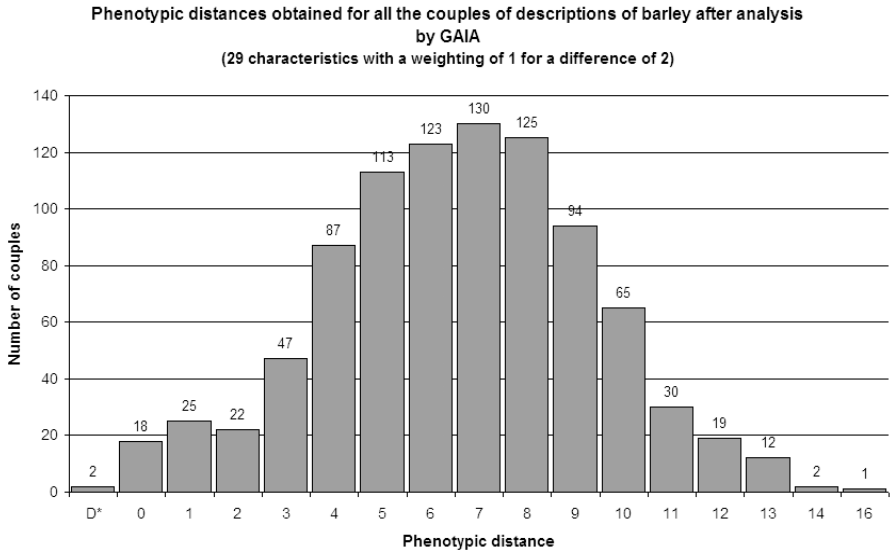


Slide 12



Slide 13

A difference on a characteristic is weighted 1 if the notes differ from 2 (unless 2 ie notes 1-9 or 1-2)



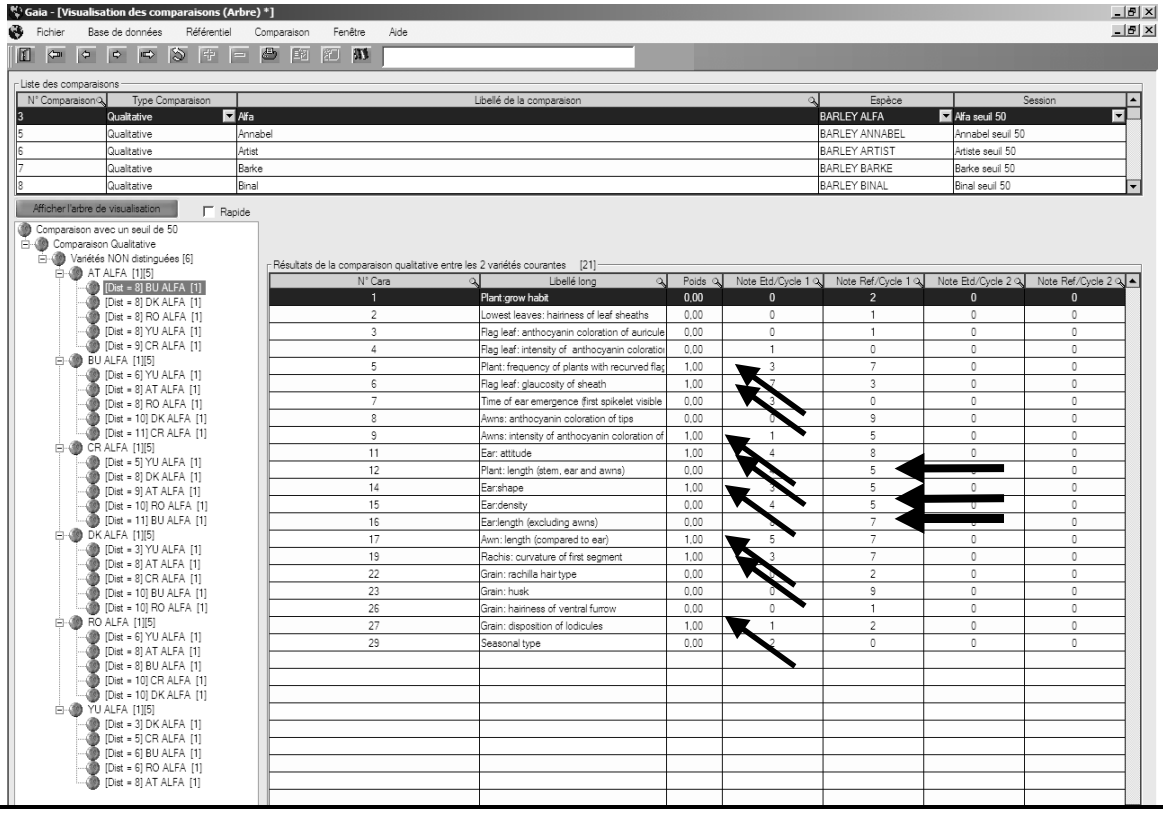
D* = Gaia distinct varieties because described in only one country

0 = no coincidence of characters, or only 1 common

Slide 14

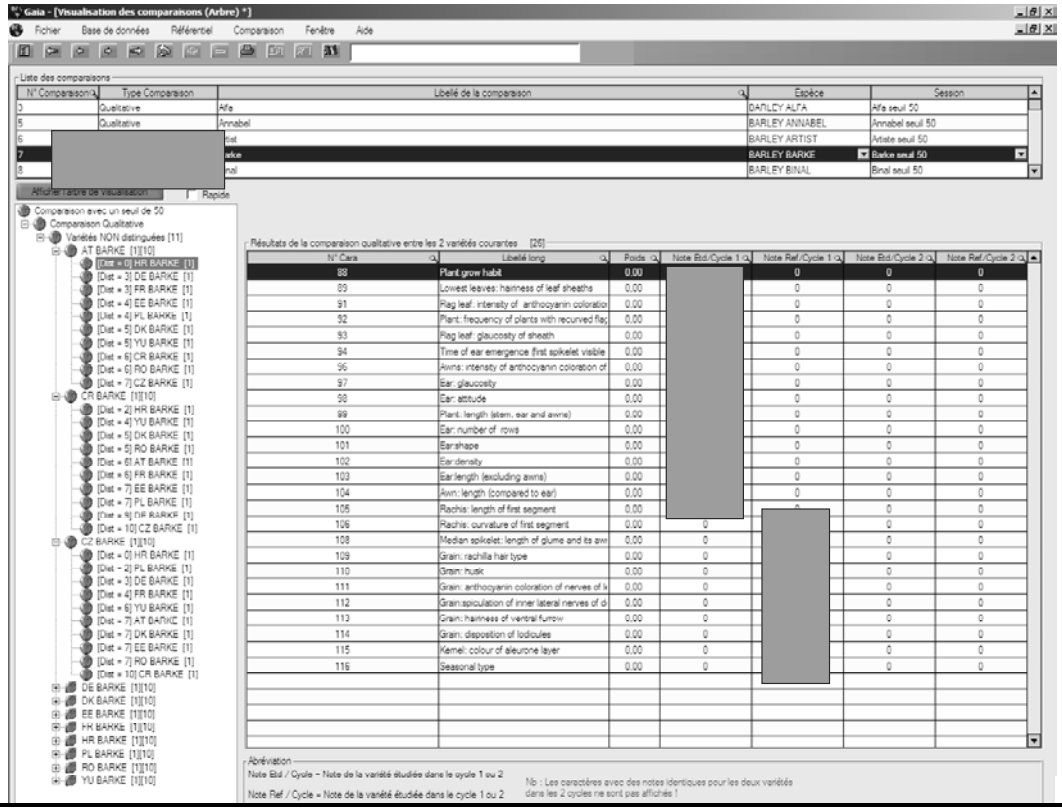
Example of useful comparison

11 characters in common, 8 <>, 3 =



Slide 15

Example where no comparison is possible



Slide 16

Variability is different on different varieties, and also differs from character to character

1	cara	name	de country	name	1	2	3	4	5	6	7	8	9
2	1	plant growth habit	5	ALFA		1	2	1	1				
3	1	plant growth habit	10	ANNABEL				1	4	3	1	1	
4	1	plant growth habit	9	ARTIST		1	1		1	3	3		
5	1	plant growth habit	10	BARKE				2	5	3			
6	1	plant growth habit	10	BINAL					9	1			
7	1	plant growth habit	9	CAMERA		2	1		2	2		1	1
8	1	plant growth habit	10	CICERO			3	1	6				
9	1	plant growth habit	1	CRISTAL				1					
10	1	plant growth habit	6	DINARAC			3	3					
11	1	plant growth habit	9	ESTEREL			2	1	5	1			
12	1	plant growth habit	10	FRAN		2	8						
13	1	plant growth habit	9	GIL			2	1	4	1	1		
14	1	plant growth habit	10	HERIS			1		5	3	1		
15	1	plant growth habit	7	JESSICA					2	1	4		
16	1	plant growth habit	9	KH AGRIA			2	1	5	1			
17	1	plant growth habit	10	KOMPAKT			2	1	5	2			
18	1	plant growth habit	4	KORCA			2		2				
19	1	plant growth habit	9	MANRICA		1			4	3	1		
20	1	plant growth habit	10	MARIA		2	6	2					
21	1	plant growth habit	10	MESSINA				1	7	2			
22	1	plant growth habit	9	NOVOSADSKI			3	1	1	2	2		
23	1	plant growth habit	9	OBZOR			1	1	1	2	4		
24	1	plant growth habit	9	ORIZONT			1	2	2	1	3		
25	1	plant growth habit	10	PRISMA			1	1	5	2	1		
26	1	plant growth habit	1	REKS					1				
27	1	plant growth habit	4	TEROVA			2		2				
28	1	plant growth habit	10	TIMOCANIN		6	3	1					
29	1	plant growth habit	6	ZLATKO			1	4	1				

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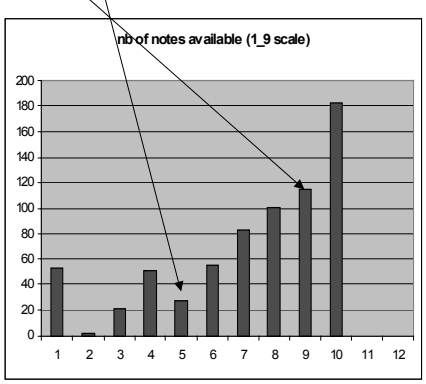
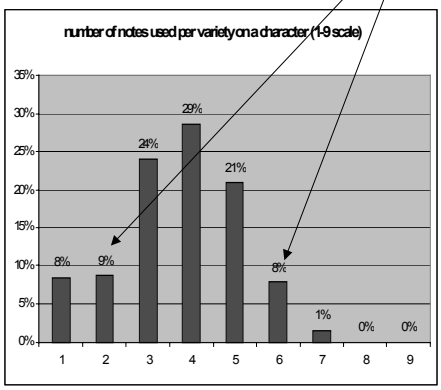
Often 3 to 5 notes within the range are found for a given variety (Characters on 1-9 scale)

5	ALFA		1	2	1	1					4
10	ANNABEL				1	4	3	1	1		5
9	ARTIST		1	1		1	3	3			5
10	BARKE				2	5	3				3
10	BINAL					9	1				2
9	CAMERA		2	1		2	2		1	1	6





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Some notes are unexpected

13	ear number of rows	6		ALFA	6							
13	ear number of rows	10		ANNABEL	10							
13	ear number of rows	9		ARTIST	9							
13	ear number of rows	10		BARKE	10							
13	ear number of rows	10		BINAL	10							
13	ear number of rows	8		CAMERA	8							
13	ear number of rows	10		CICERO	10							
13	ear number of rows	1		CRISTAL		1						
13	ear number of rows	7		DINARAC	7							
13	ear number of rows	9		ESTEREL		9						
13	ear number of rows	10		FRAN	10							
13	ear number of rows	9		GIL		9						
13	ear number of rows	10		HERIS	10							
13	ear number of rows	7		JESSICA	6			1				
13	ear number of rows	8		KH AGRIA	8							
13	ear number of rows	10		KOMPAKT	9			1				
13	ear number of rows	4		KORCA		4						
13	ear number of rows	8		MANRICA	8							
13	ear number of rows	10		MARIA	10							
13	ear number of rows	10		MESSINA	9						1	
13	ear number of rows	9		NOVOSADSKI		9						
13	ear number of rows	9		OBZOR	9							
13	ear number of rows	9		ORIZONT		9						
13	ear number of rows	10		PRISMA	9			1				
13	ear number of rows	1		REKS		1						
13	ear number of rows	4		TEROVA	4							
13	ear number of rows	10		TIMOCANIN		8						
13	ear number of rows	5		ZLATKO	5							

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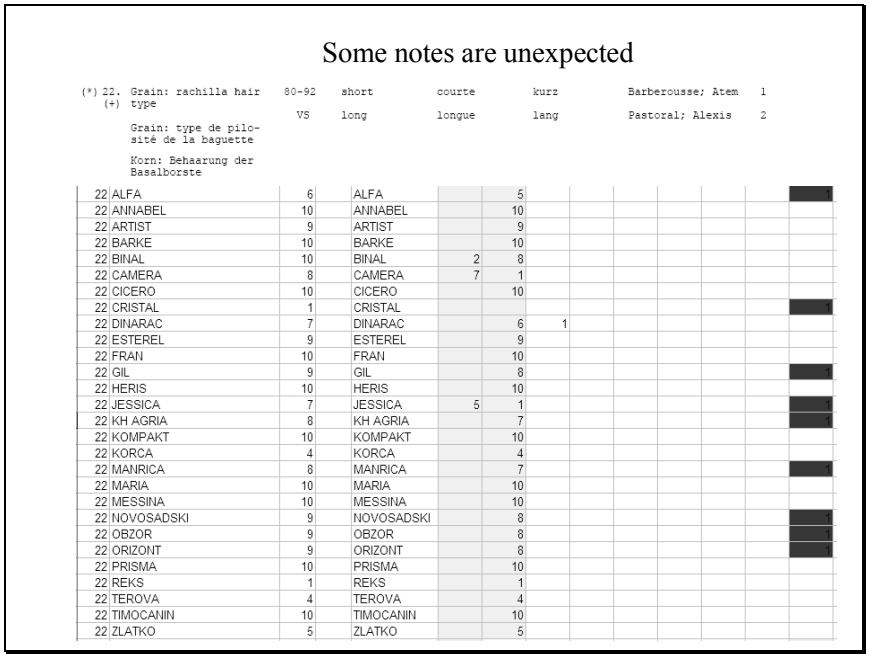

Slide 20

- We are very far from equivalent descriptions in different countries, even when a difference of 2 notes is used
- With a specific exercise, the data set was expected to be good , the study suggest some improvements can be achieved

[Annex IV follows]

ANNEX IV

PROJECT TO CONSIDER THE PUBLICATION OF VARIETY DESCRIPTIONS: MODEL STUDY ON ALSTROEMERIA

Document prepared by experts from the Netherlands

1. In the model study on Alstroemeria descriptions were requested for 7 varieties which had been plant breeders' rights in Canada, Japan, the Netherlands and South Africa.

2. Descriptions of the following varieties were received:

Stabec:	a pink flowered variety used for cut flower production
Stamond:	a white flowered variety used for cut flower production
Staprilan:	a yellow flowered variety used for production of pot plants
Staprinag:	a white flowered variety used for production of pot plants
Staprisis:	a white flowered variety used for production of pot plants
Stasach:	a red flowered variety for production of cut flowers
Statiren:	a pink flowered variety for production of cut flowers

3. The following photographs and additional documentation on the growing of the plants (as far as available) were received from 3 countries:

Canada

- Color photographs were taken by the testing centre
- The plants were grown in summer/Fall in pots or open greenhouse; all in 5 gallon pots; duration of growth 4 to 6 months
- Minimum temperature 12 C; full sunlight
- Pot varieties are grown in the same way as varieties for cut flower production, the only difference being a smaller pot for the pot types (10 inch pot)

Japan

- No pictures were made at the testing centre
- In Japan there is normally on-site inspection
- The applicants are given the following information: Planting in the greenhouse, number of plants and spacing
- Planting time: Spring: May; or Autumn: September

Netherlands

- Photographs from the testing centre
- Growing in autumn/winter/spring in the greenhouse
- Temperature low, to be kept free from frost in winter
- No shading
- Flowering in April/May

- Pot varieties are treated in the same way as varieties grown for cut flower production: both are grown in the open greenhouse soil.

Results

4. The survey of the data received from the different countries is provided as Appendix I. Appendix 2 provides selected characteristics, which include those characteristics which will be retained in the new draft Test Guidelines and the non-asterisked characteristics in that draft. The UPOV Color Groups have been added where applicable.

Discussion

Char. 1 Stem: length

RSA scores 3 for the pot varieties. That is interesting as these varieties are expected at the bottom of the scale. No further information has been received from RSA. For the cut-flower varieties Japan scored lower than the Netherlands, perhaps due to different growing circumstances.

Char. 8 Umbel branches: number

Rather consistent scores.

Char. 9 Umbel branches: length

Some variation; length is strongly depending on the time of observation.

Char. 10 Pedicel: length

Same comment as for Char. 9.

Char. 11 Flower: main color

Stabec: note 6, red, appears to deviate compared to notes 7 and 8 light pink and pink. Perhaps the red blotch on a pink background is impressive and, whilst not covering the largest part of the flower, has been the basis of the decision here.

Staprinag: the same as for Stabec, but in this case, there is a light pink blotch on a white background.

For the other varieties there may often be confusion by taking the most impressive color instead of the color that is covering the largest part of the surface. In addition, there is difficulty in the cases where 2 colors cover the surface on a 50/50 basis.

Char. 12 Size

Rather consistent scores.

Char. 14 Outer tepal: Shape of blade

Hopefully attention will be paid in the shape document to the distinctness between the shapes mentioned here. The same remark on the distinctness between claw and blade.

Char. 16 Main color of inner side of blade

The confusion that can be seen here has already been solved in the revised draft by dividing the petal into several parts for color observation.

Char. 18 Outer tepal: number of stripes on inner side of blade

The same as for Char. 16: division in parts and better definition.

Char. 20 Inner lateral tepal: main color of inner side of middle zone of blade

Not so much variation as far as the color groups are concerned. Yellow orange for Stasach is questionable.

Char. 22 Inner lateral tepal: size of stripes on inner side of blade.

Rather large variation in states, which has been addressed in the new draft Test Guidelines by division into parts and better definition of the characteristic.

Char. 23 Stamen: main color of filament

Some understandable variation in states

Char. 25 Stamens: color of the anthers at the start of dehiscence

This characteristic is very dependent on the time of observation. The color of the pollen is *not* meant here.

Char. 26 Anthocyanin coloration of the ovary.

Extremely variable results, which has been addressed in the draft Test Guidelines by a more precise definition.

General

It appears that the differences may be partly caused by different environmental factors between the different testing locations but also by unclear definitions of characteristics and/or the indication of the time of observation.

[Appendices follow]

APPENDIX I TO ANNEX IV

	Alstroemeria
Contributor: (Authority)	
Contact Details	
Name	
E-mail	
Tel. No.	

TG/29/6

Variety Denomination	Breeder's Reference	Breeder	Applicant (if different from breeder)	Status of Description (Official / Other)	Year of description	1 * Stem: length	2 * Stem: thickness	3 * Stem: density of foliage	4 * Leaf: length	5 * Leaf: width	6 * Leaf: shape of blade	7 * Leaf: longitudinal axis of blade	8 * Inflorescence: number of branches in umbel	9 * Inflorescence: length of branches in umbel	10 * Inflorescence: length of pedicel	11 * Flower: main color	12 * Flower: size	13 * Flower: spread of tepals	14 * Outer tepal: shape of blade	15 * Outer tepal: depth of emargination	16 * Outer tepal: main color of inner side of blade	17 * Outer tepal: stripes on inner side of blade	18 * Outer tepal: number of stripes on inner side of blade	19 * Inner tepal: shape of blade	20 * Inner lateral tepal: main color of inner side of middle zone of blade	21 Inner lateral tepal: number of stripes on inner side of blade	22 * Inner lateral tepal: size of stripes on inner side of blade	23 * Stamens: main color of filament	24 * Stamens: small spots on filament	25 * Stamens: color of anthers at the start of dehiscence	26 Pistil: anthocyanin coloration of ovary	27 Pistil: spots on the stigma
						1-9	1-9	1-9	1-9	1-9	1-3	1/2	1-9	1-9	1-9	1-12	1-9	1-9	1-5	1-9	RHS	1/9	1-9	1/2	RHS	1-9	1-9	1-9	1/9	1-7	1-9	1/9
Example																																	
e.g. Carmen	*BR/98/1*	*Acebreeder*	*Agentace*	*Official*	*2003*	*2*	*5*	*5*	*5*	*5*	*2*	*1*	*5*	*5*	*5*	*2*	*5*	*5*	*4*	*5*		*9*	*5*	*2*		*5*	*5*	*8*	*9*	*4*	*5*	*9*
Stabec	90708-20	Staaveren		Off. NL	1993	7	8	5	9	7	2	1	5	7	3	7	5	5	5	7	62B-C	9	1	1	9B	5	5	6	1	1	1	1
Stabec	90708-20	Staaveren		Off.RSA	1997	5	5	3	5	5	2	1	5	7	4	8	5	5	5	7	54C	9	3	1	9A	5	5	6	1	1	5	1
Stabec		Zanten		Off.CA	2001	N/A	5	6	N/A	N/A	2	1	5	N/A	N/A	6	7	7	N/A	5	54A	1	N/A	1	9A	5	5	7	1	7	5	1
Stabec		Staaveren		Off.JP	1998	7	5		7	5	3		5	5	5	8	7	7	3	3	55A	1		2	12B	9	7	6		7	3	1
Stamond	90629-37	Staaveren		Off.NL	1993	9	7	6	7	5	2	1	5	5	3	1	7	5	3	5	155D	9	1	1	155D	4	5	6	1	4	4	1
Stamond	90629-37	Staaveren		Off.RSA	1997	5	7	7	5	5	1	2	6	5	7	1	5	3	3	7	155D	9	5	2	155D	5	5	6	1	7	3	
Stamond		Zanten		Off.CA	2001	N/A	5	7	N/A	N/A	2	2	5	N/A	N/A	1	7	6	N/A	5	155D	9	1	1	4D	5	5	6	1	5	7	1
Stamond		Staaveren		Off.JP	1998	7	5		7	7	2		5	5	5	1	7	7	4	5	158D	9	1	2	158C	9	7	6		7	3	1
Staprilan	91D-169-16	Staaveren		Off.NL	1993	1	1	9	1	1	3	2	3	3	3	3	5	5	5	3	8B-C	9	1	2	9A-B	4	5	2	1	4	1	1
Staprilan	91D-169-16	Staaveren		Off.RSA	1997	3	3	5	5	5	2	1	5	3	3	3	5	5	4	3	20A	9	5	2	9B	7	3	2	1	4	1	1
Staprilan		Zanten		Off.CA	2001	N/A	3	5	N/A	N/A	2	1	5	N/A	N/A	3	5	5	N/A	5	5C	9	3	1	12A	5	5	7	1	7	1	1
Staprilan		Staaveren		Off.JP	2000	1	3		3	5	2		5	5	3	3	5	5	4	5	7D	9	1	2	12B	9	5	2		4	1	1
Staprinag	93D-820-12	Staaveren		Off.NL	1997	1	1	9	1	5	3	2	1	3	3	1	5	5	5	3	155A	9	1	2	4A-B	4	4	6	1	7	3	1
Staprinag	93D-820-12	Staaveren		Off.RSA	1997	3	5	7	6	5	2	2	5	5	3	7	5	5	4	5	36D	1	5	1	4B	7	3	6	1	7	3	1
Staprinag		Zanten		Off.CA	2001	N/A	3	5	N/A	N/A	1	1	5	N/A	N/A	1	5	5	N/A	5	155D	9	3	1	2B	5	5	7	1	7	3	1
Staprinag		Staaveren		Off.JP	2000	1	3		3	5	3		5	5	3	1	5	6	4	5	157D	9	1	2	7D	9	5	6		5	1	1
Staprisis	93D-788-11	Staaveren		Off.NL	1997	1	1	9	1	1	3	1	3	3	3	8	5	4	5	3	65A-B	1	1	2	8D	4	4	7	1	4	1	9
Staprisis	93D-788-11	Staaveren		Off.RSA	1997	3	3	5	3	5	3	2	3	3	5	8	3	5	4	3	54B	1		2	9A	5	5	6	1	4	1	1
Staprisis		Zanten		Off.CA	2001	N/A	3	5	N/A	N/A	1	1	3	N/A	N/A	8	4	4	N/A	5	65A	1	N/A	1	12A	5	5	7	1	7	1	9
Staprisis		Staaveren		Off.JP	2000	1	3		3	5	3		3	5	3	7	5	5	4	5	65C	9	1	2	1B	9	5	9		5	1	1
Stasach	90T-689-15	Staaveren		Off.NL	1997	7	5	5	7	5	1	2	5	7	5	6	5	5	5	3	40A	9	1	2	40A	5	6	4	1	4	3	1
Stasach	90T-689-15	Staaveren		Off.RSA	1997	5	3	5	7		3	1	5	7	5	6	5	5	4	3	44A	1		2	44A	5	3	5	1	4	5	1
Stasach		Zanten		Off.CA	2001	N/A	5	6	N/A	N/A	3	2	3	N/A	N/A	6	4	5	N/A	3	42B	1	N/A	1	15A	5	3	5	1	3	5	1
Stasach		Staaveren		Off.JP	1998	5	5		5	5	2		5	5	5	8	5	5	5	5	39A	1		1	44C	9	7	5		4	5	1
Statiren	90R708-16	Staaveren		Off.NL	1997	5	5	7	7	5	1	2	5	5	3	8	7	5	5	5	55D	9	1	1	4C-D	3	6	5	1	1	1	9
Statiren	90R708-16	Staaveren		Off.RSA	1999	7	5	5	6	5	2	1	5	7	6	8	7	7	5	7	51C	9	3	1	9D	7	5	6	1	7	5	1
Statiren		Zanten		Off.CA	2001	N/A	6	6	N/A	N/A	3	2	5	N/A	N/A	6	7	7	N/A	5	48A	9	2	1	3C	5	6	5	1	7	3	9
Statiren		Staaveren		Off.JP	1998	5	5		7	5	2		5	5	5	5		7	7	4	39D	9	1	2	158C	9	7	6		1	3	
Note: For Characteristics # 1, 4, 5, 9 and 10 marked N/A actual measurements have been taken ; characteristic #14 marked N/A has not been taken up in the guideline.																																	
																													[Appendix II follows]			

APPENDIX II TO ANNEX IV

Variety	Country Year of Testing	Char.1 Stem: Length	Char 8 Umbelbranches: number	Char. 9 Umbelbranches: Length	Char.10 Pedicel: Length	Char.11 Flower: Main color	Char.12 Flower: Size	Char.14. Outer tepal: Shape of blade	Char.16 Outer tepal: Main color of inner side of blade (RHS colour)	Char.16 Idem UPOV Color Group
Stabec	NL 1993	7	5	7	3	7	5	5	62 B-C	L. blue pink
Stabec	RSA1997	5	5	7	4	8	5	5	54C	Purple red
Stabec	CA 2001	-	5	-	-	6	7	-	54A	Purple red
Stabec	JP 1998	5	5	5	5	8	7	3	55A	Purple red
Stamond	NL 1993	9	5	5	3	1	7	3	155 D	White
Stamond	RSA1997	5	6	5	7	1	5	3	155 D	White
Stamond	CA 2001	-	5	-	-	1	7	-	155 D	White
Stamond	JP 1998	7	5	5	5	1	7	4	158 D	White
Staprilan	NL 1993	1	3	3	3	3	5	5	8 B-C	L. yellow
Staprilan	RSA1997	3	5	3	3	3	5	4	20A	Yell. orange
Staprilan	CA 2001	-	5	-	-	3	5	-	5C	Yellow
Staprilan	JP 2000	1	5	5	3	3	5	4	7D	Yellow
Staprinag	NL 1997	1	5	3	3	1	5	5	155 A	White
Staprinag	RSA1997	3	5	5	3	7	5	4	36 D	L. red pink
Staprinag	CA 2001	-	5	-	-	1	5	-	155 D	White
Staprinag	JP 2000	1	5	5	3	1	5	4	157 D	White

Variety	Country Year of Testing	Char.1 Stem: Length	Char 8 Umbelbranches: number	Char. 9 Umbelbranches: Length	Char.10 Pedicel: Length	Char.11 Flower: Main color	Char.12 Flower: Size	Char.14. Outer tepal: Shape of blade	Char.16 Outer tepal: Main color of inner side of blade (RHS colour)	Char.16 Idem UPOV Color Group
Staprisis	NL1997	1	3	3	3	8	5	5	65 A-B	Blue pink/ L. blue pink
Staprisis	RSA1997	3	3	3	5	8	3	4	54 B	Purple red
Staprisis	CA2001	-	3	-	-	8	4	-	65 A	Blue Pink
Staprisis	JP2000	1	3	5	3	7	5	4	65 C	L. blue pink
Stasach	NL 1997	7	5	7	5	6	5	5	40 A	Red
Stasach	RRSA1997	5	5	7	5	6	5	4	44 A	Red
Stasach	CA 2001	-	3	-	-	6	4	-	15 A	Yell.orange
Stasach	JP 1998	5	5	5	5	8	5	5	44 C	Red
Statiren	NL 1997	5	5	5	3	8	7	5	55 D	L.blue pink
Statiren	RSA1999	7	5	7	6	8	7	5	51 C	Red pink
Statiren	CA 2001	-	5	-	-	6	7	-	42 B	Red
Statiren	JP 1998	5	5	5	5	5	-	7	39 A	Orange red

Variety	Country Year of Testing	Char.18 Outer tepal:number of stripes on inner side of blade	Char.20 Inner lateral tepal: main color of inner side of middle zone of blade	Char.20 Idem UPOV Color group	Char.22 Inner lateral tepal; size of stripes on inner side of blade	Char.23 Stamens: main color of filament	Char.25 Stamens: Color of anthers at the start of dehiscence	Char.26 Pistil:anthocyanin coloration of ovary
Stabec	NL 1993	1	9 B	Yellow	5	6	1	1
Stabec	RSA1997	3	9 A	Yellow	5	6	1	5
Stabec	CA 2001	-	9 A	Yellow	5	7	7	5
Stabec	JP 1998	-	12 B	Yellow	7	6	7	3
Stamond	NL 1993	1	155 D	White	5	6	4	4
Stamond	RSA1997	5	155 D	White	5	6	7	3
Stamond	CA 2001	1	4 D	White	5	6	5	7
Stamond	JP 1998	1	158 C	L.yellow brown	7	6	7	3
Staprilan	NL 1993	1	9 A-B	Yellow	5	2	4	1
Staprilan	RSA1997	5	9 B	Yellow	3	2	4	1
Staprilan	CA 2001	3	12 A	Yellow	5	7	7	1
Staprilan	JP 1998	1	12 B	Yellow	5	2	4	1
Staprinag	NL 1997	1	4 A-B	Yellow	4	6	7	3
Staprinag	RSA1997	5	4 B	Yellow	3	6	7	3
Staprinag	CA 2001	3	2 B	Yellow	5	7	7	3
Staprinag	JP 2000	1	7 D	Yellow	5	6	5	1

Variety	Country Year of Testing	Char.18 Outer tepal:number of stripes on inner side of blade	Char.20 Inner lateral tepal: main color of inner side of middle zone of blade	Char.20 Idem UPOV Color group	Char.22 Inner lateral tepal; size of stripes on inner side of blade	Char.23 Stamens: main color of filament	Char.25 Stamens: Color of anthers at the start of dehiscence	Char.26 Pistil:anthocyanin coloration of ovary
Staprisis	NL1997	-	8 D	Light yellow	4	7	4	1
Staprisis	RSA1997	-	9 A	Yellow	5	6	4	1
Staprisis	CA2001	-	12 A	Yellow	5	7	7	1
Staprisis	JP2000	1	1 B	Yellow green	5	9	5	1
Stasach	NL 1997	-	40 A	Red	6	4	4	3
Stasach	RSA1997	-	44 A	Red	3	5	4	5
Stasach	CA 2001	-	15 A	Yellow orange	3	5	3	5
Stasach	JP 1998	-	44 C	Red	7	5	4	5
Statiren	NL 1997	1	4 C-D	Yellow green/ Light yellow	6	5	1	1
Statiren	RSA1999	3	9 D	Light yellow	5	6	7	5
Statiren	CA 2001	2	3 C	Yellow	6	5	7	3
Statiren	JP 1998	1	158 C	Light yellow brown	7	6	1	3

[Annex V follows]

ANNEX V

PROJECT TO CONSIDER THE PUBLICATION OF VARIETY DESCRIPTIONS: BARLEY

Document prepared by experts from Denmark

HARMONIZATION OF DESCRIPTIONS OF VARIETIES OF BARLEY

1. 1,191 descriptions from 16 UPOV members (Argentina (AR), Austria (AT), Canada (CA), Czech Republic (CZ), Denmark (DK), Estonia (EE), France (FR), Germany (DE), Hungary (HU), Lithuania (LT), New Zealand (NZ), Russia (RU), Slovakia (SK), Slovenia (SI), Spain (ES), South Africa (ZA), United Kingdom (GB)) and had been received by December 2004. The 1,191 descriptions originated from 756 varieties. The descriptions had been elaborated over a period of 31 years, but the largest number of descriptions was created during the last 10 years.

2. Three different versions of the UPOV Test Guidelines (TG/19/5, TG/19/7 and TG/19/10) were the basis of the elaborated descriptions. Two varieties were described according to TG/19/5 and those descriptions were excluded from the investigation. To have as many valid comparisons as possible, characteristics from TG/19/7 were converted to the equivalent numbering of TG/19/10 and all comparisons are based on TG/19/10.

3. To evaluate the level of harmonization between descriptions of the same variety, varieties with 3 or more descriptions (100 varieties) were selected, resulting in 2,871 variety* character combinations. An example of these comparisons is given in Table 1, where every line represents the combination of one variety and one characteristic. The column "number of received descriptions" indicates the number of received descriptions of the characteristic and variety in question. For example, the variety 'Tolar' has 2 descriptions of characteristic 1. One description gave note 5 and the other description gave note 6 as the state of expression. This means 2 different notes were used. "Range" indicates the difference between the 2 different notes used. Finally the standard deviation between the 2 notes is calculated and displayed.

Table 1: Example of examination of harmonization of descriptions between members (2 characters of 2 different varieties) – all comparisons are given in the Appendix

						State of expression											
Char.-no		Char.-type	Characteristic	Variety Denomination	No of received descriptions	1	2	3	4	5	6	7	8	9	freq_notes	range	std
1	*	PQ	Plant: growth habit	TOLAR	2					1	1				2	2	0,71
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ANNABELL	9						1	3	1	4	4	4	1,17

Further 2,869 records – see Appendix

4. The examination is based on individual characteristics and the information of every characteristic is summarized across all varieties in Table 2, where the characteristics are sorted according to the average standard deviation of every characteristic.

5. Characteristic 2 'Lowest leaves: hairiness of leaf sheaths' and characteristic 13 'Ear: number of rows' are described in the same way between the contributing members of UPOV across the examined number of varieties (331 and 408 recordings). In characteristic 27, 'Grain: disposition of lodicules', there is a variation between the recordings of this characteristic for 2 varieties. The variety Calgary has been described with note 1 by one member and 2 other members describe Calgary with note 2. The variety Volga has been described with note 1 by one member and note 2 by another member. Two out of 328 recordings cause this deviation. Similar minor deviations occur in characteristics 22, 29 and 26. Characteristic 22 'Grain: rachilla hair type' has 3 varieties (Maud, Regina and Tiffany) with different recordings - 3 out of 396. Characteristic 29 'Seasonal type' both Astrid, Landi and Steffi have different recordings - 3 deviating recordings out of 391. Characteristic 26 'Grain: hairiness of ventral furrow' has 2 varieties (Chariot and Nelly) with different recordings.

6. Characteristic 23 'Grain: husk' shows a slightly higher degree of variation, but this is caused by only 3 varieties (Maud, Prima and Catania) having descriptions with the notes 1 and 9.

7. Characteristic 3 'Flag leaf: anthocyanin coloration of auricles', characteristic 8 'Awns: anthocyanin coloration of tips' are both characteristics with 1 or 9 as the state of expression. The examination shows that in most cases it is straightforward to classify the varieties, but there are cases where the variation between members is difficult to eliminate. For example, in characteristic 3, 5 varieties have been recorded with both states 1 and 9. In characteristic 8, 7 varieties have been recorded with both states 1 and 9.

8. Characteristic 21 'Median spikelet: length of glume and its awn relative to grain', characteristic 28 'Kernel: color of aleurone layer' and characteristic 20 'Sterile spikelet: attitude (in mid-third of ear)' are all pseudo-qualitative characteristics scored on a 1-3 scale. In many cases there is a consistent recording. But these characteristics show the difficulty of harmonized scoring. For example, characteristic 20 has 58 varieties with variable recordings, but there is no variety covering all three states of the scale. 16 of the 55 varieties have one main type of recording and a deviating note.

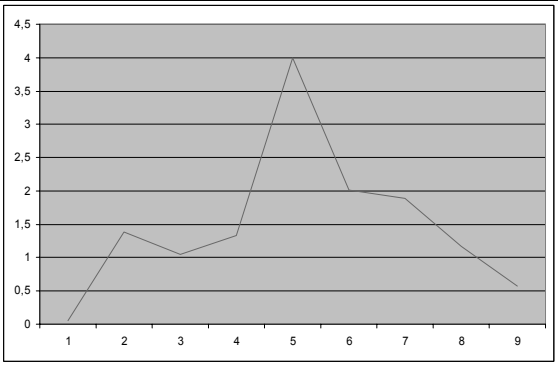

Figure 1: Average standard deviation between descriptions of characteristic 25 'Grain: spiculation of inner lateral nerves of dorsal side of lemma'

Characteristic 21 has 21 varieties with variable states of expression, but no variety covering all 3 states. Characteristic 28 has 37 varieties with variation in the states of expression, and 2 varieties (Hanna and Petra) have states covering all 3 states of expression.

Characteristic 25 'Grain: spiculation of inner lateral nerves of dorsal side of lemma' has a reasonably harmonized expression especially if the variety is scored as absent or very weak or strong to very strong. If the notes given are higher than 2 and lower than 8 a higher degree of variation between the descriptions occurs than at the ends of the scale (see figure 1).

Table 2: Characteristic examination on the level of harmonization

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	no_var	no of recordings	avg_freq_notes	avg_range	avg_std	classification
2	*-g	QL	Lowest leaves: hairiness of leaf sheaths	100	331	1,00	1	0	H
13	*-g	QL	Ear: number of rows	100	408	1,00	1	0	H
27	*	PQ	Grain: disposition of lodicules	99	328	1,02	1	0	H
22	*-g	QL	Grain: rachilla hair type	100	396	1,03	1	0	H
29	*-g	PQ	Seasonal type	100	391	1,03	1	0	H
26	*-g	QL	Grain: hairiness of ventral furrow	100	395	1,02	1,2	0,1	H
21		PQ	Median spikelet: length of glume and its awn relative to grain	99	358	1,22	1,3	0,1	H
3	*	QL	Flag leaf: anthocyanin coloration of auricles	100	412	1,07	1,5	0,3	H
8	*-g	QL	Awns: anthocyanin coloration of tips	100	403	1,08	1,6	0,3	H
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	89	348	1,64	1,6	0,3	H
28		PQ	Kernel: color of aleurone layer	100	393	1,43	1,8	0,4	H
23	*	QL	Grain: husk	100	403	1,17	1,9	0,4	H
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	100	385	1,65	2,3	0,6	AH
6		PQ	Flag leaf: glaucosity of sheath	100	402	2,22	2,5	0,7	AH
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	100	387	2,28	2,5	0,7	AH
18		PQ	Rachis: length of first segment	99	328	1,97	2,3	0,7	AH
1	*	PQ	Plant: growth habit	100	407	2,30	2,5	0,7	AH
15	*	PQ	Ear: density	100	398	2,24	2,5	0,7	AH
16		QN	Ear: length (excluding awns)	100	341	2,11	2,4	0,7	AH
14		PQ	Ear: shape	100	345	1,79	2,4	0,8	AH
12	*	QN	Plant: length (stem, ear and awns)	100	354	2,31	2,7	0,9	NH
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	93	370	2,42	2,9	0,9	NH
19		PQ	Rachis: curvature of first segment	99	325	2,17	2,7	0,9	NH
24		PQ	Grain: anthocyanin coloration of nerves of lemma	100	388	2,56	3,1	1	NH
10	*	PQ	Ear: glaucosity	100	405	2,57	3,3	1,1	NH
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	93	369	2,77	3,6	1,3	NH
5		PQ	Plant: frequency of plants with recurved flag leaves	100	381	2,68	3,8	1,4	NH
17	*	QN	Awn: length (compared to ear)	100	395	2,69	3,9	1,4	NH
11		PQ	Ear: attitude	100	402	2,79	4	1,4	NH

9. Characteristic 7 ‘Time of ear emergence (first spikelet visible on 50% of ears)’ has a very variable distribution across the different UPOV members. Only 15 varieties have harmonized recording in all members. The other varieties vary between 2 and 5 states of expression. For example, Meltan covers a wide range from ‘very early to early’ up to ‘medium to late’. Characteristic 1 ‘Plant: growth habit’, characteristic 6 ‘Flag leaf: glaucosity of sheath’, characteristic 14 ‘Ear: shape’, characteristic 15 ‘Ear: density’, characteristic 16 ‘Ear: length (excluding awns)’ and characteristic 18 ‘Rachis: length of first segment’ have a similarly variable distribution of recordings.

10. All remaining characteristics have a higher degree of variation and their recording can be classified as non-harmonized as the state of expression covers a wide range of the scale.

11. All 6 grouping characteristics work well in terms of a harmonized recording. Deviations are probably caused by mistakes or environmental variations. For example,

"Seasonal type" can show different scoring dependent on the climatic conditions. A simple validation/quality assurance process could eliminate these deviations.

12. The Test Guidelines for Barley, document TG/19/10, have 18 asterisked characteristics. 10 of these characteristics can be regarded as harmonized in terms of recording the state of expression of the different varieties. Of these 10 asterisked characteristics, characteristic 3 'Flag leaf: anthocyanin coloration of auricles' and characteristic 8 'Awns: anthocyanin coloration of tips' are classified as qualitative characteristics. Under certain environmental conditions it can be very difficult to state the variety as clearly without anthocyanin. The characteristics should be combined with characteristic 4 'Flag leaf: intensity of anthocyanin coloration of auricles' and characteristic 9 'Awns: intensity of anthocyanin coloration of tips' to form quantitative characteristics for the intensity of anthocyanin coloration of auricles and tips.

13. Five asterisked characteristics are classified as non-harmonized.

- Characteristic 12: Plant: length (stem, ear and awns)
- Characteristic 4: Flag leaf: intensity of anthocyanin coloration of auricles
- Characteristic 10: Ear: glaucosity
- Characteristic 9: Awns: intensity of anthocyanin coloration of tips
- Characteristic 17: Awn: length (compared to ear)

14. These characteristics are susceptible to environmental variations like day length, solar irradiation or water stress. The evaluation shows this very clearly, e.g. a commonly known variety like 'Barke' covers a range of 7 notes for ear glaucosity and the characteristic has an average range of 3.3 notes across all varieties. Plant length also shows variation of 7 notes for one variety. For example, 'Danuta' has been described as 'short' (3) and 'long to very long' (9).

15. Characteristic 4 'Flag leaf: intensity of anthocyanin coloration of auricles' shows an average range of 2.9 and varieties like Pewter, Thuringia and Viskosa are described with a difference of 6 notes. Characteristic 9 'Awns: intensity of anthocyanin coloration of tips' shows the same degree of variation. Characteristic 17 'Awn: length (compared to ear)' is the characteristic with the second highest variation. This variation, mainly caused by environmental influence, should be eliminated by the use of example varieties, but in many cases the example varieties of the UPOV Test Guidelines are no longer grown or are difficult to obtain. When revising guidelines, attention should be paid to the future maintenance of these example varieties. How will it be possible to continuously provide seed of these example varieties, to maintain a unique reference point regarding the different states of expression?

16. Another aspect which probably will enhance the harmonization of variety description is the conduct of a routine ring test. The ring test should be repeated after a certain period, and could focus on selected difficult characteristics.

Potential Use of Publication of Variety Descriptions

17. If the descriptions of barley varieties created by the testing authorities were available to other testing offices, the descriptions could be used in connection with a pre-screening tool regarding the management of the collection of varieties used in the DUS examination. The

aim is to reduce the number of varieties grown in the field and restrict the field comparisons to the most similar varieties of common knowledge.

18. With the received descriptions, it is possible to examine the discriminative power of the dataset. Only varieties with 2 or more descriptions are included in this evaluation (222 varieties). Initially a minimum distance for every characteristic is set (Table 3). The minimum distance depends on the classification of the characteristics in Table 2. Every description of a contributing country is then compared against all other descriptions and the number of distinct and non-distinct descriptions is counted. Based on these figures, it is possible to evaluate the discriminating power in % as the number of distinct descriptions/total no of descriptions *100. For pre-screening to be as effective as possible, a high discriminative power is desirable.

Table 3: Characteristics and minimum distances used for pre-screening

No	Characteristic	Scale	Type		Classification	MD level 1	MD level 2
1	Plant: growth habit	1-9	*	PQ	AH	3	4
6	Flag leaf: glaucosity of sheath	1-9		PQ	AH	2,5	3,5
7	Time of ear emergence (first spikelet visible on 50% of ears)	1-9	*	QN	AH	2	2,5
14	Ear: shape	1-9		PQ	AH	2,5	3,5
15	Ear: density	1-9	*	PQ	AH	2,5	3,5
16	Ear: length (excluding awns)	1-9		QN	AH	3	3,5
18	Rachis: length of first segment	1-9		PQ	AH	2,5	3,5
25	Grain: spiculation of inner lateral nerves of dorsal side of lemma	1-9		PQ	AH	2,5	3,5
2	Lowest leaves: hairiness of leaf sheaths	1/9	*-g	QL	H	8	8
3	Flag leaf: anthocyanin coloration of auricles	1/9	*	QL	H	8	8
8	Awns: anthocyanin coloration of tips	1/9	*-g	QL	H	8	8
13	Ear: number of rows	1/2	*-g	QL	H	0,9	0,99
20	Sterile spikelet: attitude (in mid-third of ear)	1-3	*	PQ	H	1,1	2
21	Median spikelet: length of glume and its awn relative to grain	1-3		PQ	H	1,1	2
22	Grain: rachilla hair type	1/2	*-g	QL	H	0,9	0,99
23	Grain: husk	1/9	*	QL	H	8	8
26	Grain: hairiness of ventral furrow	1/9	*-g	QL	H	8	8
27	Grain: disposition of lodicules	1/2	*	PQ	H	0,9	0,99
28	Kernel: color of aleurone layer	1-3		PQ	H	1,1	2
29	Seasonal type	1-3	*-g	PQ	H	8	8
4	Flag leaf: intensity of anthocyanin coloration of auricles	1-9	*	PQ	NH	5	6,25
5	Plant: frequency of plants with recurved flag leaves	1-9		PQ	NH	5	6,25
9	Awns: intensity of anthocyanin coloration of tips	1-9	*	PQ	NH	5	6,25
10	Ear: glaucosity	1-9	*	PQ	NH	5	6,25
11	Ear: attitude	1-9		PQ	NH	5	6,25
12	Plant: length (stem, ear and awns)	1-9	*	QN	NH	5	6,25
17	Awn: length (compared to ear)	1-9	*	QN	NH	5	6,25
19	Rachis: curvature of first segment	1-9		PQ	NH	5	6,25
24	Grain: anthocyanin coloration of nerves of lemma	1-9		PQ	NH	5	6,25

19. To examine the quality of this distinctness evaluation the number of descriptions of the same variety (from other contributing countries) are counted, depended on their examination as distinct and non distinct (Table 4). The relative ratio of these figures (distinct/(distinct + non-distinct)*100), gives the chance of declaring a description from the same variety as distinct.

20. For example, DK – Apex is examined against all received descriptions. The number of distinct and non-distinct variety*country combinations are counted and summarized across all varieties.

21. In the distinct combinations the number of Apex descriptions from other countries are considered to be a wrong result for distinctness examination during the pre-screening process as these descriptions are expected to be identical and not distinct. The sum of mistakes is put in relation to the total number of possible Apex*country combinations.

22. In Table 4, an example of the distinctness evaluation is given. For example, all Apex*country combinations are given, based on all harmonized and acceptable harmonized characteristics. The Estonian Apex description has in characteristic 'Grain: spiculation of inner lateral nerves of dorsal side' the state of expression 8 where all other countries have state 1.

Table 4: Example of distinctness evaluation

					Apex				
no	characteristic	CZ	DE	DK	ES	EST	FR	SK	MD
1	Plant: growth habit	.	5	5	5	4	5	5	3.00
2	Lowest leaves: hairiness of leaf sheaths	.	1	.	.	1	1	1	8.00
3	Flag leaf: anthocyanin coloration of auricles	9	9	9	9	9	9	9	8.00
6	Flag leaf: glaucosity of sheath	8	.	7	7	8	7	7	2.50
7	Time of ear emergence (first spikelet visible on 50% of e	.	4	4	5	5	.	3	2.00
8	Awns: anthocyanin coloration of tips	.	9	9	9	9	9	9	8.00
13	Ear: number of rows	1	1	1	1	1	1	1	0.90
14	Ear: shape	.	.	5	1	5	5	5	2.50
15	Ear: density	.	6	4	5	5	4	.	2.50
16	Ear: length (excluding awns)	.	.	5	5	4	6	.	3.00
18	Rachis: length of first segment	.	.	5	3	4	5	.	2.50
20	Sterile spikelet: attitude (in mid-third of ear)	.	2	3	2	3	3	3	1.10
21	Median spikelet: length of glume and its awn relative to	.	.	2	2	2	2	2	1.10
22	Grain: rachilla hair type	.	2	2	2	2	2	.	0.90
23	Grain: husk	9	9	9	3	9	9	.	8.00
25	Grain: spiculation of inner lateral nerves of dorsal side	.	1	1	1	8	1	.	2.50
26	Grain: hairiness of ventral furrow	1	1	1	1	1	1	.	8.00
27	Grain: disposition of lodicules	.	.	2	2	2	2	.	0.90
28	Kernel: color of aleurone layer	1	1	1	1	1	1	.	1.10
29	Seasonal type	3	3	3	3	3	3	.	0.90

23. Due to this difference, the Estonian Apex will be considered as distinct using the minimum distance to evaluate distinctness. One out of 7 descriptions deviates, and based on Apex there is a mistake rate of 14% (1/7). The relationship between the number of possible combinations and the number of mistakes for the same variety are accumulated across all varieties and an average mistake based on a set of characteristics is given.

24. This exercise can be done on different subsets of characteristics and with the use of different minimum distances (Table 3). In Table 5 the resulting figures are given. The first record shows the discriminative power of the grouping characteristics. These characteristics would reduce the number of variety comparisons by 58%. The rate of 6% of mistakes is based on deviations as described under the individual characteristics. This rate of mistakes

could be eliminated by a simple quality assurance procedure, when comparing new descriptions with already elaborated descriptions from other countries. These grouping characteristics are used by all members and are the current level of pre-screening.

25. Using the harmonized characteristics with the minimum distance set to level 1 increases the discriminative power by 7%, but also increases the risk of making mistakes by 7%. An increase of the minimum distance to level 2 does not change these key figures.

26. Using the asterisked characteristics with the minimum distance at level 2 increases the pre-screening efficiency from 58 to 68%, but also increases the chance of declaring a variety distinct against itself from 5 to 11%.

27. Using the set of harmonized and acceptable harmonized characteristics with the minimum distance level 2 increases the discriminative power to approximately 73%, but also increases the chance of declaring a variety distinct against it self to 19%. Using all characteristics with a minimum distance of level 2 give approximately the same result.

28. Reducing the minimum distance from level 2 to level 1 increases the discriminative power, but also increases the chance of declaring a variety as distinct against itself to more than 25%.

Table 5: Discriminative power of morphological descriptions from different sources

	% distinct	% mistakes
Grouping	58	6
Harmonized - level 2 of min distance	65	13
Harmonized - level 1 of min distance	65	13
Asterisk - level 2	68	11
Harmonized and acceptable harmonized 2-level of min distance	73	19
All characteristics - level 2 of min distance	74	19
Asterisk - level 1	81	25
Harmonized and acceptable harmonized - level 1 of min distance	82	29
All characteristics - level 1 of min distance	87	34

29. This pre-screening is using the declaration of a variety as distinct against itself as a quality parameter of this process. As the descriptions of the same variety can be considered as the most similar, actually identical, the performance of other similar varieties to a candidate variety cannot be evaluated by doing desk research but needs a real time pre-screening evaluation. The chance of making mistakes is expected to be higher than in this evaluation. At the moment it seems as if an effective pre-screening based on description needs a strong control of the environment which would only allow pre-screening based on descriptions from the same source – authority, testing site and with a carefully evaluated minimum distance.

30. Another open question, which needs to be solved, is how to handle varieties where one description shows distinctness but the others do not.

Summary/Conclusions

31. Twelve characteristics from TG/19/10 are considered to be harmonized. 5 of 18 asterisked characteristics are considered to be non-harmonized. To enhance the harmonization of variety descriptions, 2 main items would need to be addressed:

- maintenance of example varieties
- routine ring tests between testing offices

32. The use of descriptions in connection with a pre-screening tool shows the potential of discriminative power depending on the selected characteristics and the estimated minimum distance. A reduction of the minimum distance increases the discriminative power, but also increases the chance of declaring a variety distinct against itself.

33. Using the grouping characteristics, which is considered to be the current level, eliminates approximately 50% of all unnecessary variety comparisons. Further elimination of variety comparisons based on variety descriptions increases the possibility of declaring a variety distinct from itself to more than 32%, if 86% of all variety comparisons are eliminated based on a pre-screening tool using earlier elaborated descriptions from other members.

34. As there are assumptions in the performed desk research a real time pre-screening evaluation would need to be performed to give the accurate figures regarding discriminative power and the risk of taking wrong decisions.

[Appendix follows]

APPENDIX TO ANNEX V

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
1	*-g	PQ	Plant: growth habit	BRENDA	4					4					1	1	0.00
1	*-g	PQ	Plant: growth habit	KRONA	4					4					1	1	0.00
1	*-g	PQ	Plant: growth habit	ANGORA	3						3				1	1	0.00
1	*-g	PQ	Plant: growth habit	BRAZIL	3						3				1	1	0.00
1	*-g	PQ	Plant: growth habit	GOLF	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	HENDRIX	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	HENNI	3						3				1	1	0.00
1	*-g	PQ	Plant: growth habit	JERSEY	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	LOMERIT	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	MADEIRA	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	NELLY	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	URSA	3						3				1	1	0.00
1	*-g	PQ	Plant: growth habit	VORTEX	3					3					1	1	0.00
1	*-g	PQ	Plant: growth habit	OTIS	2					2					1	1	0.00
1	*-g	PQ	Plant: growth habit	PASADENA	7					6	1				2	2	0.38
1	*-g	PQ	Plant: growth habit	BARONESSE	6				1	5					2	2	0.41
1	*-g	PQ	Plant: growth habit	ALEXIS	5					4	1				2	2	0.45
1	*-g	PQ	Plant: growth habit	APEX	5				1	4					2	2	0.45
1	*-g	PQ	Plant: growth habit	BRITTA	5				1	4					2	2	0.45
1	*-g	PQ	Plant: growth habit	BRISE	4					3	1				2	2	0.50
1	*-g	PQ	Plant: growth habit	PENELOPE	4					1	3				2	2	0.50
1	*-g	PQ	Plant: growth habit	PRISMA	4					3	1				2	2	0.50
1	*-g	PQ	Plant: growth habit	ANNABELL	9					5	4				2	2	0.53
1	*-g	PQ	Plant: growth habit	MARESI	6					3	3				2	2	0.55
1	*-g	PQ	Plant: growth habit	PRESTIGE	5			2	3						2	2	0.55
1	*-g	PQ	Plant: growth habit	ROXANA	5				3	2					2	2	0.55
1	*-g	PQ	Plant: growth habit	ASPEN	4				2	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	EUNOVA	4				2	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	PEWTER	4				2	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	PHILADELPHIA	4					2	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	SEBASTIAN	4					2	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	STEFFI	4					2	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	ADONIS	3				1	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	ANGELA	3					2	1				2	2	0.58
1	*-g	PQ	Plant: growth habit	ASTORIA	3						2	1			2	2	0.58
1	*-g	PQ	Plant: growth habit	ASTRID	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	BACCARA	3			1	2						2	2	0.58
1	*-g	PQ	Plant: growth habit	BOLINA	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	CATANIA	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	CELINKA	3			1	2						2	2	0.58
1	*-g	PQ	Plant: growth habit	CELLAR	3				2	1					2	2	0.58
1	*-g	PQ	Plant: growth habit	CEYLON	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	CHALICE	3				1	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	CHANTAL	3					2	1				2	2	0.58
1	*-g	PQ	Plant: growth habit	CLASS	3				1	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	DANOR	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	DITTA	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	FELICITAS	3					2	1				2	2	0.58
1	*-g	PQ	Plant: growth habit	HARRIOT	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	OTIRA	3						1	2			2	2	0.58
1	*-g	PQ	Plant: growth habit	RIVIERA	3				1	2					2	2	0.58
1	*-g	PQ	Plant: growth habit	SW	3					2	1				2	2	0.58
1	*-g	PQ	Plant: growth habit	WIKINGETT TRAMINER	3						2	1			2	2	0.58
1	*-g	PQ	Plant: growth habit	TUNIKA	3					1	2				2	2	0.58
1	*-g	PQ	Plant: growth habit	VENUS	3				2	1					2	2	0.58
1	*-g	PQ	Plant: growth habit	TOLAR	2					1	1				2	2	0.71
1	*-g	PQ	Plant: growth habit	EXTRACT	6			1	3	2					3	3	0.75
1	*-g	PQ	Plant: growth habit	SALOON	6			1		5					2	3	0.76
1	*-g	PQ	Plant: growth habit	THURINGIA	9			1		7	1				3	4	0.78
1	*-g	PQ	Plant: growth habit	CHARIOT	4				1	2	1				3	3	0.82
1	*-g	PQ	Plant: growth habit	LANDORA	4			1	2	1					3	3	0.82

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
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1	*-g	PQ	Plant: growth habit	ORTHEGA	6			1	1	4					3	3	0.84
1	*-g	PQ	Plant: growth habit	CAROLA	5				2	2	1				3	3	0.84
1	*-g	PQ	Plant: growth habit	MADONNA	5					2	2	1			3	3	0.84
1	*-g	PQ	Plant: growth habit	BRAEMAR	5					3	1	1			3	3	0.89
1	*-g	PQ	Plant: growth habit	BARKE	8				1	3	3	1			4	4	0.93
1	*-g	PQ	Plant: growth habit	PONGO	4				1	1	2				3	3	0.96
1	*-g	PQ	Plant: growth habit	OPTIC	4				1		3				2	3	1.00
1	*-g	PQ	Plant: growth habit	BOGESA	3				1	1	1				3	3	1.00
1	*-g	PQ	Plant: growth habit	CAMERA	3					1	1	1			3	3	1.00
1	*-g	PQ	Plant: growth habit	DERKADO	3					1	1	1			3	3	1.00
1	*-g	PQ	Plant: growth habit	ELISA	3			1	1	1					3	3	1.00
1	*-g	PQ	Plant: growth habit	HELLANA	3			1	1	1					3	3	1.00
1	*-g	PQ	Plant: growth habit	MAGDA	3				1	1	1				3	3	1.00
1	*-g	PQ	Plant: growth habit	MESSINA	3			1	1	1					3	3	1.00
1	*-g	PQ	Plant: growth habit	PETRA	3			1	1	1					3	3	1.00
1	*-g	PQ	Plant: growth habit	PRIMA	3				1	1	1				3	3	1.00
1	*-g	PQ	Plant: growth habit	REGINA	3					1	1	1			3	3	1.00
1	*-g	PQ	Plant: growth habit	TIFFANY	3				1	1	1				3	3	1.00
1	*-g	PQ	Plant: growth habit	VIDEO	3				1	1	1				3	3	1.00
1	*-g	PQ	Plant: growth habit	MELTAN	6			1	1	3	1				4	4	1.03
1	*-g	PQ	Plant: growth habit	VISKOSA	5					3		2			2	3	1.10
1	*-g	PQ	Plant: growth habit	HANKA	7			1		5		1			3	5	1.15
1	*-g	PQ	Plant: growth habit	ARAMIR	3					2		1			2	3	1.15
1	*-g	PQ	Plant: growth habit	BONAIRE	3			1		2					2	3	1.15
1	*-g	PQ	Plant: growth habit	CALGARY	3			1		2					2	3	1.15
1	*-g	PQ	Plant: growth habit	LANDI	3		1		2						2	3	1.15
1	*-g	PQ	Plant: growth habit	PROLOG	3			1		2					2	3	1.15
1	*-g	PQ	Plant: growth habit	VOLGA	3					2		1			2	3	1.15
1	*-g	PQ	Plant: growth habit	OHARA	4			1		2	1				3	4	1.26
1	*-g	PQ	Plant: growth habit	SCARLETT	8					2	1	2	3		4	4	1.28
1	*-g	PQ	Plant: growth habit	DANUTA	6			2	2		2				3	4	1.37
1	*-g	PQ	Plant: growth habit	BABYLONE	2					1		1			2	3	1.41
1	*-g	PQ	Plant: growth habit	VANESSA	3					1		1	1		3	4	1.53
1	*-g	PQ	Plant: growth habit	HANNA	4			1		1	1	1			4	5	1.71
1	*-g	PQ	Plant: growth habit	JOLANTE	3			1			1	1			3	5	2.08
1	*-g	PQ	Plant: growth habit	MAUD	3			1			1	1			3	5	2.08
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ANNABELL	8	8									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BARKE	8	8									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	THURINGIA	8	8									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	SCARLETT	7	7									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HANKA	6	6									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PASADENA	6	6									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ALEXIS	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BARONESSE	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BRAEMAR	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CAROLA	5									5	1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	DANUTA	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	EXTRACT	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MELTAN	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ORTHEGA	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ROXANA	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	SALOON	5	5									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	APEX	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BRITTA	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HANNA	4									4	1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	LANDORA	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MARESI	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	OPTIC	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PHILADELPHIA	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PRESTIGE	4	4									1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	RENI	4									4	1	1	0
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VISKOSA	4	4									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ADONIS	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ANGELA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ANGORA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ASPEN	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BABYLONE	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BOGESA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BOLINA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BRAZIL	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BRENDA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BRISE	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CALGARY	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CAMERA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CATANIA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CEYLON	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CHARIOT	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CLASS	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	DANOR	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	DERKADO	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	FELICITAS	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HENDRIX	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HENNI	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	JOLANTE	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	KRONA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	LANDI	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	LOMERIT	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MADONNA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MESSINA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	NELLY	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PENELOPE	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PEWTER	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PONGO	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PRISMA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PROLOG	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	REGINA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	SEBASTIAN	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	SW WIKINGETT TIFFANY	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	TRAMINER	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	TUNIKA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	URSA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VANESSA	3									3	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VENUS	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VOLGA	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VORTEX	3	3									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ARAMIR	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ASTORIA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ASTRID	2									2	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BACCARA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	BONAIRE	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CELINKA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CELLAR	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CHALICE	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	CHANTAL	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	ELISA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	EUNOVA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	GOLF	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HARRIOT	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	JERSEY	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MADEIRA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MAUD	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	OHARA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	OTIRA	2	2									1	1	0	

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	OTIS	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PETRA	2									2	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	PRIMA	2									2	1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	RIVIERA	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	STEFFI	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	TOLAR	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	VIDEO	2	2									1	1	0	
2	*	QL	Lowest leaves: hairiness of leaf sheaths	DITTA	1	1									1	1		
2	*	QL	Lowest leaves: hairiness of leaf sheaths	HELLANA	1	1									1	1		
2	*	QL	Lowest leaves: hairiness of leaf sheaths	MAGDA	1	1									1	1		
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ANNABELL	9									9	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	THURINGIA	9									9	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BARKE	8									8	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	SCARLETT	8									8	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BARONESSE	7									7	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HANKA	7									7	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PASADENA	7									7	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	APEX	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	DANUTA	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	EXTRACT	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MARESI	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ORTHEGA	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	SALOON	6									6	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ALEXIS	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BRAEMAR	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BRITTA	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CAROLA	5	5									1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MADONNA	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PRESTIGE	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ROXANA	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	STEFFI	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VISKOSA	5									5	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ASPEN	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BRENDA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BRISE	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CHARIOT	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	EUNOVA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HANNA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	KRONA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	OHARA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	OPTIC	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PENELOPE	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PEWTER	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PHILADELPHIA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PONGO	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PRISMA	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	RENI	4	4									1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	SEBASTIAN	4									4	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ADONIS	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ANGELA	3	3									1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ANGORA	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ARAMIR	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ASTORIA	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ASTRID	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BABYLONE	3	3									1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BACCARA	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BOGESA	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BOLINA	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BONAIRE	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	BRAZIL	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CALGARY	3									3	1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CAMERA	3	3									1	1	0	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CATANIA	3									3	1	1	0	

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CELINKA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CELLAR	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CEYLON	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CHALICE	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CHANTAL	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	CLASS	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	DANOR	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	DERKADO	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	DITTA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	ELISA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	FELICITAS	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	GOLF	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HARRIOT	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HELLANA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HENDRIX	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	HENNI	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	JERSEY	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	JOLANTE	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	LANDI	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MADEIRA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MAGDA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MAUD	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MESSINA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	NELLY	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	OTIRA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	OTIS	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PETRA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PROLOG	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	RIVIERA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	SW WIKINGETT	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	TIFFANY	3	3										1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	TRAMINER	3	3										1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	TUNIKA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	URSA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VANESSA	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VIDEO	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VORTEX	3										3	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	TOLAR	2										2	1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VOLGA	3										2	2	3	1.15
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MELTAN	6										5	2	5	1.63
3	*	QL	Flag leaf: anthocyanin coloration of auricles	LANDORA	4	2									2	2	9	4.62
3	*	QL	Flag leaf: anthocyanin coloration of auricles	LOMERIT	3	2									1	2	9	4.62
3	*	QL	Flag leaf: anthocyanin coloration of auricles	PRIMA	3	1									2	2	9	4.62
3	*	QL	Flag leaf: anthocyanin coloration of auricles	REGINA	3	1									2	2	9	4.62
3	*	QL	Flag leaf: anthocyanin coloration of auricles	VENUS	3	2									1	2	9	4.62
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ADONIS	3							3				1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ASTORIA	3							3				1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ASTRID	3				3							1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BACCARA	3								3			1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CELLAR	3							3				1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CEYLON	3								3			1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MAGDA	3							3				1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	OTIRA	3								3			1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	LANDORA	2	2										1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	OTIS	2							2				1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	REGINA	2	2										1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VOLGA	2										2	1	1	0.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BRAEMAR	5					4	1					2	2	0.45
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ROXANA	5							1	4			2	2	0.45
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PENELOPE	4							1	3			2	2	0.50
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PRISMA	4							3	1			2	2	0.50
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BRITTA	5						2	3				2	2	0.55

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ANGORA	3	1	2								2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BRAZIL	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CALGARY	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CHALICE	3						1	2			2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	DANOR	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	DERKADO	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	FELICITAS	3				1	2					2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	GOLF	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HELLANA	3							2	1		2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HENNI	3								2	1	2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MESSINA	3					1	2				2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	NELLY	3		2	1							2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PETRA	3			2	1						2	2	0.58
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PASADENA	7					2	4	1			3	3	0.69
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MAUD	2				1	1					2	2	0.71
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	TOLAR	2						1	1			2	2	0.71
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	EXTRACT	6					2	3	1			3	3	0.75
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HANKA	7					1	1	5			3	3	0.79
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ASPEN	4				1	2	1				3	3	0.82
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	OPTIC	4					1	2	1			3	3	0.82
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BARONESSE	6						1	1	4		3	3	0.84
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BARKE	7					2	1	4			3	3	0.95
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BRENDA	4				1	1	2				3	3	0.96
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BRISE	4					2	1	1			3	3	0.96
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	EUNOVA	4							1	1	2	3	3	0.96
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	KRONA	4				1	1	2				3	3	0.96
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	OHARA	4						2	1	1		3	3	0.96
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	THURINGIA	9	1		3	5						3	4	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MADONNA	5					2	1	2			3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HANNA	4					3		1			2	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PONGO	4					1		3			2	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BONAIRE	3					1	1	1			3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CATANIA	3		1	1	1						3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CHANTAL	3				1	1	1				3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	SW WIKINGETT	3			1	1	1					3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	TUNIKA	3			1	1	1					3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	URSA	3						1	1	1		3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VANESSA	3			1	1	1					3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VIDEO	3						1	1	1		3	3	1.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MARESI	6				1	1	3	1			4	4	1.03
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MELTAN	6						1	2	2	1	4	4	1.05
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	DANUTA	5					2		3			2	3	1.10
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	SCARLETT	7					1		1	5		3	4	1.13
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BOGESA	3	2		1							2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	BOLINA	3					1		2			2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	DITTA	3					2		1			2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ELISA	3					2		1			2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	JERSEY	3					2		1			2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MADEIRA	3				1		2				2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PROLOG	3						1		2		2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VORTEX	3					1		2			2	3	1.15
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ANNABELL	9						1	3	1	4	4	4	1.17
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	SALOON	6				1	4			1		3	5	1.25
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ALEXIS	5				1	1	1	2			4	4	1.30
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PRESTIGE	5				1			3	1		3	5	1.37
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PHILADELPHIA	4					1		1	2		3	4	1.41
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	APEX	5				1	1	2		1		4	5	1.48
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	STEFFI	4					2		1	1		3	4	1.50
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CLASS	3					1	1		1		3	4	1.53
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HARRIOT	3						1		1	1	3	4	1.53
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	JOLANTE	3				1	1		1			3	4	1.53
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CHARIOT	4			1		1	1	1			4	5	1.71

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ORTHEGA	6				1	2		1	2		4	5	1.72
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	ARAMIR	3					2			1		2	4	1.73
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	HENDRIX	3					1			2		2	4	1.73
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	RIVIERA	3					1			2		2	4	1.73
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	SEBASTIAN	4				1		1		2		3	5	1.91
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VISKOSA	5			1				1	3		3	6	2.00
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	CELINKA	3				1	1			1		3	5	2.08
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	LANDI	3				1	1			1		3	5	2.08
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PEWTER	4			1	2				1		3	6	2.22
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	LOMERIT	1	1									1	1	
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	PRIMA	1	1									1	1	
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	VENUS	1		1								1	1	
5		PQ	Plant: frequency of plants with recurved flag leaves	HARRIOT	3						3				1	1	0.00
5		PQ	Plant: frequency of plants with recurved flag leaves	VENUS	3			3							1	1	0
5		PQ	Plant: frequency of plants with recurved flag leaves	MAUD	2						2				1	1	0
5		PQ	Plant: frequency of plants with recurved flag leaves	PETRA	2					2					1	1	0
5		PQ	Plant: frequency of plants with recurved flag leaves	VOLGA	2								2		1	1	0
5		PQ	Plant: frequency of plants with recurved flag leaves	BRENDA	4					1	3				2	2	0.50
5		PQ	Plant: frequency of plants with recurved flag leaves	KRONA	4					3	1				2	2	0.50
5		PQ	Plant: frequency of plants with recurved flag leaves	PENELOPE	4					1	3				2	2	0.50
5		PQ	Plant: frequency of plants with recurved flag leaves	PONGO	4				1	3					2	2	0.50
5		PQ	Plant: frequency of plants with recurved flag leaves	OPTIC	4		2	2							2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	BOLINA	3					1	2				2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	BRAZIL	3					2	1				2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	CATANIA	3			2	1						2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	CELLAR	3			2	1						2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	HENDRIX	3						1	2			2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	HENNI	3					2	1				2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	JERSEY	3					1	2				2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	REGINA	3			2	1						2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	TIFFANY	3	2	1								2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	TRAMINER	3				1	2					2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	URSA	3						2	1			2	2	0.58
5		PQ	Plant: frequency of plants with recurved flag leaves	BARKE	7					2	4	1			3	3	0.69
5		PQ	Plant: frequency of plants with recurved flag leaves	BABYLONE	2	1	1								2	2	0.71
5		PQ	Plant: frequency of plants with recurved flag leaves	DITTA	2						1	1			2	2	0.71
5		PQ	Plant: frequency of plants with recurved flag leaves	MAGDA	2					1	1				2	2	0.71
5		PQ	Plant: frequency of plants with recurved flag leaves	HANKA	7				1	3	3				3	3	0.76
5		PQ	Plant: frequency of plants with recurved flag leaves	PRESTIGE	5		2	2	1						3	3	0.82
5		PQ	Plant: frequency of plants with recurved flag leaves	ASPEN	4		1	2	1						3	3	0.82
5		PQ	Plant: frequency of plants with recurved flag leaves	SALOON	6	1	1	3	1						4	4	0.95
5		PQ	Plant: frequency of plants with recurved flag leaves	BRISE	4		1	1	2						3	3	0.96
5		PQ	Plant: frequency of plants with recurved flag leaves	LANDORA	4				1	1	2				3	3	0.96
5		PQ	Plant: frequency of plants with recurved flag leaves	PHILADELPHIA	4					1	1	2			3	3	0.96
5		PQ	Plant: frequency of plants with recurved flag leaves	BRITTA	5					2	1	2			3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	SEBASTIAN	4	1		3							2	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	ANGORA	3			1	1	1					3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	ASTORIA	3					1	1	1			3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	CAMERA	3			1	1	1					3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	CEYLON	3		1	1	1						3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	CLASS	3			1	1	1					3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	DERKADO	3				1	1	1				3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	NELLY	3		1	1	1						3	3	1.00
5		PQ	Plant: frequency of plants with recurved flag leaves	VIDEO	3				1	1	1				3	3	1
5		PQ	Plant: frequency of plants with recurved flag leaves	VISKOSA	5			2		3					2	3	1.03
5		PQ	Plant: frequency of plants with recurved flag leaves	PASADENA	7			1		2	4				3	4	1.11
5		PQ	Plant: frequency of plants with recurved flag leaves	CAROLA	5		1	1	2	1					4	4	1.14
5		PQ	Plant: frequency of plants with recurved flag leaves	PEWTER	4		2		2						2	3	1.15
5		PQ	Plant: frequency of plants with recurved flag leaves	BOGESA	3	1		2							2	3	1.15
5		PQ	Plant: frequency of plants with recurved flag leaves	LOMERIT	3	1		2							2	3	1.15
5		PQ	Plant: frequency of plants with recurved flag leaves	MADEIRA	3					1		2			2	3	1.15
5		PQ	Plant: frequency of plants with recurved flag leaves	OTIRA	3					1		2			2	3	1.15
5		PQ	Plant: frequency of plants with recurved flag leaves	VORTEX	3		1		2						2	3	1.15

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
5		PQ	Plant: frequency of plants with recurved flag leaves	OHARA	4		1	1	1	1					4	4	1.29
5		PQ	Plant: frequency of plants with recurved flag leaves	RENI	4						1	1	1	1	4	4	1.29
5		PQ	Plant: frequency of plants with recurved flag leaves	ROXANA	5			1		1	3				3	4	1.30
5		PQ	Plant: frequency of plants with recurved flag leaves	EUNOVA	4		1		1	2					3	4	1.41
5		PQ	Plant: frequency of plants with recurved flag leaves	HELLANA	2						1		1		2	3	1.41
5		PQ	Plant: frequency of plants with recurved flag leaves	OTIS	2					1		1			2	3	1.41
5		PQ	Plant: frequency of plants with recurved flag leaves	TOLAR	2	1		1							2	3	1.41
5		PQ	Plant: frequency of plants with recurved flag leaves	ADONIS	3		1		1	1					3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	ANGELA	3		1	1		1					3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	CALGARY	3				1	1		1			3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	CHALICE	3	1		1	1						3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	CHANTAL	3					1	1		1		3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	DANOR	3					1	1		1		3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	LANDI	3	1	1		1						3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	MESSINA	3	1		1	1						3	4	1.53
5		PQ	Plant: frequency of plants with recurved flag leaves	ORTHEGA	6					4			2		2	4	1.55
5		PQ	Plant: frequency of plants with recurved flag leaves	ANNABELL	9	1				3	5				3	6	1.62
5		PQ	Plant: frequency of plants with recurved flag leaves	HANNA	4			1		1	1	1			4	5	1.71
5		PQ	Plant: frequency of plants with recurved flag leaves	CELINKA	3	1			2						2	4	1.73
5		PQ	Plant: frequency of plants with recurved flag leaves	JOLANTE	3		1			2					2	4	1.73
5		PQ	Plant: frequency of plants with recurved flag leaves	PROLOG	3		1			2					2	4	1.73
5		PQ	Plant: frequency of plants with recurved flag leaves	SW WIKINGETT THURINGIA	3		1			2					2	4	1.73
5		PQ	Plant: frequency of plants with recurved flag leaves	BRAEMAR	9	1				5	1	2			4	7	1.76
5		PQ	Plant: frequency of plants with recurved flag leaves	SCARLETT	5	3			1	1					3	5	1.95
5		PQ	Plant: frequency of plants with recurved flag leaves	DANUTA	7	1				4		2			3	7	2.00
5		PQ	Plant: frequency of plants with recurved flag leaves	ALEXIS	6	1			3		1	1			4	7	2.07
5		PQ	Plant: frequency of plants with recurved flag leaves	BACCARA	5	1			1	1	2				4	6	2.07
5		PQ	Plant: frequency of plants with recurved flag leaves	FELICITAS	3		1			1	1				3	5	2.08
5		PQ	Plant: frequency of plants with recurved flag leaves	RIVIERA	3		1			1	1				3	5	2.08
5		PQ	Plant: frequency of plants with recurved flag leaves	VANESSA	3				1			1	1		3	5	2.08
5		PQ	Plant: frequency of plants with recurved flag leaves	ASTRID	2				1			1			2	4	2.12
5		PQ	Plant: frequency of plants with recurved flag leaves	BARONESSE	6	1				2		3			3	7	2.34
5		PQ	Plant: frequency of plants with recurved flag leaves	PRISMA	4	1				1	2				3	6	2.38
5		PQ	Plant: frequency of plants with recurved flag leaves	MADONNA	5	2				2	1				3	6	2.41
5		PQ	Plant: frequency of plants with recurved flag leaves	EXTRACT	6	3			1		2				3	6	2.48
5		PQ	Plant: frequency of plants with recurved flag leaves	CHARIOT	3				1		1			1	3	6	2.52
5		PQ	Plant: frequency of plants with recurved flag leaves	TUNIKA	3		1			1		1			3	6	2.52
5		PQ	Plant: frequency of plants with recurved flag leaves	MELTAN	5	1				1		3			3	7	2.61
5		PQ	Plant: frequency of plants with recurved flag leaves	MARESI	4			1	1	1				1	4	7	2.63
5		PQ	Plant: frequency of plants with recurved flag leaves	GOLF	3	1				1	1				3	6	2.65
5		PQ	Plant: frequency of plants with recurved flag leaves	PRIMA	2			1				1			2	5	2.83
5		PQ	Plant: frequency of plants with recurved flag leaves	APEX	5	1				1	2			1	4	9	2.88
5		PQ	Plant: frequency of plants with recurved flag leaves	STEFFI	3	1					2				2	6	2.89
5		PQ	Plant: frequency of plants with recurved flag leaves	ARAMIR	3	1						1	1		3	8	3.79
5		PQ	Plant: frequency of plants with recurved flag leaves	BONAIRE	1							1			1	1	
5		PQ	Plant: frequency of plants with recurved flag leaves	ELISA	1							1			1	1	
6		PQ	Flag leaf: glaucosity of sheath	SCARLETT	7							7			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	BRISE	4							4			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	PENELOPE	4							4			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	PEWTER	4							4			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	SEBASTIAN	4							4			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	ARAMIR	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	BACCARA	3								3		1	1	0
6		PQ	Flag leaf: glaucosity of sheath	CHALICE	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	DANOR	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	GOLF	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	HARRIOT	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	HENDRIX	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	OTIRA	3						3				1	1	0
6		PQ	Flag leaf: glaucosity of sheath	SW WIKINGETT TIFFANY	3							3			1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
6		PQ	Flag leaf: glaucosity of sheath	VIDEO	3								3		1	1	0
6		PQ	Flag leaf: glaucosity of sheath	VORTEX	3							3			1	1	0
6		PQ	Flag leaf: glaucosity of sheath	PRESTIGE	5							4	1		2	2	0.41
6		PQ	Flag leaf: glaucosity of sheath	BRAEMAR	5							4	1		2	2	0.45
6		PQ	Flag leaf: glaucosity of sheath	MADONNA	5							4	1		2	2	0.45
6		PQ	Flag leaf: glaucosity of sheath	EUNOVA	4							3	1		2	2	0.5
6		PQ	Flag leaf: glaucosity of sheath	OHARA	4								3	1	2	2	0.5
6		PQ	Flag leaf: glaucosity of sheath	OPTIC	4					1	3				2	2	0.5
6		PQ	Flag leaf: glaucosity of sheath	PHILADELPHIA	4							3	1		2	2	0.5
6		PQ	Flag leaf: glaucosity of sheath	MELTAN	6							4	2		2	2	0.52
6		PQ	Flag leaf: glaucosity of sheath	SALOON	6						3	3			2	2	0.53
6		PQ	Flag leaf: glaucosity of sheath	BARONESSE	6						3	3			2	2	0.55
6		PQ	Flag leaf: glaucosity of sheath	APEX	5							3	2		2	2	0.55
6		PQ	Flag leaf: glaucosity of sheath	BRITTA	5						2	3			2	2	0.55
6		PQ	Flag leaf: glaucosity of sheath	ASPEN	4							2	2		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	KRONA	4						2	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	ANGELA	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	ASTORIA	3							1	2		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	ASTRID	3						2	1			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	BABYLONE	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	BOGESA	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	BRAZIL	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	CALGARY	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	CAMERA	3						2	1			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	CELINKA	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	CELLAR	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	CHANTAL	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	FELICITAS	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	HELLANA	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	HENNI	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	JERSEY	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	LANDI	3						2	1			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	MADEIRA	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	MAGDA	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	PROLOG	3							1	2		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	RIVIERA	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	TUNIKA	3							2	1		2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	URSA	3						1	2			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	VENUS	3						2	1			2	2	0.58
6		PQ	Flag leaf: glaucosity of sheath	HANKA	7					2	4	1			3	3	0.69
6		PQ	Flag leaf: glaucosity of sheath	ELISA	2							1	1		2	2	0.71
6		PQ	Flag leaf: glaucosity of sheath	MAUD	2					1	1				2	2	0.71
6		PQ	Flag leaf: glaucosity of sheath	OTIS	2						1	1			2	2	0.71
6		PQ	Flag leaf: glaucosity of sheath	VOLGA	2							1	1		2	2	0.71
6		PQ	Flag leaf: glaucosity of sheath	DANUTA	6					1	2	3			3	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	ORTHEGA	6							1	2	3	3	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	VISKOSA	5					1		4			2	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	BRENDA	4					1	2	1			3	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	PONGO	4						1	2	1		3	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	PRISMA	4						1	2	1		3	3	0.82
6		PQ	Flag leaf: glaucosity of sheath	ROXANA	5					1		4			2	3	0.89
6		PQ	Flag leaf: glaucosity of sheath	PASADENA	7					1		5	1		3	4	0.9
6		PQ	Flag leaf: glaucosity of sheath	BARKE	7					1	1	4	1		4	4	0.95
6		PQ	Flag leaf: glaucosity of sheath	STEFFI	4					1	1	2			3	3	0.96
6		PQ	Flag leaf: glaucosity of sheath	ANNABELL	9					4	1	4			3	3	1
6		PQ	Flag leaf: glaucosity of sheath	CAROLA	5						2	1	2		3	3	1
6		PQ	Flag leaf: glaucosity of sheath	LANDORA	4					1		3			2	3	1
6		PQ	Flag leaf: glaucosity of sheath	ADONIS	3						1	1	1		3	3	1
6		PQ	Flag leaf: glaucosity of sheath	BOLINA	3						1	1	1		3	3	1
6		PQ	Flag leaf: glaucosity of sheath	BONAIRE	3					1	1	1			3	3	1
6		PQ	Flag leaf: glaucosity of sheath	CATANIA	3					1	1	1			3	3	1
6		PQ	Flag leaf: glaucosity of sheath	CEYLON	3					1	1	1			3	3	1
6		PQ	Flag leaf: glaucosity of sheath	DERKADO	3				1	1	1				3	3	1

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
6		PQ	Flag leaf: glaucosity of sheath	DITTA	3						1	1	1		3	3	1
6		PQ	Flag leaf: glaucosity of sheath	JOLANTE	3					1	1	1			3	3	1
6		PQ	Flag leaf: glaucosity of sheath	MESSINA	3						1	1	1		3	3	1
6		PQ	Flag leaf: glaucosity of sheath	MARESI	5					2		3			2	3	1.1
6		PQ	Flag leaf: glaucosity of sheath	THURINGIA	9				1		1	6	1		4	5	1.12
6		PQ	Flag leaf: glaucosity of sheath	ANGORA	3					2		1			2	3	1.15
6		PQ	Flag leaf: glaucosity of sheath	CLASS	3						1		2		2	3	1.15
6		PQ	Flag leaf: glaucosity of sheath	NELLY	3					1		2			2	3	1.15
6		PQ	Flag leaf: glaucosity of sheath	REGINA	3					1		2			2	3	1.15
6		PQ	Flag leaf: glaucosity of sheath	RENI	4				1		2	1			3	4	1.26
6		PQ	Flag leaf: glaucosity of sheath	HANNA	4					1	1	1	1		4	4	1.29
6		PQ	Flag leaf: glaucosity of sheath	ALEXIS	5				1			4			2	4	1.34
6		PQ	Flag leaf: glaucosity of sheath	TOLAR	2							1		1	2	3	1.41
6		PQ	Flag leaf: glaucosity of sheath	LOMERIT	3					1		1	1		3	4	1.53
6		PQ	Flag leaf: glaucosity of sheath	PETRA	3						1	1		1	3	4	1.53
6		PQ	Flag leaf: glaucosity of sheath	PRIMA	3					1	1		1		3	4	1.53
6		PQ	Flag leaf: glaucosity of sheath	EXTRACT	6				1		2		3		3	5	1.63
6		PQ	Flag leaf: glaucosity of sheath	CHARIOT	4			1		1		2			3	5	1.91
6		PQ	Flag leaf: glaucosity of sheath	VANESSA	3			1			1	1			3	5	2.08
6		PQ	Flag leaf: glaucosity of sheath	TRAMINER	3			1				1	1		3	6	2.65
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ORTHEGA	5					5					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BRISE	4					4					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MADONNA	4					4					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PEWTER	4					4					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PHILADELPHIA	4						4				1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BABYLONE	3					3					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CELINKA	3				3						1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CHANTAL	3					3					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CLASS	3				3						1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HENNI	3					3					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	LOMERIT	3					3					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	REGINA	3						3				1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VANESSA	3					3					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	GOLF	2					2					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	TOLAR	2					2					1	1	0
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ANNABELL	9					8	1				2	2	0.33
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	EXTRACT	6					5	1				2	2	0.41
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ALEXIS	4					3	1				2	2	0.5
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ASPEN	4				1	3					2	2	0.5
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BRENDA	4				1	3					2	2	0.5
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	LANDORA	4						3	1			2	2	0.5
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BARONESSE	6				4	2					2	2	0.52
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	THURINGIA	8			3	5						2	2	0.52
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BRAEMAR	5			3	2						2	2	0.55

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MARESI	5					3	2				2	2	0.55
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PRESTIGE	5			2	3						2	2	0.55
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HANNA	4					2	2				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	KRONA	4					2	2				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PONGO	4						2	2			2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ADONIS	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BOLINA	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BONAIRE	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BRAZIL	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CALGARY	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CATANIA	3					1	2				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CELLAR	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CHALICE	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	DITTA	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ELISA	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	EUNOVA	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HARRIOT	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HELLANA	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HENDRIX	3					1	2				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	LANDI	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MADEIRA	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MESSINA	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PETRA	3			1	2						2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PRIMA	3				2	1					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	TUNIKA	3			1	2						2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	URSA	3				1	2					2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VIDEO	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VORTEX	3					2	1				2	2	0.58
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VISKOSA	5			1	3	1					3	3	0.63
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BRITTA	5				1	3	1				3	3	0.71
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ARAMIR	2					1	1				2	2	0.71
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MAUD	2							1		1	2	2	0.71
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VOLGA	2					1	1				2	2	0.71
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PASADENA	7					3	3	1			3	3	0.76
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	SCARLETT	7					6		1			2	3	0.76

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	HANKA	7					5	1	1			3	3	0.79
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	SALOON	6				1	2	3				3	3	0.79
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BARKE	6					5		1			2	3	0.82
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	DANUTA	6			3	2	1					3	3	0.82
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	APEX	4			1	2	1					3	3	0.82
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	SEBASTIAN	4				1	2	1				3	3	0.82
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	STEFFI	4				1	2	1				3	3	0.82
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ROXANA	5					2	2	1			3	3	0.84
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	RENI	4					2	1	1			3	3	0.96
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ANGELA	3			1	1	1					3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ANGORA	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ASTRID	3				1	1	1				3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CAMERA	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	DERKADO	3				1	1	1				3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	FELICITAS	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	JOLANTE	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MAGDA	3			1	1	1					3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	OHARA	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	OPTIC	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	SW WIKINGETT	3				1	1	1				3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	TIFFANY	3					1	1	1			3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	VENUS	3				1	1	1				3	3	1
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	ASTORIA	3					2		1			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BACCARA	3				2		1				2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CEYLON	3					2		1			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	DANOR	3					1		2			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	JERSEY	3			1		2					2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	NELLY	3				2		1				2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PENELOPE	3					2		1			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PROLOG	3					2		1			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	TRAMINER	3					2		1			2	3	1.15
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CHARIOT	4		1	1	1	1					4	4	1.29
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	PRISMA	4				1	1	1	1			4	4	1.29
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	CAROLA	5					2	1	1	1		4	4	1.3
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	OTIRA	2				1		1				2	3	1.41

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	MELTAN	6		1	1	2		2				4	5	1.6
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	BOGESA	3					2			1		2	4	1.73
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	RIVIERA	3			1		1		1			3	5	2
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ears)	OTIS	1					1					1	1	
8	*-g	QL	Awns: anthocyanin coloration of tips	ANNABELL	9									9	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BARKE	7									7	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HANKA	7									7	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PASADENA	7									7	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	SCARLETT	7									7	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BARONESSE	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	EXTRACT	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MARESI	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MELTAN	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ORTHEGA	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	SALOON	6									6	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ALEXIS	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	APEX	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BRAEMAR	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BRITTA	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CAROLA	5	5									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MADONNA	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PRESTIGE	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ROXANA	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	VISKOSA	5									5	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ASPEN	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BRENDA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BRISE	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CHARIOT	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	EUNOVA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HANNA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	KRONA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	OHARA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	OPTIC	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PENELOPE	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PEWTER	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PHILADELPHIA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PONGO	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PRISMA	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	RENI	4	4									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	SEBASTIAN	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	STEFFI	4									4	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ADONIS	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ANGELA	3	3									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ANGORA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ARAMIR	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ASTORIA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ASTRID	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BACCARA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BOGESA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BOLINA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BONAIRE	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BRAZIL	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CALGARY	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CAMERA	3	3									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CATANIA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CELINKA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CELLAR	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CEYLON	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CHALICE	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	CHANTAL	3									3	1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
8	*-g	QL	Awns: anthocyanin coloration of tips	CLASS	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	DANOR	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	DERKADO	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	DITTA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	ELISA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	FELICITAS	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	GOLF	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HARRIOT	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HELLANA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HENDRIX	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	HENNI	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	JERSEY	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	JOLANTE	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	LANDI	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MADEIRA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MAGDA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MESSINA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	NELLY	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	OTIRA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PETRA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	PROLOG	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	RIVIERA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	SW WIKINGETT	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	TIFFANY	3	3									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	TRAMINER	3	3									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	URSA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	VANESSA	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	VIDEO	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	VORTEX	3									3	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	BABYLONE	2	2									1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	MAUD	2									2	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	OTIS	2									2	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	TOLAR	2									2	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	VOLGA	2									2	1	1	0
8	*-g	QL	Awns: anthocyanin coloration of tips	THURINGIA	9	1								8	2	9	2.67
8	*-g	QL	Awns: anthocyanin coloration of tips	DANUTA	6	1								5	2	9	3.27
8	*-g	QL	Awns: anthocyanin coloration of tips	LANDORA	4	1								3	2	9	4
8	*-g	QL	Awns: anthocyanin coloration of tips	LOMERIT	3	1								2	2	9	4.62
8	*-g	QL	Awns: anthocyanin coloration of tips	PRIMA	3	1								2	2	9	4.62
8	*-g	QL	Awns: anthocyanin coloration of tips	REGINA	3	1								2	2	9	4.62
8	*-g	QL	Awns: anthocyanin coloration of tips	TUNIKA	3	2								1	2	9	4.62
8	*-g	QL	Awns: anthocyanin coloration of tips	VENUS	3	2								1	2	9	4.62
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HANNA	4							4			1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ANGORA	3			3							1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ASTRID	3			3							1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BONAIRE	3					3					1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	JOLANTE	3						3				1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	REGINA	2	2									1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	DANUTA	5				4	1					2	2	0.45
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BOGESA	3		1	2							2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	DANOR	3						1	2			2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	FELICITAS	3			2	1						2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HENNI	3							2	1		2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	LANDORA	3	1	2								2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PETRA	3		2	1							2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VANESSA	3		1	2							2	2	0.58
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	THURINGIA	8	2	5	1							3	3	0.64
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	LOMERIT	2		1	1							2	2	0.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MAUD	2		1	1							2	2	0.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	TOLAR	2				1	1					2	2	0.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VOLGA	2					1	1				2	2	0.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	EUNOVA	4							1	2	1	3	3	0.82

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	KRONA	4			1	2	1						3	3	0.82
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	SCARLETT	7					1		5	1			3	4	0.9
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	STEFFI	4					3		1				2	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ASTORIA	3						1	1	1			3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BACCARA	3							1	1	1		3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BRAZIL	3						1	1	1			3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CATANIA	3			1	1	1						3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CHALICE	3						1	1	1			3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CHANTAL	3	1	1	1								3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MESSINA	3			1	1	1						3	3	1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VISKOSA	5					1	1	2	1			4	4	1.03
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BARONESSE	6					2	3		1			3	4	1.1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MELTAN	6				1	3	2					3	4	1.1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MADONNA	5					3		2				2	3	1.1
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ARAMIR	3					2		1				2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CALGARY	3				1		2					2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CELLAR	3					2		1				2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CEYLON	3						2		1			2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HELLANA	3					1		2				2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HENDRIX	3					1		2				2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	OTIRA	3					2		1				2	3	1.15
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PONGO	4					1	2		1			3	4	1.26
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BRENDA	4	1	1	1	1							4	4	1.29
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PENELOPE	4					1	1	1	1			4	4	1.29
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PRESTIGE	5				1	2	1		1			4	5	1.38
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HANKA	7				1	1	1	3	1			5	5	1.38
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MARESI	6			1	1	2	1	1				5	5	1.41
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BRAEMAR	5			1		3		1				3	5	1.41
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	OTIS	2					1		1				2	3	1.41
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ALEXIS	5		1		2	1	1					4	5	1.48
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BRISE	4				1	1		2				3	4	1.5
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	OHARA	4						2		1	1		3	4	1.5
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	SEBASTIAN	4					2		1	1			3	4	1.5
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	APEX	5			1	2	1		1				4	5	1.52
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BOLINA	3			1		1	1					3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	DITTA	3				1	1		1				3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ELISA	3			1		1	1					3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	GOLF	3						1	1		1		3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MAGDA	3				1	1		1				3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PROLOG	3						1	1		1		3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VORTEX	3				1	1		1				3	4	1.53
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PASADENA	7			1		2		4				3	5	1.57
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	SALOON	6				2	2		1	1			4	5	1.6
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	OPTIC	4				1		2		1			3	5	1.63
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PEWTER	4			1		2		1				3	5	1.63
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BRITTA	5			1		1	1	2				4	5	1.67
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ROXANA	5					2	1	1		1		4	5	1.67
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	BARKE	7			1		1		4	1			4	6	1.7
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CHARIOT	4			1		1	1	1				4	5	1.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PHILADELPHIA	4				1		1	1	1			4	5	1.71
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	EXTRACT	6			2			3	1				3	5	1.72
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ASPEN	4			1	2			1				3	5	1.73
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PRISMA	4				1	2			1			3	5	1.73
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ADONIS	3				1			2				2	4	1.73
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	DERKADO	3				1			2				2	4	1.73
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ORTHEGA	6				1	1		1	3			4	5	1.75
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	ANNABELL	9			2	1	1		5				4	5	1.81
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	HARRIOT	3				1		1		1			3	5	2
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	LANDI	3			1		1		1				3	5	2
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	SW WIKINGETT	3		1		1		1					3	5	2
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CLASS	3				1	1			1			3	5	2.08
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	NELLY	3	1			1	1						3	5	2.08

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	RIVIERA	3				1			1	1		3	5	2.08
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VIDEO	3			1	1			1			3	5	2.08
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	CELINKA	3					2				1	2	5	2.31
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MADEIRA	3	2				1					2	5	2.31
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	URSA	3			1				2			2	5	2.31
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	JERSEY	3			1				1	1		3	6	2.65
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	PRIMA	1	1									1	1	
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	TUNIKA	1	1									1	1	
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	VENUS	1		1								1	1	
10	*	PQ	Ear: glaucosity	PENELOPE	4							4			1	1	0
10	*	PQ	Ear: glaucosity	ADONIS	3					3					1	1	0
10	*	PQ	Ear: glaucosity	ANGORA	3			3							1	1	0
10	*	PQ	Ear: glaucosity	BACCARA	3	3									1	1	0
10	*	PQ	Ear: glaucosity	DANOR	3							3			1	1	0
10	*	PQ	Ear: glaucosity	HENNI	3									3	1	1	0
10	*	PQ	Ear: glaucosity	RIVIERA	3						3				1	1	0
10	*	PQ	Ear: glaucosity	MELTAN	6					5	1				2	2	0.41
10	*	PQ	Ear: glaucosity	BARONESSE	6						3	3			2	2	0.55
10	*	PQ	Ear: glaucosity	EUNOVA	4	2	2								2	2	0.58
10	*	PQ	Ear: glaucosity	OHARA	4								2	2	2	2	0.58
10	*	PQ	Ear: glaucosity	PONGO	4						2	2			2	2	0.58
10	*	PQ	Ear: glaucosity	ANGELA	3				1	2					2	2	0.58
10	*	PQ	Ear: glaucosity	ARAMIR	3							2	1		2	2	0.58
10	*	PQ	Ear: glaucosity	ASTORIA	3						2	1			2	2	0.58
10	*	PQ	Ear: glaucosity	ASTRID	3		2	1							2	2	0.58
10	*	PQ	Ear: glaucosity	BOLINA	3							2	1		2	2	0.58
10	*	PQ	Ear: glaucosity	BRAZIL	3							2	1		2	2	0.58
10	*	PQ	Ear: glaucosity	CATANIA	3	1	2								2	2	0.58
10	*	PQ	Ear: glaucosity	CELINKA	3							2	1		2	2	0.58
10	*	PQ	Ear: glaucosity	CELLAR	3						2	1			2	2	0.58
10	*	PQ	Ear: glaucosity	CHALICE	3					1	2				2	2	0.58
10	*	PQ	Ear: glaucosity	MESSINA	3				1	2					2	2	0.58
10	*	PQ	Ear: glaucosity	OTIRA	3						1	2			2	2	0.58
10	*	PQ	Ear: glaucosity	PRIMA	3			2	1						2	2	0.58
10	*	PQ	Ear: glaucosity	VANESSA	3			2	1						2	2	0.58
10	*	PQ	Ear: glaucosity	VENUS	3			2	1						2	2	0.58
10	*	PQ	Ear: glaucosity	PRESTIGE	5					1	3	1			3	3	0.63
10	*	PQ	Ear: glaucosity	PASADENA	7					2	4	1			3	3	0.69
10	*	PQ	Ear: glaucosity	THURINGIA	9					4	4	1			3	3	0.71
10	*	PQ	Ear: glaucosity	BRAEMAR	5					1	3	1			3	3	0.71
10	*	PQ	Ear: glaucosity	ROXANA	5					1	3	1			3	3	0.71
10	*	PQ	Ear: glaucosity	TOLAR	2			1	1						2	2	0.71
10	*	PQ	Ear: glaucosity	MADONNA	5					3	1	1			3	3	0.89
10	*	PQ	Ear: glaucosity	SALOON	6					3	1	2			3	3	0.95
10	*	PQ	Ear: glaucosity	BRENDA	4			1	1	2					3	3	0.96
10	*	PQ	Ear: glaucosity	KRONA	4				2	1	1				3	3	0.96
10	*	PQ	Ear: glaucosity	HANKA	7			2		5					2	3	0.98
10	*	PQ	Ear: glaucosity	DANUTA	6				1	4		1			3	4	0.98
10	*	PQ	Ear: glaucosity	APEX	5						2	1	2		3	3	1
10	*	PQ	Ear: glaucosity	BRISE	4					3		1			2	3	1
10	*	PQ	Ear: glaucosity	STEFFI	4					3		1			2	3	1
10	*	PQ	Ear: glaucosity	CALGARY	3					1	1	1			3	3	1
10	*	PQ	Ear: glaucosity	CHANTAL	3				1	1	1				3	3	1
10	*	PQ	Ear: glaucosity	DITTA	3					1	1	1			3	3	1
10	*	PQ	Ear: glaucosity	FELICITAS	3					1	1	1			3	3	1
10	*	PQ	Ear: glaucosity	HARRIOT	3						1	1	1		3	3	1
10	*	PQ	Ear: glaucosity	LOMERIT	3	1	1	1							3	3	1
10	*	PQ	Ear: glaucosity	MAGDA	3					1	1	1			3	3	1
10	*	PQ	Ear: glaucosity	TIFFANY	3				1	1	1				3	3	1
10	*	PQ	Ear: glaucosity	TUNIKA	3						1	1	1		3	3	1
10	*	PQ	Ear: glaucosity	ANNABELL	9							4		5	2	3	1.05
10	*	PQ	Ear: glaucosity	BRITTA	5				1		3	1			3	4	1.1
10	*	PQ	Ear: glaucosity	BOGESA	3	2		1							2	3	1.15

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
10	*	PQ	Ear: glaucosity	BONAIRE	3					1		2			2	3	1.15
10	*	PQ	Ear: glaucosity	CLASS	3					1		2			2	3	1.15
10	*	PQ	Ear: glaucosity	HENDRIX	3			1		2					2	3	1.15
10	*	PQ	Ear: glaucosity	JERSEY	3				1		2				2	3	1.15
10	*	PQ	Ear: glaucosity	JOLANTE	3					2		1			2	3	1.15
10	*	PQ	Ear: glaucosity	MADEIRA	3					2		1			2	3	1.15
10	*	PQ	Ear: glaucosity	PROLOG	3		2		1						2	3	1.15
10	*	PQ	Ear: glaucosity	VIDEO	3					1		2			2	3	1.15
10	*	PQ	Ear: glaucosity	VOLGA	3							1		2	2	3	1.15
10	*	PQ	Ear: glaucosity	PEWTER	4			1		2	1				3	4	1.26
10	*	PQ	Ear: glaucosity	PHILADELPHIA	4				1		2	1			3	4	1.26
10	*	PQ	Ear: glaucosity	RENI	4	1	2		1						3	4	1.26
10	*	PQ	Ear: glaucosity	ORTHEGA	6					1		4		1	3	5	1.26
10	*	PQ	Ear: glaucosity	PRISMA	4			1	1	1	1				4	4	1.29
10	*	PQ	Ear: glaucosity	MARESI	5					2	1	1	1		4	4	1.3
10	*	PQ	Ear: glaucosity	CAROLA	5				1	2		2			3	4	1.34
10	*	PQ	Ear: glaucosity	VISKOSA	5				1		1	2	1		4	5	1.38
10	*	PQ	Ear: glaucosity	HANNA	4			2	1		1				3	4	1.41
10	*	PQ	Ear: glaucosity	ELISA	2					1		1			2	3	1.41
10	*	PQ	Ear: glaucosity	OTIS	2					1		1			2	3	1.41
10	*	PQ	Ear: glaucosity	ASPEN	4					3			1		2	4	1.5
10	*	PQ	Ear: glaucosity	SEBASTIAN	4					1	1		2		3	4	1.5
10	*	PQ	Ear: glaucosity	CAMERA	3			1		1	1				3	4	1.53
10	*	PQ	Ear: glaucosity	CEYLON	3				1		1	1			3	4	1.53
10	*	PQ	Ear: glaucosity	GOLF	3					1	1		1		3	4	1.53
10	*	PQ	Ear: glaucosity	LANDI	3			1	1		1				3	4	1.53
10	*	PQ	Ear: glaucosity	REGINA	3			1		1	1				3	4	1.53
10	*	PQ	Ear: glaucosity	TRAMINER	3				1		1	1			3	4	1.53
10	*	PQ	Ear: glaucosity	URSA	3				1		1	1			3	4	1.53
10	*	PQ	Ear: glaucosity	VORTEX	3				1		1	1			3	4	1.53
10	*	PQ	Ear: glaucosity	EXTRACT	6	1		1	3		1				4	6	1.63
10	*	PQ	Ear: glaucosity	LANDORA	4				1			2	1		3	5	1.73
10	*	PQ	Ear: glaucosity	PETRA	3					2			1		2	4	1.73
10	*	PQ	Ear: glaucosity	BARKE	8	1			1	2	3	1			5	7	1.85
10	*	PQ	Ear: glaucosity	SCARLETT	8	1				3	1	3			4	7	2
10	*	PQ	Ear: glaucosity	SW WIKINGETT	3			1		1		1			3	5	2
10	*	PQ	Ear: glaucosity	CHARIOT	4			1	1			2			3	5	2.06
10	*	PQ	Ear: glaucosity	ALEXIS	5	1			1	1	2				4	6	2.07
10	*	PQ	Ear: glaucosity	MAUD	3					1	1			1	3	5	2.08
10	*	PQ	Ear: glaucosity	NELLY	3			1			1	1			3	5	2.08
10	*	PQ	Ear: glaucosity	BABYLONE	2			1			1				2	4	2.12
10	*	PQ	Ear: glaucosity	OPTIC	4	1				1	2				3	6	2.38
10	*	PQ	Ear: glaucosity	DERKADO	3	1					2				2	6	2.89
10	*	PQ	Ear: glaucosity	HELLANA	3			1					2		2	6	2.89
11		PQ	Ear: attitude	ASTORIA	3				3						1	1	0
11		PQ	Ear: attitude	BONAIRE	3					3					1	1	0
11		PQ	Ear: attitude	CELLAR	3			3							1	1	0
11		PQ	Ear: attitude	DANOR	3					3					1	1	0
11		PQ	Ear: attitude	OTIS	2						2				1	1	0
11		PQ	Ear: attitude	PASADENA	7		2	5							2	2	0.49
11		PQ	Ear: attitude	LANDORA	4				1	3					2	2	0.5
11		PQ	Ear: attitude	SCARLETT	7		1	5	1						3	3	0.58
11		PQ	Ear: attitude	PENELOPE	4						2	2			2	2	0.58
11		PQ	Ear: attitude	BOGESA	3		1	2							2	2	0.58
11		PQ	Ear: attitude	CALGARY	3		2	1							2	2	0.58
11		PQ	Ear: attitude	DERKADO	3			1	2						2	2	0.58
11		PQ	Ear: attitude	RIVIERA	3				1	2					2	2	0.58
11		PQ	Ear: attitude	MAUD	2						1	1			2	2	0.71
11		PQ	Ear: attitude	TOLAR	2		1	1							2	2	0.71
11		PQ	Ear: attitude	SALOON	6		1	2	3						3	3	0.79
11		PQ	Ear: attitude	EXTRACT	6		1		5						2	3	0.82
11		PQ	Ear: attitude	OPTIC	4				1	2	1				3	3	0.82

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
11		PQ	Ear: attitude	PONGO	4				1	2	1				3	3	0.82
11		PQ	Ear: attitude	ORTHEGA	6		1	1	4						3	3	0.84
11		PQ	Ear: attitude	OHARA	4			1	1	2					3	3	0.96
11		PQ	Ear: attitude	ANNABELL	9	1		3	5						3	4	1
11		PQ	Ear: attitude	MADONNA	5			2	1	2					3	3	1
11		PQ	Ear: attitude	EUNOVA	4		1		3						2	3	1
11		PQ	Ear: attitude	KRONA	4		1		3						2	3	1
11		PQ	Ear: attitude	BACCARA	3		1	1	1						3	3	1
11		PQ	Ear: attitude	GOLF	3			1	1	1					3	3	1
11		PQ	Ear: attitude	HELLANA	3					1	1	1			3	3	1
11		PQ	Ear: attitude	TUNIKA	3		1	1	1						3	3	1
11		PQ	Ear: attitude	MELTAN	6		1	3	1	1					4	4	1.03
11		PQ	Ear: attitude	VISKOSA	5				2		3				2	3	1.03
11		PQ	Ear: attitude	ADONIS	3					1		2			2	3	1.15
11		PQ	Ear: attitude	CEYLON	3			1		2					2	3	1.15
11		PQ	Ear: attitude	CHANTAL	3			2		1					2	3	1.15
11		PQ	Ear: attitude	FELICITAS	3		1		2						2	3	1.15
11		PQ	Ear: attitude	HENDRIX	3	1		2							2	3	1.15
11		PQ	Ear: attitude	HENNI	3					2		1			2	3	1.15
11		PQ	Ear: attitude	LANDI	3	1		2							2	3	1.15
11		PQ	Ear: attitude	MADEIRA	3		1		2						2	3	1.15
11		PQ	Ear: attitude	MAGDA	3				2		1				2	3	1.15
11		PQ	Ear: attitude	PRIMA	3	1		2							2	3	1.15
11		PQ	Ear: attitude	VOLGA	3	2		1							2	3	1.15
11		PQ	Ear: attitude	MARESI	5			1		2	2				3	4	1.22
11		PQ	Ear: attitude	BRENDA	4		1		2	1					3	4	1.26
11		PQ	Ear: attitude	PHILADELPHIA	4	1		2	1						3	4	1.26
11		PQ	Ear: attitude	BRITTA	5		1		1	3					3	4	1.3
11		PQ	Ear: attitude	APEX	6		1	2	2		1				4	5	1.37
11		PQ	Ear: attitude	BABYLONE	2			1		1					2	3	1.41
11		PQ	Ear: attitude	ELISA	2			1		1					2	3	1.41
11		PQ	Ear: attitude	BRISE	4		1	1		2					3	4	1.5
11		PQ	Ear: attitude	BRAZIL	3			1		1	1				3	4	1.53
11		PQ	Ear: attitude	CHALICE	3			1	1		1				3	4	1.53
11		PQ	Ear: attitude	PETRA	3	1		1	1						3	4	1.53
11		PQ	Ear: attitude	REGINA	3	1		1	1						3	4	1.53
11		PQ	Ear: attitude	SW	3		1		1	1					3	4	1.53
11		PQ	Ear: attitude	WIKINGETT TIFFANY	3	1	1		1						3	4	1.53
11		PQ	Ear: attitude	THURINGIA	9			2	1	1	3	2			5	5	1.56
11		PQ	Ear: attitude	BARONESSE	6			1		1		4			3	5	1.67
11		PQ	Ear: attitude	PRESTIGE	5		1			2	1	1			4	6	1.67
11		PQ	Ear: attitude	BARKE	7		1		1	1	3	1			5	6	1.68
11		PQ	Ear: attitude	RENI	4		1	1	1		1				4	5	1.71
11		PQ	Ear: attitude	BRAEMAR	5		1			1	3				3	5	1.73
11		PQ	Ear: attitude	CAROLA	5	1			1	3					3	5	1.73
11		PQ	Ear: attitude	SEBASTIAN	4	1			2	1					3	5	1.73
11		PQ	Ear: attitude	ARAMIR	3			1			2				2	4	1.73
11		PQ	Ear: attitude	BOLINA	3		1			2					2	4	1.73
11		PQ	Ear: attitude	JERSEY	3		1			2					2	4	1.73
11		PQ	Ear: attitude	LOMERIT	3		1			2					2	4	1.73
11		PQ	Ear: attitude	MESSINA	3		1			2					2	4	1.73
11		PQ	Ear: attitude	OTIRA	3					2				1	2	4	1.73
11		PQ	Ear: attitude	URSA	3		1			2					2	4	1.73
11		PQ	Ear: attitude	HANKA	7		2			4		1			3	6	1.81
11		PQ	Ear: attitude	ROXANA	5	1		2	1		1				4	6	1.82
11		PQ	Ear: attitude	STEFFI	4			1		1		2			3	5	1.91
11		PQ	Ear: attitude	PEWTER	4	1				3					2	5	2
11		PQ	Ear: attitude	ANGELA	3	1		1		1					3	5	2
11		PQ	Ear: attitude	NELLY	3	1		1		1					3	5	2
11		PQ	Ear: attitude	TRAMINER	3		1		1		1				3	5	2
11		PQ	Ear: attitude	VIDEO	3	1		1		1					3	5	2
11		PQ	Ear: attitude	DANUTA	6		1	1		2		2			4	6	2.04

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
11		PQ	Ear: attitude	ALEXIS	5		1	1		1	1	1			5	6	2.07
11		PQ	Ear: attitude	CELINKA	3		1	1			1				3	5	2.08
11		PQ	Ear: attitude	HARRIOT	3		1			1	1				3	5	2.08
11		PQ	Ear: attitude	PROLOG	3		1	1			1				3	5	2.08
11		PQ	Ear: attitude	PRISMA	4		1	1	1			1			4	6	2.16
11		PQ	Ear: attitude	ASPEN	4	1				2	1				3	6	2.22
11		PQ	Ear: attitude	HANNA	4	1		1		1	1				4	6	2.22
11		PQ	Ear: attitude	CLASS	3		1				2				2	5	2.31
11		PQ	Ear: attitude	VORTEX	3		1				2				2	5	2.31
11		PQ	Ear: attitude	ANGORA	3		1		1			1			3	6	2.52
11		PQ	Ear: attitude	CAMERA	3		1			1		1			3	6	2.52
11		PQ	Ear: attitude	CATANIA	3		1		1			1			3	6	2.52
11		PQ	Ear: attitude	DITTA	3		1		1			1			3	6	2.52
11		PQ	Ear: attitude	VENUS	3	1			1		1				3	6	2.52
11		PQ	Ear: attitude	CHARIOT	4	1		1		1		1			4	7	2.58
11		PQ	Ear: attitude	ASTRID	3		1				1	1			3	6	2.65
11		PQ	Ear: attitude	JOLANTE	3	1				1	1				3	6	2.65
11		PQ	Ear: attitude	VANESSA	3	1			1					1	3	8	3.51
12	*	QN	Plant: length (stem, ear and awns)	ADONIS	3				3						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	ASTORIA	3				3						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	BRAZIL	3			3							1	1	0
12	*	QN	Plant: length (stem, ear and awns)	CELLAR	3				3						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	ALEXIS	2					2					1	1	0
12	*	QN	Plant: length (stem, ear and awns)	BOLINA	2				2						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	HARRIOT	2					2					1	1	0
12	*	QN	Plant: length (stem, ear and awns)	HENDRIX	2				2						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	OTIRA	2				2						1	1	0
12	*	QN	Plant: length (stem, ear and awns)	OTIS	2					2					1	1	0
12	*	QN	Plant: length (stem, ear and awns)	SW WIKINGETT	2					2					1	1	0
12	*	QN	Plant: length (stem, ear and awns)	URSA	2					2					1	1	0
12	*	QN	Plant: length (stem, ear and awns)	CHARIOT	4				1	3					2	2	0.5
12	*	QN	Plant: length (stem, ear and awns)	HANNA	4					3	1				2	2	0.5
12	*	QN	Plant: length (stem, ear and awns)	LANDORA	4				1	3					2	2	0.5
12	*	QN	Plant: length (stem, ear and awns)	ROXANA	4				3	1					2	2	0.5
12	*	QN	Plant: length (stem, ear and awns)	BARONESSE	6					2	4				2	2	0.52
12	*	QN	Plant: length (stem, ear and awns)	VISKOSA	5			2	3						2	2	0.52
12	*	QN	Plant: length (stem, ear and awns)	PRESTIGE	4				2	2					2	2	0.55
12	*	QN	Plant: length (stem, ear and awns)	ANGELA	3				1	2					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	ASTRID	3			1	2						2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	BABYLONE	3					2	1				2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	BONAIRE	3					2	1				2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	BRISE	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	CAMERA	3			1	2						2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	CHALICE	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	DANOR	3			1	2						2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	EUNOVA	3					1	2				2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	FELICITAS	3			1	2						2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	HENNI	3			2	1						2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	JOLANTE	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	KRONA	3					2	1				2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	MADONNA	3				1	2					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	OHARA	3					1	2				2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	PHILADELPHIA	3				1	2					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	PRIMA	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	REGINA	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	TIFFANY	3				2	1					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	VANESSA	3				1	2					2	2	0.58
12	*	QN	Plant: length (stem, ear and awns)	SCARLETT	6			1	4	1					3	3	0.63
12	*	QN	Plant: length (stem, ear and awns)	BARKE	5			1	3	1					3	3	0.71
12	*	QN	Plant: length (stem, ear and awns)	CAROLA	5					1	3	1			3	3	0.71
12	*	QN	Plant: length (stem, ear and awns)	JERSEY	2				1	1					2	2	0.71
12	*	QN	Plant: length (stem, ear and awns)	MADEIRA	2					1	1				2	2	0.71

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
12	*	QN	Plant: length (stem, ear and awns)	TOLAR	2					1	1				2	2	0.71
12	*	QN	Plant: length (stem, ear and awns)	VIDEO	2			1	1						2	2	0.71
12	*	QN	Plant: length (stem, ear and awns)	ANNABELL	8			2	4	2					3	3	0.76
12	*	QN	Plant: length (stem, ear and awns)	HANKA	7					5	1	1			3	3	0.79
12	*	QN	Plant: length (stem, ear and awns)	ORTHEGA	4			1	2	1					3	3	0.82
12	*	QN	Plant: length (stem, ear and awns)	EXTRACT	5			1	1	3					3	3	0.89
12	*	QN	Plant: length (stem, ear and awns)	PASADENA	7			1	5		1				3	4	0.9
12	*	QN	Plant: length (stem, ear and awns)	BRENDA	4					2	1	1			3	3	0.96
12	*	QN	Plant: length (stem, ear and awns)	SALOON	5			2	1	2					3	3	0.98
12	*	QN	Plant: length (stem, ear and awns)	THURINGIA	7					2	4		1		3	4	1
12	*	QN	Plant: length (stem, ear and awns)	ASPEN	4				3		1				2	3	1
12	*	QN	Plant: length (stem, ear and awns)	HELLANA	3					1	1	1			3	3	1
12	*	QN	Plant: length (stem, ear and awns)	LOMERIT	3					1	1	1			3	3	1
12	*	QN	Plant: length (stem, ear and awns)	MAGDA	3				1	1	1				3	3	1
12	*	QN	Plant: length (stem, ear and awns)	NELLY	3					1	1	1			3	3	1
12	*	QN	Plant: length (stem, ear and awns)	OPTIC	3				1	1	1				3	3	1
12	*	QN	Plant: length (stem, ear and awns)	PENELOPE	3				1	1	1				3	3	1
12	*	QN	Plant: length (stem, ear and awns)	RIVIERA	3				1	1	1				3	3	1
12	*	QN	Plant: length (stem, ear and awns)	SEBASTIAN	3		1	1	1						3	3	1
12	*	QN	Plant: length (stem, ear and awns)	APEX	4				2		2				2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	ANGORA	3			2		1					2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	CEYLON	3		1		2						2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	ELISA	3					1		2			2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	LANDI	3			1		2					2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	PETRA	3			1		2					2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	PROLOG	3		1		2						2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	VENUS	3					2		1			2	3	1.15
12	*	QN	Plant: length (stem, ear and awns)	BRITTA	5					2	2		1		3	4	1.22
12	*	QN	Plant: length (stem, ear and awns)	RENI	4				1	2		1			3	4	1.26
12	*	QN	Plant: length (stem, ear and awns)	STEFFI	4				1	1	1	1			4	4	1.29
12	*	QN	Plant: length (stem, ear and awns)	BRAEMAR	5			3	1		1				3	4	1.3
12	*	QN	Plant: length (stem, ear and awns)	MARESI	5			2	1	1	1				4	4	1.3
12	*	QN	Plant: length (stem, ear and awns)	PEWTER	4			2	1		1				3	4	1.41
12	*	QN	Plant: length (stem, ear and awns)	CALGARY	2			1		1					2	3	1.41
12	*	QN	Plant: length (stem, ear and awns)	CLASS	2				1		1				2	3	1.41
12	*	QN	Plant: length (stem, ear and awns)	PRISMA	2			1		1					2	3	1.41
12	*	QN	Plant: length (stem, ear and awns)	BACCARA	3			1		1	1				3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	BOGESA	3					1	1		1		3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	CELINKA	3					1	1		1		3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	CHANTAL	3				1	1		1			3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	TRAMINER	3				1		1	1			3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	TUNIKA	3			1	1		1				3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	VORTEX	3				1	1		1			3	4	1.53
12	*	QN	Plant: length (stem, ear and awns)	PONGO	4			1	2			1			3	5	1.73
12	*	QN	Plant: length (stem, ear and awns)	CATANIA	3				2			1			2	4	1.73
12	*	QN	Plant: length (stem, ear and awns)	MELTAN	5	1	1	1		2					4	5	1.79
12	*	QN	Plant: length (stem, ear and awns)	DANUTA	6			1		3	1			1	4	7	1.97
12	*	QN	Plant: length (stem, ear and awns)	MESSINA	3				1	1			1		3	5	2.08
12	*	QN	Plant: length (stem, ear and awns)	DITTA	2				1			1			2	4	2.12
12	*	QN	Plant: length (stem, ear and awns)	MAUD	2		1			1					2	4	2.12
12	*	QN	Plant: length (stem, ear and awns)	DERKADO	3		1		1			1			3	6	2.52
12	*	QN	Plant: length (stem, ear and awns)	ARAMIR	1							1			1	1	
12	*	QN	Plant: length (stem, ear and awns)	GOLF	1					1					1	1	
12	*	QN	Plant: length (stem, ear and awns)	VOLGA	1				1						1	1	
13	*-g	QL	Ear: number of rows	ANNABELL	9	9									1	1	0
13	*-g	QL	Ear: number of rows	THURINGIA	9	9									1	1	0
13	*-g	QL	Ear: number of rows	BARKE	7	7									1	1	0
13	*-g	QL	Ear: number of rows	BARONESSE	7	7									1	1	0
13	*-g	QL	Ear: number of rows	HANKA	7	7									1	1	0
13	*-g	QL	Ear: number of rows	PASADENA	7	7									1	1	0
13	*-g	QL	Ear: number of rows	SCARLETT	7	7									1	1	0
13	*-g	QL	Ear: number of rows	APEX	6	6									1	1	0
13	*-g	QL	Ear: number of rows	DANUTA	6	6									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
13	*-g	QL	Ear: number of rows	EXTRACT	6	6									1	1	0
13	*-g	QL	Ear: number of rows	MARESI	6	6									1	1	0
13	*-g	QL	Ear: number of rows	MELTAN	6	6									1	1	0
13	*-g	QL	Ear: number of rows	ORTHEGA	6	6									1	1	0
13	*-g	QL	Ear: number of rows	SALOON	6	6									1	1	0
13	*-g	QL	Ear: number of rows	ALEXIS	5	5									1	1	0
13	*-g	QL	Ear: number of rows	BRAEMAR	5	5									1	1	0
13	*-g	QL	Ear: number of rows	BRITTA	5	5									1	1	0
13	*-g	QL	Ear: number of rows	CAROLA	5			5							1	1	0
13	*-g	QL	Ear: number of rows	MADONNA	5	5									1	1	0
13	*-g	QL	Ear: number of rows	PRESTIGE	5	5									1	1	0
13	*-g	QL	Ear: number of rows	ROXANA	5	5									1	1	0
13	*-g	QL	Ear: number of rows	STEFFI	5	5									1	1	0
13	*-g	QL	Ear: number of rows	VISKOSA	5	5									1	1	0
13	*-g	QL	Ear: number of rows	ASPEN	4	4									1	1	0
13	*-g	QL	Ear: number of rows	BRENDA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	BRISE	4	4									1	1	0
13	*-g	QL	Ear: number of rows	CHARIOT	4	4									1	1	0
13	*-g	QL	Ear: number of rows	EUNOVA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	HANNA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	KRONA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	LANDORA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	OHARA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	OPTIC	4	4									1	1	0
13	*-g	QL	Ear: number of rows	PENELOPE	4	4									1	1	0
13	*-g	QL	Ear: number of rows	PEWTER	4	4									1	1	0
13	*-g	QL	Ear: number of rows	PHILADELPHIA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	PONGO	4	4									1	1	0
13	*-g	QL	Ear: number of rows	PRISMA	4	4									1	1	0
13	*-g	QL	Ear: number of rows	RENI	4	4									1	1	0
13	*-g	QL	Ear: number of rows	SEBASTIAN	4	4									1	1	0
13	*-g	QL	Ear: number of rows	ADONIS	3	3									1	1	0
13	*-g	QL	Ear: number of rows	ANGELA	3			3							1	1	0
13	*-g	QL	Ear: number of rows	ANGORA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	ARAMIR	3	3									1	1	0
13	*-g	QL	Ear: number of rows	ASTORIA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	ASTRID	3	3									1	1	0
13	*-g	QL	Ear: number of rows	BABYLONE	3	3									1	1	0
13	*-g	QL	Ear: number of rows	BACCARA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	BOGESA	3			3							1	1	0
13	*-g	QL	Ear: number of rows	BOLINA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	BONAIRE	3	3									1	1	0
13	*-g	QL	Ear: number of rows	BRAZIL	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CALGARY	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CAMERA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CATANIA	3			3							1	1	0
13	*-g	QL	Ear: number of rows	CELINKA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CELLAR	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CEYLON	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CHALICE	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CHANTAL	3	3									1	1	0
13	*-g	QL	Ear: number of rows	CLASS	3	3									1	1	0
13	*-g	QL	Ear: number of rows	DANOR	3	3									1	1	0
13	*-g	QL	Ear: number of rows	DERKADO	3	3									1	1	0
13	*-g	QL	Ear: number of rows	DITTA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	ELISA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	FELICITAS	3	3									1	1	0
13	*-g	QL	Ear: number of rows	GOLF	3	3									1	1	0
13	*-g	QL	Ear: number of rows	HARRIOT	3	3									1	1	0
13	*-g	QL	Ear: number of rows	HELLANA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	HENDRIX	3	3									1	1	0
13	*-g	QL	Ear: number of rows	HENNI	3	3									1	1	0
13	*-g	QL	Ear: number of rows	JERSEY	3	3									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
13	*-g	QL	Ear: number of rows	JOLANTE	3	3									1	1	0
13	*-g	QL	Ear: number of rows	LANDI	3		3								1	1	0
13	*-g	QL	Ear: number of rows	LOMERIT	3		3								1	1	0
13	*-g	QL	Ear: number of rows	MADEIRA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	MAGDA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	MESSINA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	NELLY	3		3								1	1	0
13	*-g	QL	Ear: number of rows	OTIRA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	OTIS	3	3									1	1	0
13	*-g	QL	Ear: number of rows	PETRA	3		3								1	1	0
13	*-g	QL	Ear: number of rows	PRIMA	3		3								1	1	0
13	*-g	QL	Ear: number of rows	PROLOG	3	3									1	1	0
13	*-g	QL	Ear: number of rows	REGINA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	RIVIERA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	SW	3	3									1	1	0
13	*-g	QL	Ear: number of rows	WIKINGETT TIFFANY	3	3									1	1	0
13	*-g	QL	Ear: number of rows	TRAMINER	3		3								1	1	0
13	*-g	QL	Ear: number of rows	TUNIKA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	URSA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	VANESSA	3	3									1	1	0
13	*-g	QL	Ear: number of rows	VENUS	3		3								1	1	0
13	*-g	QL	Ear: number of rows	VIDEO	3	3									1	1	0
13	*-g	QL	Ear: number of rows	VORTEX	3	3									1	1	0
13	*-g	QL	Ear: number of rows	MAUD	2	2									1	1	0
13	*-g	QL	Ear: number of rows	TOLAR	2	2									1	1	0
13	*-g	QL	Ear: number of rows	VOLGA	2	2									1	1	0
14		PQ	Ear: shape	ALEXIS	4					4					1	1	0
14		PQ	Ear: shape	APEX	4					4					1	1	0
14		PQ	Ear: shape	BARONESSE	4					4					1	1	0
14		PQ	Ear: shape	EUNOVA	4					4					1	1	0
14		PQ	Ear: shape	OPTIC	4					4					1	1	0
14		PQ	Ear: shape	ANGELA	3					3					1	1	0
14		PQ	Ear: shape	ARAMIR	3					3					1	1	0
14		PQ	Ear: shape	BOGESA	3					3					1	1	0
14		PQ	Ear: shape	BOLINA	3					3					1	1	0
14		PQ	Ear: shape	BRENDA	3					3					1	1	0
14		PQ	Ear: shape	CELINKA	3					3					1	1	0
14		PQ	Ear: shape	CHANTAL	3					3					1	1	0
14		PQ	Ear: shape	DANOR	3					3					1	1	0
14		PQ	Ear: shape	GOLF	3					3					1	1	0
14		PQ	Ear: shape	HARRIOT	3					3					1	1	0
14		PQ	Ear: shape	JERSEY	3					3					1	1	0
14		PQ	Ear: shape	MADEIRA	3					3					1	1	0
14		PQ	Ear: shape	MARESI	3					3					1	1	0
14		PQ	Ear: shape	SW	3					3					1	1	0
14		PQ	Ear: shape	WIKINGETT VANESSA	3					3					1	1	0
14		PQ	Ear: shape	VIDEO	3					3					1	1	0
14		PQ	Ear: shape	DERKADO	2					2					1	1	0
14		PQ	Ear: shape	DITTA	2					2					1	1	0
14		PQ	Ear: shape	HELLANA	2					2					1	1	0
14		PQ	Ear: shape	LANDI	2					2					1	1	0
14		PQ	Ear: shape	MAGDA	2					2					1	1	0
14		PQ	Ear: shape	PETRA	2					2					1	1	0
14		PQ	Ear: shape	REGINA	2					2					1	1	0
14		PQ	Ear: shape	STEFFI	2					2					1	1	0
14		PQ	Ear: shape	TIFFANY	2					2					1	1	0
14		PQ	Ear: shape	TOLAR	2					2					1	1	0
14		PQ	Ear: shape	VENUS	2					2					1	1	0
14		PQ	Ear: shape	DANUTA	5				1	4					2	2	0.45
14		PQ	Ear: shape	MADONNA	5				1	4					2	2	0.45
14		PQ	Ear: shape	ORTHEGA	4				1	3					2	2	0.5
14		PQ	Ear: shape	CAROLA	5				2	3					2	2	0.55

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
14		PQ	Ear: shape	BRAZIL	3				1	2					2	2	0.58
14		PQ	Ear: shape	CALGARY	3			2	1						2	2	0.58
14		PQ	Ear: shape	CAMERA	3				1	2					2	2	0.58
14		PQ	Ear: shape	HENDRIX	3				2	1					2	2	0.58
14		PQ	Ear: shape	LOMERIT	3				1	2					2	2	0.58
14		PQ	Ear: shape	NELLY	3					2	1				2	2	0.58
14		PQ	Ear: shape	OTIRA	3				1	2					2	2	0.58
14		PQ	Ear: shape	PHILADELPHIA	3				1	2					2	2	0.58
14		PQ	Ear: shape	TRAMINER	3				1	2					2	2	0.58
14		PQ	Ear: shape	URSA	3				1	2					2	2	0.58
14		PQ	Ear: shape	ANNABELL	8			1		7					2	3	0.71
14		PQ	Ear: shape	ASTORIA	2				1	1					2	2	0.71
14		PQ	Ear: shape	VISKOSA	5			1	2	2					3	3	0.75
14		PQ	Ear: shape	HANKA	7			1	3	3					3	3	0.76
14		PQ	Ear: shape	PASADENA	6			1	2	3					3	3	0.82
14		PQ	Ear: shape	THURINGIA	6			2	2	2					3	3	0.89
14		PQ	Ear: shape	BARKE	5			1		4					2	3	0.89
14		PQ	Ear: shape	BRITTA	5			1	1	3					3	3	0.89
14		PQ	Ear: shape	ROXANA	5			1		4					2	3	0.89
14		PQ	Ear: shape	PONGO	4			1	1	2					3	3	0.96
14		PQ	Ear: shape	RENI	4			1	1	2					3	3	0.96
14		PQ	Ear: shape	PRESTIGE	5			2	1	2					3	3	0.98
14		PQ	Ear: shape	BRISE	4			1		3					2	3	1
14		PQ	Ear: shape	LANDORA	4			1		3					2	3	1
14		PQ	Ear: shape	OHARA	4			1		3					2	3	1
14		PQ	Ear: shape	PRISMA	4			3		1					2	3	1
14		PQ	Ear: shape	SEBASTIAN	4			1		3					2	3	1
14		PQ	Ear: shape	BACCARA	3			1	1	1					3	3	1
14		PQ	Ear: shape	SALOON	6			2		4					2	3	1.07
14		PQ	Ear: shape	EXTRACT	6			3		3					2	3	1.1
14		PQ	Ear: shape	BRAEMAR	5			3		2					2	3	1.1
14		PQ	Ear: shape	ASPEN	4			2		2					2	3	1.15
14		PQ	Ear: shape	PEWTER	4			2		2					2	3	1.15
14		PQ	Ear: shape	ADONIS	3			1		2					2	3	1.15
14		PQ	Ear: shape	CELLAR	3			2		1					2	3	1.15
14		PQ	Ear: shape	CEYLON	3			1		2					2	3	1.15
14		PQ	Ear: shape	CHALICE	3					2		1			2	3	1.15
14		PQ	Ear: shape	CLASS	3			1		2					2	3	1.15
14		PQ	Ear: shape	FELICITAS	3			1		2					2	3	1.15
14		PQ	Ear: shape	MESSINA	3			1		2					2	3	1.15
14		PQ	Ear: shape	PENELOPE	3			1		2					2	3	1.15
14		PQ	Ear: shape	PROLOG	3			1		2					2	3	1.15
14		PQ	Ear: shape	TUNIKA	3			1		2					2	3	1.15
14		PQ	Ear: shape	VORTEX	3			1		2					2	3	1.15
14		PQ	Ear: shape	ANGORA	2			1		1					2	3	1.41
14		PQ	Ear: shape	HANNA	2			1		1					2	3	1.41
14		PQ	Ear: shape	VOLGA	2			1							2	3	1.41
14		PQ	Ear: shape	MELTAN	4					3					2	4	1.5
14		PQ	Ear: shape	SCARLETT	4			1		2					3	4	1.5
14		PQ	Ear: shape	KRONA	3					2					2	4	1.73
14		PQ	Ear: shape	RIVIERA	3					2					2	4	1.73
14		PQ	Ear: shape	BONAIRE	2					1					2	4	2.12
14		PQ	Ear: shape	CHARIOT	2					1					2	4	2.12
14		PQ	Ear: shape	MAUD	2					1					2	4	2.12
14		PQ	Ear: shape	ASTRID	1					1					1	1	
14		PQ	Ear: shape	BABYLONE	1					1					1	1	
14		PQ	Ear: shape	CATANIA	1					1					1	1	
14		PQ	Ear: shape	ELISA	1					1					1	1	
14		PQ	Ear: shape	HENNI	1					1					1	1	
14		PQ	Ear: shape	JOLANTE	1					1					1	1	
14		PQ	Ear: shape	OTIS	1					1					1	1	
14		PQ	Ear: shape	PRIMA	1					1					1	1	
15	*	PQ	Ear: density	OHARA	4					4					1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
15	*	PQ	Ear: density	SEBASTIAN	4					4					1	1	0
15	*	PQ	Ear: density	CELINKA	3						3				1	1	0
15	*	PQ	Ear: density	CELLAR	3						3				1	1	0
15	*	PQ	Ear: density	CEYLON	3					3					1	1	0
15	*	PQ	Ear: density	CHARIOT	3			3							1	1	0
15	*	PQ	Ear: density	DITTA	3				3						1	1	0
15	*	PQ	Ear: density	HENDRIX	3				3						1	1	0
15	*	PQ	Ear: density	JERSEY	3					3					1	1	0
15	*	PQ	Ear: density	JOLANTE	3							3			1	1	0
15	*	PQ	Ear: density	LOMERIT	3			3							1	1	0
15	*	PQ	Ear: density	TUNIKA	3					3					1	1	0
15	*	PQ	Ear: density	OTIS	2					2					1	1	0
15	*	PQ	Ear: density	TOLAR	2					2					1	1	0
15	*	PQ	Ear: density	DANUTA	6				5	1					2	2	0.41
15	*	PQ	Ear: density	MARESI	6				1	5					2	2	0.41
15	*	PQ	Ear: density	ALEXIS	5					4	1				2	2	0.45
15	*	PQ	Ear: density	BRAEMAR	5			1	4						2	2	0.45
15	*	PQ	Ear: density	SALOON	6			2	4						2	2	0.49
15	*	PQ	Ear: density	BRISE	4			3	1						2	2	0.5
15	*	PQ	Ear: density	EUNOVA	4				1	3					2	2	0.5
15	*	PQ	Ear: density	HANNA	4					1	3				2	2	0.5
15	*	PQ	Ear: density	PENELOPE	4					3	1				2	2	0.5
15	*	PQ	Ear: density	PEWTER	4					3	1				2	2	0.5
15	*	PQ	Ear: density	PONGO	4				1	3					2	2	0.5
15	*	PQ	Ear: density	EXTRACT	6				4	2					2	2	0.52
15	*	PQ	Ear: density	PASADENA	7					4	3				2	2	0.53
15	*	PQ	Ear: density	MADONNA	5				2	3					2	2	0.55
15	*	PQ	Ear: density	ASPEN	4			2	2						2	2	0.58
15	*	PQ	Ear: density	ADONIS	3			2	1						2	2	0.58
15	*	PQ	Ear: density	ANGELA	3			1	2						2	2	0.58
15	*	PQ	Ear: density	ANGORA	3					2	1				2	2	0.58
15	*	PQ	Ear: density	ASTORIA	3			1	2						2	2	0.58
15	*	PQ	Ear: density	ASTRID	3					2	1				2	2	0.58
15	*	PQ	Ear: density	BABYLONE	3					2	1				2	2	0.58
15	*	PQ	Ear: density	BOGESA	3			2	1						2	2	0.58
15	*	PQ	Ear: density	BOLINA	3				1	2					2	2	0.58
15	*	PQ	Ear: density	BRAZIL	3				1	2					2	2	0.58
15	*	PQ	Ear: density	CAMERA	3					2	1				2	2	0.58
15	*	PQ	Ear: density	CATANIA	3			1	2						2	2	0.58
15	*	PQ	Ear: density	DERKADO	3				1	2					2	2	0.58
15	*	PQ	Ear: density	FELICITAS	3				1	2					2	2	0.58
15	*	PQ	Ear: density	HARRIOT	3				2	1					2	2	0.58
15	*	PQ	Ear: density	HELLANA	3				1	2					2	2	0.58
15	*	PQ	Ear: density	HENNI	3					1	2				2	2	0.58
15	*	PQ	Ear: density	LANDI	3			1	2						2	2	0.58
15	*	PQ	Ear: density	MADEIRA	3			2	1						2	2	0.58
15	*	PQ	Ear: density	MAUD	3				1	2					2	2	0.58
15	*	PQ	Ear: density	MESSINA	3				1	2					2	2	0.58
15	*	PQ	Ear: density	NELLY	3		1	2							2	2	0.58
15	*	PQ	Ear: density	OTIRA	3					2	1				2	2	0.58
15	*	PQ	Ear: density	PETRA	3				2	1					2	2	0.58
15	*	PQ	Ear: density	PRISMA	3						2	1			2	2	0.58
15	*	PQ	Ear: density	RIVIERA	3					1	2				2	2	0.58
15	*	PQ	Ear: density	STEFFI	3					1	2				2	2	0.58
15	*	PQ	Ear: density	SW WIKINGETT	3				1	2					2	2	0.58
15	*	PQ	Ear: density	URSA	3				1	2					2	2	0.58
15	*	PQ	Ear: density	VENUS	3				2	1					2	2	0.58
15	*	PQ	Ear: density	VIDEO	3					2	1				2	2	0.58
15	*	PQ	Ear: density	VOLGA	3						2	1			2	2	0.58
15	*	PQ	Ear: density	THURINGIA	8						3	4	1		3	3	0.71
15	*	PQ	Ear: density	MELTAN	5			1	3	1					3	3	0.71
15	*	PQ	Ear: density	ROXANA	5			1	3	1					3	3	0.71

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
15	*	PQ	Ear: density	ARAMIR	2				1	1					2	2	0.71
15	*	PQ	Ear: density	GOLF	2					1	1				2	2	0.71
15	*	PQ	Ear: density	ANNABELL	9					1	3	5			3	3	0.73
15	*	PQ	Ear: density	ORTHEGA	6					1	3	2			3	3	0.75
15	*	PQ	Ear: density	SCARLETT	8				2	4	2				3	3	0.76
15	*	PQ	Ear: density	OPTIC	4				1	2	1				3	3	0.82
15	*	PQ	Ear: density	RENI	4					1	2	1			3	3	0.82
15	*	PQ	Ear: density	CAROLA	5				4		1				2	3	0.89
15	*	PQ	Ear: density	BARKE	8						2	1	5		3	3	0.92
15	*	PQ	Ear: density	APEX	4					2	1	1			3	3	0.96
15	*	PQ	Ear: density	BRENDA	4			1	1	2					3	3	0.96
15	*	PQ	Ear: density	LANDORA	4					2	1	1			3	3	0.96
15	*	PQ	Ear: density	PHILADELPHIA	4				2	1	1				3	3	0.96
15	*	PQ	Ear: density	VISKOSA	5				1	3		1			3	4	0.98
15	*	PQ	Ear: density	BRITTA	5				2	1	2				3	3	1
15	*	PQ	Ear: density	KRONA	4			1		3					2	3	1
15	*	PQ	Ear: density	CHANTAL	3				1	1	1				3	3	1
15	*	PQ	Ear: density	ELISA	3				1	1	1				3	3	1
15	*	PQ	Ear: density	MAGDA	3					1	1	1			3	3	1
15	*	PQ	Ear: density	PROLOG	3				1	1	1				3	3	1
15	*	PQ	Ear: density	VORTEX	3				1	1	1				3	3	1
15	*	PQ	Ear: density	HANKA	7			1	1	3	2				4	4	1.07
15	*	PQ	Ear: density	BARONESSE	5				1	1	2	1			4	4	1.14
15	*	PQ	Ear: density	BACCARA	3					2		1			2	3	1.15
15	*	PQ	Ear: density	BONAIRE	3				1		2				2	3	1.15
15	*	PQ	Ear: density	CHALICE	3					2		1			2	3	1.15
15	*	PQ	Ear: density	CLASS	3				1		2				2	3	1.15
15	*	PQ	Ear: density	DANOR	3				1		2				2	3	1.15
15	*	PQ	Ear: density	TIFFANY	3					1		2			2	3	1.15
15	*	PQ	Ear: density	VANESSA	3				1		2				2	3	1.15
15	*	PQ	Ear: density	PRESTIGE	5	2	1	1	1	1					4	4	1.26
15	*	PQ	Ear: density	CALGARY	3						1		1	1	3	4	1.53
15	*	PQ	Ear: density	REGINA	3					1		1	1		3	4	1.53
15	*	PQ	Ear: density	PRIMA	3				2			1			2	4	1.73
15	*	PQ	Ear: density	TRAMINER	3				2			1			2	4	1.73
16		QN	Ear: length (excluding awns)	BRAEMAR	5							5			1	1	0
16		QN	Ear: length (excluding awns)	MARESI	4						4				1	1	0
16		QN	Ear: length (excluding awns)	PEWTER	4						4				1	1	0
16		QN	Ear: length (excluding awns)	BOLINA	3						3				1	1	0
16		QN	Ear: length (excluding awns)	CAMERA	3							3			1	1	0
16		QN	Ear: length (excluding awns)	TUNIKA	3					3					1	1	0
16		QN	Ear: length (excluding awns)	URSA	3						3				1	1	0
16		QN	Ear: length (excluding awns)	VIDEO	3						3				1	1	0
16		QN	Ear: length (excluding awns)	ARAMIR	2							2			1	1	0
16		QN	Ear: length (excluding awns)	CHARIOT	2							2			1	1	0
16		QN	Ear: length (excluding awns)	DITTA	2						2				1	1	0
16		QN	Ear: length (excluding awns)	ELISA	2							2			1	1	0
16		QN	Ear: length (excluding awns)	HELLANA	2						2				1	1	0
16		QN	Ear: length (excluding awns)	KRONA	2							2			1	1	0
16		QN	Ear: length (excluding awns)	LANDI	2						2				1	1	0
16		QN	Ear: length (excluding awns)	RIVIERA	2							2			1	1	0
16		QN	Ear: length (excluding awns)	TIFFANY	2							2			1	1	0
16		QN	Ear: length (excluding awns)	VOLGA	2						2				1	1	0
16		QN	Ear: length (excluding awns)	SALOON	6							5	1		2	2	0.38
16		QN	Ear: length (excluding awns)	PRESTIGE	5								4	1	2	2	0.41
16		QN	Ear: length (excluding awns)	BRITTA	5						1	4			2	2	0.45
16		QN	Ear: length (excluding awns)	ALEXIS	4						3	1			2	2	0.5
16		QN	Ear: length (excluding awns)	ASPEN	4						3	1			2	2	0.5
16		QN	Ear: length (excluding awns)	BRISE	4							3	1		2	2	0.5
16		QN	Ear: length (excluding awns)	SEBASTIAN	4						3	1			2	2	0.5
16		QN	Ear: length (excluding awns)	PASADENA	6					2	4				2	2	0.52
16		QN	Ear: length (excluding awns)	VISKOSA	5						2	3			2	2	0.52
16		QN	Ear: length (excluding awns)	ROXANA	5							3	2		2	2	0.55

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
16		QN	Ear: length (excluding awns)	EUNOVA	4						2	2			2	2	0.58
16		QN	Ear: length (excluding awns)	OPTIC	4					2	2				2	2	0.58
16		QN	Ear: length (excluding awns)	ANGELA	3				2	1					2	2	0.58
16		QN	Ear: length (excluding awns)	BACCARA	3				1	2					2	2	0.58
16		QN	Ear: length (excluding awns)	CALGARY	3			1	2						2	2	0.58
16		QN	Ear: length (excluding awns)	CELLAR	3					1	2				2	2	0.58
16		QN	Ear: length (excluding awns)	CEYLON	3					2	1				2	2	0.58
16		QN	Ear: length (excluding awns)	CHALICE	3					2	1				2	2	0.58
16		QN	Ear: length (excluding awns)	CHANTAL	3					1	2				2	2	0.58
16		QN	Ear: length (excluding awns)	FELICITAS	3					2	1				2	2	0.58
16		QN	Ear: length (excluding awns)	HARRIOT	3					1	2				2	2	0.58
16		QN	Ear: length (excluding awns)	HENDRIX	3					1	2				2	2	0.58
16		QN	Ear: length (excluding awns)	PHILADELPHIA	3					1	2				2	2	0.58
16		QN	Ear: length (excluding awns)	VORTEX	3						1	2			2	2	0.58
16		QN	Ear: length (excluding awns)	CAROLA	5				1	3	1				3	3	0.71
16		QN	Ear: length (excluding awns)	DANUTA	5					1	3	1			3	3	0.71
16		QN	Ear: length (excluding awns)	ANGORA	2						1	1			2	2	0.71
16		QN	Ear: length (excluding awns)	ASTORIA	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	DERKADO	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	GOLF	2						1	1			2	2	0.71
16		QN	Ear: length (excluding awns)	HANNA	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	MAGDA	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	REGINA	2						1	1			2	2	0.71
16		QN	Ear: length (excluding awns)	TOLAR	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	VENUS	2					1	1				2	2	0.71
16		QN	Ear: length (excluding awns)	ANNABELL	8			1	2	5					3	3	0.76
16		QN	Ear: length (excluding awns)	HANKA	7					6		1			2	3	0.76
16		QN	Ear: length (excluding awns)	EXTRACT	6				1	2	3				3	3	0.82
16		QN	Ear: length (excluding awns)	LANDORA	4					1	2	1			3	3	0.82
16		QN	Ear: length (excluding awns)	PENELOPE	4					1	2	1			3	3	0.82
16		QN	Ear: length (excluding awns)	PONGO	4				1	2	1				3	3	0.82
16		QN	Ear: length (excluding awns)	MADONNA	5					3	1	1			3	3	0.89
16		QN	Ear: length (excluding awns)	THURINGIA	5			3	1	1					3	3	0.89
16		QN	Ear: length (excluding awns)	BARKE	8				2	5		1			3	4	0.93
16		QN	Ear: length (excluding awns)	RENI	4							3		1	2	3	1
16		QN	Ear: length (excluding awns)	ADONIS	3						1	1	1		3	3	1
16		QN	Ear: length (excluding awns)	APEX	3				1	1	1				3	3	1
16		QN	Ear: length (excluding awns)	BARONESSE	3				1	1	1				3	3	1
16		QN	Ear: length (excluding awns)	BRENDA	3					1	1	1			3	3	1
16		QN	Ear: length (excluding awns)	CELINKA	3			1	1	1					3	3	1
16		QN	Ear: length (excluding awns)	DANOR	3					1	1	1			3	3	1
16		QN	Ear: length (excluding awns)	MESSINA	3					1	1	1			3	3	1
16		QN	Ear: length (excluding awns)	PRISMA	3			1	1	1					3	3	1
16		QN	Ear: length (excluding awns)	TRAMINER	3				1	1	1				3	3	1
16		QN	Ear: length (excluding awns)	VANESSA	3						1	1	1		3	3	1
16		QN	Ear: length (excluding awns)	ORTHEGA	6			1	3	1	1				4	4	1.03
16		QN	Ear: length (excluding awns)	SCARLETT	4					2		2			2	3	1.15
16		QN	Ear: length (excluding awns)	CLASS	3					1		2			2	3	1.15
16		QN	Ear: length (excluding awns)	JERSEY	3				2		1				2	3	1.15
16		QN	Ear: length (excluding awns)	MADEIRA	3					2		1			2	3	1.15
16		QN	Ear: length (excluding awns)	NELLY	3					2		1			2	3	1.15
16		QN	Ear: length (excluding awns)	PROLOG	3				2		1				2	3	1.15
16		QN	Ear: length (excluding awns)	SW WIKINGETT	3					2		1			2	3	1.15
16		QN	Ear: length (excluding awns)	OHARA	4						2	1		1	3	4	1.41
16		QN	Ear: length (excluding awns)	BABYLONE	2					1		1			2	3	1.41
16		QN	Ear: length (excluding awns)	BONAIRE	2					1		1			2	3	1.41
16		QN	Ear: length (excluding awns)	MAUD	2					1		1			2	3	1.41
16		QN	Ear: length (excluding awns)	BOGESA	3			1		1	1				3	4	1.53
16		QN	Ear: length (excluding awns)	BRAZIL	3				1	1		1			3	4	1.53
16		QN	Ear: length (excluding awns)	OTIRA	3				2			1			2	4	1.73
16		QN	Ear: length (excluding awns)	LOMERIT	3			1		1		1			3	5	2
16		QN	Ear: length (excluding awns)	PETRA	2	1			1						2	4	2.12

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
16		QN	Ear: length (excluding awns)	ASTRID	1						1				1	1	
16		QN	Ear: length (excluding awns)	CATANIA	1					1					1	1	
16		QN	Ear: length (excluding awns)	HENNI	1						1				1	1	
16		QN	Ear: length (excluding awns)	JOLANTE	1						1				1	1	
16		QN	Ear: length (excluding awns)	MELTAN	1					1					1	1	
16		QN	Ear: length (excluding awns)	OTIS	1						1				1	1	
16		QN	Ear: length (excluding awns)	PRIMA	1			1							1	1	
16		QN	Ear: length (excluding awns)	STEFFI	1					1					1	1	
17	*	QN	Awn: length (compared to ear)	ANGORA	2							2			1	1	0
17	*	QN	Awn: length (compared to ear)	CATANIA	2							2			1	1	0
17	*	QN	Awn: length (compared to ear)	TOLAR	2							2			1	1	0
17	*	QN	Awn: length (compared to ear)	VENUS	2							2			1	1	0
17	*	QN	Awn: length (compared to ear)	PEWTER	4						1	3			2	2	0.5
17	*	QN	Awn: length (compared to ear)	ORTHEGA	6						4	2			2	2	0.52
17	*	QN	Awn: length (compared to ear)	PENELOPE	4					2	2				2	2	0.58
17	*	QN	Awn: length (compared to ear)	PRISMA	4						2	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	BACCARA	3						1	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	BOGESA	3							2	1		2	2	0.58
17	*	QN	Awn: length (compared to ear)	CALGARY	3						1	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	CELINKA	3						2	1			2	2	0.58
17	*	QN	Awn: length (compared to ear)	FELICITAS	3						2	1			2	2	0.58
17	*	QN	Awn: length (compared to ear)	GOLF	3						2	1			2	2	0.58
17	*	QN	Awn: length (compared to ear)	MESSINA	3						1	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	TRAMINER	3					2	1				2	2	0.58
17	*	QN	Awn: length (compared to ear)	TUNIKA	3						1	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	VIDEO	3						1	2			2	2	0.58
17	*	QN	Awn: length (compared to ear)	MAUD	2			1	1						2	2	0.71
17	*	QN	Awn: length (compared to ear)	PRESTIGE	5			2	2	1					3	3	0.75
17	*	QN	Awn: length (compared to ear)	SALOON	6					1	1	4			3	3	0.79
17	*	QN	Awn: length (compared to ear)	RENI	4				1	2	1				3	3	0.82
17	*	QN	Awn: length (compared to ear)	EXTRACT	6					1	1	4			3	3	0.84
17	*	QN	Awn: length (compared to ear)	BARONESSE	5					1	2	2			3	3	0.84
17	*	QN	Awn: length (compared to ear)	CAROLA	5					2	2	1			3	3	0.84
17	*	QN	Awn: length (compared to ear)	CHARIOT	4		1	1	2						3	3	0.96
17	*	QN	Awn: length (compared to ear)	OHARA	4			1	1	2					3	3	0.96
17	*	QN	Awn: length (compared to ear)	SEBASTIAN	4					1	1	2			3	3	0.96
17	*	QN	Awn: length (compared to ear)	LANDORA	4				3		1				2	3	1
17	*	QN	Awn: length (compared to ear)	BRAZIL	3					1	1	1			3	3	1
17	*	QN	Awn: length (compared to ear)	CHANTAL	3			1	1	1					3	3	1
17	*	QN	Awn: length (compared to ear)	DANOR	3				1	1	1				3	3	1
17	*	QN	Awn: length (compared to ear)	MADEIRA	3			1	1	1					3	3	1
17	*	QN	Awn: length (compared to ear)	RIVIERA	3			1	1	1					3	3	1
17	*	QN	Awn: length (compared to ear)	URSA	3				1	1	1				3	3	1
17	*	QN	Awn: length (compared to ear)	BARKE	7					3		4			2	3	1.07
17	*	QN	Awn: length (compared to ear)	BRITTA	5				3		2				2	3	1.1
17	*	QN	Awn: length (compared to ear)	SCARLETT	7		1	4		2					3	4	1.13
17	*	QN	Awn: length (compared to ear)	ASPEN	4					2		2			2	3	1.15
17	*	QN	Awn: length (compared to ear)	BOLINA	3					1		2			2	3	1.15
17	*	QN	Awn: length (compared to ear)	CELLAR	3					1		2			2	3	1.15
17	*	QN	Awn: length (compared to ear)	CEYLON	3				1		2				2	3	1.15
17	*	QN	Awn: length (compared to ear)	CHALICE	3			2		1					2	3	1.15
17	*	QN	Awn: length (compared to ear)	CLASS	3			2		1					2	3	1.15
17	*	QN	Awn: length (compared to ear)	HARRIOT	3				2		1				2	3	1.15
17	*	QN	Awn: length (compared to ear)	HELLANA	3			1		2					2	3	1.15
17	*	QN	Awn: length (compared to ear)	HENNI	3			2		1					2	3	1.15
17	*	QN	Awn: length (compared to ear)	JERSEY	3					2		1			2	3	1.15
17	*	QN	Awn: length (compared to ear)	MAGDA	3			1		2					2	3	1.15
17	*	QN	Awn: length (compared to ear)	OTIRA	3							2		1	2	3	1.15
17	*	QN	Awn: length (compared to ear)	VANESSA	3					1		2			2	3	1.15
17	*	QN	Awn: length (compared to ear)	BRENDA	4		1	2		1					3	4	1.26
17	*	QN	Awn: length (compared to ear)	BRISE	4				1	2		1			3	4	1.26
17	*	QN	Awn: length (compared to ear)	HANKA	7				4		2	1			3	4	1.29
17	*	QN	Awn: length (compared to ear)	EUNOVA	4			1	1	1	1				4	4	1.29

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
17	*	QN	Awn: length (compared to ear)	PONGO	4				1	1	1	1			4	4	1.29
17	*	QN	Awn: length (compared to ear)	BRAEMAR	5				1		1	3			3	4	1.3
17	*	QN	Awn: length (compared to ear)	ROXANA	5				3	1		1			3	4	1.3
17	*	QN	Awn: length (compared to ear)	STEFFI	5			3		1	1				3	4	1.41
17	*	QN	Awn: length (compared to ear)	OPTIC	4				2	1		1			3	4	1.41
17	*	QN	Awn: length (compared to ear)	ELISA	2			1		1					2	3	1.41
17	*	QN	Awn: length (compared to ear)	ANNABELL	9		1			5	1	2			4	6	1.48
17	*	QN	Awn: length (compared to ear)	MADONNA	5				2	1		2			3	4	1.52
17	*	QN	Awn: length (compared to ear)	ARAMIR	3				1	1		1			3	4	1.53
17	*	QN	Awn: length (compared to ear)	CAMERA	3			1		1	1				3	4	1.53
17	*	QN	Awn: length (compared to ear)	DITTA	3			1	1		1				3	4	1.53
17	*	QN	Awn: length (compared to ear)	LOMERIT	3					1		1	1		3	4	1.53
17	*	QN	Awn: length (compared to ear)	SW	3		1	1		1					3	4	1.53
17	*	QN	Awn: length (compared to ear)	WIKINGETT VISKOSA	5				3			2			2	4	1.55
17	*	QN	Awn: length (compared to ear)	ALEXIS	5			1	1	1	1	1			5	5	1.58
17	*	QN	Awn: length (compared to ear)	MARESI	4			1		2		1			3	5	1.63
17	*	QN	Awn: length (compared to ear)	PHILADELPHIA	4		1		1	1	1				4	5	1.71
17	*	QN	Awn: length (compared to ear)	ASTORIA	3		1			2					2	4	1.73
17	*	QN	Awn: length (compared to ear)	HENDRIX	3				2			1			2	4	1.73
17	*	QN	Awn: length (compared to ear)	NELLY	3				1			2			2	4	1.73
17	*	QN	Awn: length (compared to ear)	APEX	5			1	1		1	2			4	5	1.82
17	*	QN	Awn: length (compared to ear)	DANUTA	5		1		1	2		1			4	6	1.82
17	*	QN	Awn: length (compared to ear)	PASADENA	7		1		2		2	2			4	6	1.86
17	*	QN	Awn: length (compared to ear)	THURINGIA	9			3			1	5			3	5	1.94
17	*	QN	Awn: length (compared to ear)	ANGELA	3					1		1		1	3	5	2
17	*	QN	Awn: length (compared to ear)	PROLOG	3				1		1		1		3	5	2
17	*	QN	Awn: length (compared to ear)	VORTEX	3			1		1		1			3	5	2
17	*	QN	Awn: length (compared to ear)	MELTAN	6		1	2		1		2			4	6	2.17
17	*	QN	Awn: length (compared to ear)	ADONIS	3			2				1			2	5	2.31
17	*	QN	Awn: length (compared to ear)	DERKADO	3			1				2			2	5	2.31
17	*	QN	Awn: length (compared to ear)	REGINA	3			1				2			2	5	2.31
17	*	QN	Awn: length (compared to ear)	TIFFANY	3			1				2			2	5	2.31
17	*	QN	Awn: length (compared to ear)	KRONA	4	2		1			1				3	6	2.36
17	*	QN	Awn: length (compared to ear)	BONAIRE	3		1		1			1			3	6	2.52
17	*	QN	Awn: length (compared to ear)	HANNA	4		1	1				2			3	6	2.63
17	*	QN	Awn: length (compared to ear)	JOLANTE	3		1	1				1			3	6	2.65
17	*	QN	Awn: length (compared to ear)	ASTRID	2			1				1			2	5	2.83
17	*	QN	Awn: length (compared to ear)	OTIS	2		1				1				2	5	2.83
17	*	QN	Awn: length (compared to ear)	VOLGA	2		1				1				2	5	2.83
17	*	QN	Awn: length (compared to ear)	LANDI	3			1				1		1	3	7	3.06
17	*	QN	Awn: length (compared to ear)	PETRA	3			1				1		1	3	7	3.06
17	*	QN	Awn: length (compared to ear)	PRIMA	3			1				1		1	3	7	3.06
17	*	QN	Awn: length (compared to ear)	BABYLONE	2		1					1			2	6	3.54
18		PQ	Rachis: length of first segment	ORTHEGA	4					4					1	1	0
18		PQ	Rachis: length of first segment	PONGO	4			4							1	1	0
18		PQ	Rachis: length of first segment	BARONESSE	3				3						1	1	0
18		PQ	Rachis: length of first segment	BRENDA	3					3					1	1	0
18		PQ	Rachis: length of first segment	CALGARY	3			3							1	1	0
18		PQ	Rachis: length of first segment	CELLAR	3					3					1	1	0
18		PQ	Rachis: length of first segment	CHANTAL	3					3					1	1	0
18		PQ	Rachis: length of first segment	TUNIKA	3			3							1	1	0
18		PQ	Rachis: length of first segment	VIDEO	3			3							1	1	0
18		PQ	Rachis: length of first segment	VORTEX	3					3					1	1	0
18		PQ	Rachis: length of first segment	GOLF	2				2						1	1	0
18		PQ	Rachis: length of first segment	MAGDA	2				2						1	1	0
18		PQ	Rachis: length of first segment	PETRA	2			2							1	1	0
18		PQ	Rachis: length of first segment	REGINA	2					2					1	1	0
18		PQ	Rachis: length of first segment	TIFFANY	2					2					1	1	0
18		PQ	Rachis: length of first segment	VENUS	2			2							1	1	0
18		PQ	Rachis: length of first segment	VOLGA	2					2					1	1	0
18		PQ	Rachis: length of first segment	ANNABELL	8			7	1						2	2	0.35
18		PQ	Rachis: length of first segment	VISKOSA	5						1	4			2	2	0.41

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
18		PQ	Rachis: length of first segment	LANDORA	4				1	3					2	2	0.5
18		PQ	Rachis: length of first segment	BRAEMAR	5					2	3				2	2	0.55
18		PQ	Rachis: length of first segment	CAROLA	5			3	2						2	2	0.55
18		PQ	Rachis: length of first segment	THURINGIA	5			3	2						2	2	0.55
18		PQ	Rachis: length of first segment	OHARA	4				2	2					2	2	0.58
18		PQ	Rachis: length of first segment	OPTIC	4			2	2						2	2	0.58
18		PQ	Rachis: length of first segment	SCARLETT	4				2	2					2	2	0.58
18		PQ	Rachis: length of first segment	ADONIS	3					2	1				2	2	0.58
18		PQ	Rachis: length of first segment	APEX	3				1	2					2	2	0.58
18		PQ	Rachis: length of first segment	BACCARA	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	BRAZIL	3			1	2						2	2	0.58
18		PQ	Rachis: length of first segment	BRISE	3					2	1				2	2	0.58
18		PQ	Rachis: length of first segment	CAMERA	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	CHALICE	3				1	2					2	2	0.58
18		PQ	Rachis: length of first segment	DANOR	3				2	1					2	2	0.58
18		PQ	Rachis: length of first segment	FELICITAS	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	HARRIOT	3			1	2						2	2	0.58
18		PQ	Rachis: length of first segment	JERSEY	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	MARESI	3				2	1					2	2	0.58
18		PQ	Rachis: length of first segment	OTIRA	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	PHILADELPHIA	3			2	1						2	2	0.58
18		PQ	Rachis: length of first segment	RIVIERA	3				2	1					2	2	0.58
18		PQ	Rachis: length of first segment	URSA	3				1	2					2	2	0.58
18		PQ	Rachis: length of first segment	ANGELA	2			1	1						2	2	0.71
18		PQ	Rachis: length of first segment	ANGORA	2				1	1					2	2	0.71
18		PQ	Rachis: length of first segment	ASTORIA	2			1	1						2	2	0.71
18		PQ	Rachis: length of first segment	BONAIRE	2				1	1					2	2	0.71
18		PQ	Rachis: length of first segment	DERKADO	2						1	1			2	2	0.71
18		PQ	Rachis: length of first segment	MAUD	2				1	1					2	2	0.71
18		PQ	Rachis: length of first segment	TRAMINER	2				1	1					2	2	0.71
18		PQ	Rachis: length of first segment	SALOON	6					5		1			2	3	0.76
18		PQ	Rachis: length of first segment	HANKA	7			1	1	5					3	3	0.79
18		PQ	Rachis: length of first segment	ASPEN	4			1	2	1					3	3	0.82
18		PQ	Rachis: length of first segment	EXTRACT	6			1	1	4					3	3	0.84
18		PQ	Rachis: length of first segment	MADONNA	5			2	2	1					3	3	0.84
18		PQ	Rachis: length of first segment	BARKE	5			1		4					2	3	0.89
18		PQ	Rachis: length of first segment	BRITTA	5			1	1	3					3	3	0.89
18		PQ	Rachis: length of first segment	DANUTA	4					2	1	1			3	3	0.96
18		PQ	Rachis: length of first segment	PEWTER	4			1		3					2	3	1
18		PQ	Rachis: length of first segment	ALEXIS	3			1	1	1					3	3	1
18		PQ	Rachis: length of first segment	CEYLON	3			1	1	1					3	3	1
18		PQ	Rachis: length of first segment	NELLY	3		1	1	1						3	3	1
18		PQ	Rachis: length of first segment	VANESSA	3			1	1	1					3	3	1
18		PQ	Rachis: length of first segment	PASADENA	6			4		2					2	3	1.03
18		PQ	Rachis: length of first segment	PRESTIGE	5			1	1	2	1				4	4	1.03
18		PQ	Rachis: length of first segment	BOGESA	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	BOLINA	3			2		1					2	3	1.15
18		PQ	Rachis: length of first segment	CLASS	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	KRONA	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	LOMERIT	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	MADEIRA	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	MELTAN	3			2		1					2	3	1.15
18		PQ	Rachis: length of first segment	MESSINA	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	PENELOPE	3			2		1					2	3	1.15
18		PQ	Rachis: length of first segment	PRISMA	3	1		2							2	3	1.15
18		PQ	Rachis: length of first segment	SW WIKINGETT	3			1		2					2	3	1.15
18		PQ	Rachis: length of first segment	EUNOVA	4					1		2	1		3	4	1.26
18		PQ	Rachis: length of first segment	SEBASTIAN	4			1		2	1				3	4	1.26
18		PQ	Rachis: length of first segment	ARAMIR	2			1		1					2	3	1.41
18		PQ	Rachis: length of first segment	CHARIOT	2			1		1					2	3	1.41
18		PQ	Rachis: length of first segment	DITTA	2			1		1					2	3	1.41
18		PQ	Rachis: length of first segment	HELLANA	2		1		1						2	3	1.41

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
18		PQ	Rachis: length of first segment	TOLAR	2			1		1					2	3	1.41
18		PQ	Rachis: length of first segment	ROXANA	5			2	1		2				3	4	1.52
18		PQ	Rachis: length of first segment	CELINKA	3		1	1		1					3	4	1.53
18		PQ	Rachis: length of first segment	PROLOG	3			1		1	1				3	4	1.53
18		PQ	Rachis: length of first segment	RENI	4			1		1	1	1			4	5	1.71
18		PQ	Rachis: length of first segment	HENDRIX	3			1			2				2	4	1.73
18		PQ	Rachis: length of first segment	ASTRID	1					1					1	1	
18		PQ	Rachis: length of first segment	BABYLONE	1					1					1	1	
18		PQ	Rachis: length of first segment	CATANIA	1			1							1	1	
18		PQ	Rachis: length of first segment	ELISA	1					1					1	1	
18		PQ	Rachis: length of first segment	HANNA	1			1							1	1	
18		PQ	Rachis: length of first segment	HENNI	1			1							1	1	
18		PQ	Rachis: length of first segment	JOLANTE	1			1							1	1	
18		PQ	Rachis: length of first segment	LANDI	1			1							1	1	
18		PQ	Rachis: length of first segment	OTIS	1					1					1	1	
18		PQ	Rachis: length of first segment	STEFFI	1				1						1	1	
19		PQ	Rachis: curvature of first segment	ALEXIS	4			4							1	1	0
19		PQ	Rachis: curvature of first segment	LANDORA	4			4							1	1	0
19		PQ	Rachis: curvature of first segment	OHARA	4					4					1	1	0
19		PQ	Rachis: curvature of first segment	PRISMA	4	4									1	1	0
19		PQ	Rachis: curvature of first segment	ARAMIR	3					3					1	1	0
19		PQ	Rachis: curvature of first segment	BACCARA	3								3		1	1	0
19		PQ	Rachis: curvature of first segment	JERSEY	3			3							1	1	0
19		PQ	Rachis: curvature of first segment	MELTAN	3			3							1	1	0
19		PQ	Rachis: curvature of first segment	TUNIKA	3			3							1	1	0
19		PQ	Rachis: curvature of first segment	DERKADO	2			2							1	1	0
19		PQ	Rachis: curvature of first segment	DITTA	2					2					1	1	0
19		PQ	Rachis: curvature of first segment	HELLANA	2								2		1	1	0
19		PQ	Rachis: curvature of first segment	MAGDA	2					2					1	1	0
19		PQ	Rachis: curvature of first segment	TIFFANY	2					2					1	1	0
19		PQ	Rachis: curvature of first segment	VENUS	2			2							1	1	0
19		PQ	Rachis: curvature of first segment	ROXANA	5			4	1						2	2	0.45
19		PQ	Rachis: curvature of first segment	OPTIC	4			3	1						2	2	0.5
19		PQ	Rachis: curvature of first segment	ORTHEGA	4					3	1				2	2	0.5
19		PQ	Rachis: curvature of first segment	SCARLETT	4			3	1						2	2	0.5
19		PQ	Rachis: curvature of first segment	ADONIS	3					1	2				2	2	0.58
19		PQ	Rachis: curvature of first segment	ANGELA	3		1	2							2	2	0.58
19		PQ	Rachis: curvature of first segment	APEX	3					2	1				2	2	0.58
19		PQ	Rachis: curvature of first segment	BRENDA	3			2	1						2	2	0.58
19		PQ	Rachis: curvature of first segment	CALGARY	3		1	2							2	2	0.58
19		PQ	Rachis: curvature of first segment	CELLAR	3				2	1					2	2	0.58
19		PQ	Rachis: curvature of first segment	HENDRIX	3					1	2				2	2	0.58
19		PQ	Rachis: curvature of first segment	LOMERIT	3			2	1						2	2	0.58
19		PQ	Rachis: curvature of first segment	PENELOPE	3			2	1						2	2	0.58
19		PQ	Rachis: curvature of first segment	VORTEX	3					2	1				2	2	0.58
19		PQ	Rachis: curvature of first segment	BARKE	5			1	3	1					3	3	0.71
19		PQ	Rachis: curvature of first segment	ANGORA	2				1	1					2	2	0.71
19		PQ	Rachis: curvature of first segment	BONAIRE	2					1	1				2	2	0.71
19		PQ	Rachis: curvature of first segment	GOLF	2						1	1			2	2	0.71
19		PQ	Rachis: curvature of first segment	TRAMINER	2			1	1						2	2	0.71
19		PQ	Rachis: curvature of first segment	VOLGA	2				1	1					2	2	0.71
19		PQ	Rachis: curvature of first segment	ANNABELL	7			1		6					2	3	0.76
19		PQ	Rachis: curvature of first segment	HANKA	7			6		1					2	3	0.76
19		PQ	Rachis: curvature of first segment	ASPEN	4			1	2	1					3	3	0.82
19		PQ	Rachis: curvature of first segment	RENI	4					1	2	1			3	3	0.82
19		PQ	Rachis: curvature of first segment	EXTRACT	6			4	1	1					3	3	0.84
19		PQ	Rachis: curvature of first segment	THURINGIA	5			1	2	2					3	3	0.84
19		PQ	Rachis: curvature of first segment	PASADENA	6			2	2	2					3	3	0.89
19		PQ	Rachis: curvature of first segment	CAROLA	4			2	1	1					3	3	0.96
19		PQ	Rachis: curvature of first segment	VISKOSA	5					2	1	2			3	3	0.98
19		PQ	Rachis: curvature of first segment	EUNOVA	4					1		3			2	3	1
19		PQ	Rachis: curvature of first segment	SEBASTIAN	4			1		3					2	3	1
19		PQ	Rachis: curvature of first segment	BARONESSE	3				1	1	1				3	3	1

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
19		PQ	Rachis: curvature of first segment	BOGESA	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	BRISE	3				1	1	1				3	3	1
19		PQ	Rachis: curvature of first segment	DANOR	3				1	1	1				3	3	1
19		PQ	Rachis: curvature of first segment	FELICITAS	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	KRONA	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	MARESI	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	MESSINA	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	OTIRA	3		1	1	1						3	3	1
19		PQ	Rachis: curvature of first segment	RIVIERA	3					1	1	1			3	3	1
19		PQ	Rachis: curvature of first segment	URSA	3			1	1	1					3	3	1
19		PQ	Rachis: curvature of first segment	BRAEMAR	5			1	3		1				3	4	1.1
19		PQ	Rachis: curvature of first segment	BRITTA	5			1	1	2	1				4	4	1.14
19		PQ	Rachis: curvature of first segment	MADONNA	4			2		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	BRAZIL	3			2		1					2	3	1.15
19		PQ	Rachis: curvature of first segment	CAMERA	3			1		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	CEYLON	3			1		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	CHANTAL	3			1		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	DANUTA	3			2		1					2	3	1.15
19		PQ	Rachis: curvature of first segment	HARRIOT	3			1		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	MADEIRA	3			2		1					2	3	1.15
19		PQ	Rachis: curvature of first segment	SW	3			2		1					2	3	1.15
19		PQ	Rachis: curvature of first segment	WIKINGETT VIDEO	3			1		2					2	3	1.15
19		PQ	Rachis: curvature of first segment	PRESTIGE	5			1	3			1			3	5	1.37
19		PQ	Rachis: curvature of first segment	PONGO	4			2	1		1				3	4	1.41
19		PQ	Rachis: curvature of first segment	ASTORIA	2			1		1					2	3	1.41
19		PQ	Rachis: curvature of first segment	CELINKA	2			1		1					2	3	1.41
19		PQ	Rachis: curvature of first segment	HANNA	2			1		1					2	3	1.41
19		PQ	Rachis: curvature of first segment	MAUD	2			1		1					2	3	1.41
19		PQ	Rachis: curvature of first segment	TOLAR	2			1		1					2	3	1.41
19		PQ	Rachis: curvature of first segment	SALOON	5				2	1		2			3	4	1.47
19		PQ	Rachis: curvature of first segment	CHALICE	3			1	1		1				3	4	1.53
19		PQ	Rachis: curvature of first segment	NELLY	3		1	1		1					3	4	1.53
19		PQ	Rachis: curvature of first segment	VANESSA	3			1	1		1				3	4	1.53
19		PQ	Rachis: curvature of first segment	PEWTER	4			1		2		1			3	5	1.63
19		PQ	Rachis: curvature of first segment	CLASS	3			1		1		1			3	5	2
19		PQ	Rachis: curvature of first segment	BOLINA	2			1			1				2	4	2.12
19		PQ	Rachis: curvature of first segment	CHARIOT	2				1			1			2	4	2.12
19		PQ	Rachis: curvature of first segment	PHILADELPHIA	3			1				2			2	5	2.31
19		PQ	Rachis: curvature of first segment	PROLOG	3			2				1			2	5	2.31
19		PQ	Rachis: curvature of first segment	REGINA	2			1				1			2	5	2.83
19		PQ	Rachis: curvature of first segment	ASTRID	1			1							1	1	
19		PQ	Rachis: curvature of first segment	BABYLONE	1					1					1	1	
19		PQ	Rachis: curvature of first segment	CATANIA	1			1							1	1	
19		PQ	Rachis: curvature of first segment	ELISA	1							1			1	1	
19		PQ	Rachis: curvature of first segment	HENNI	1			1							1	1	
19		PQ	Rachis: curvature of first segment	JOLANTE	1			1							1	1	
19		PQ	Rachis: curvature of first segment	LANDI	1			1							1	1	
19		PQ	Rachis: curvature of first segment	OTIS	1					1					1	1	
19		PQ	Rachis: curvature of first segment	PETRA	1		1								1	1	
19		PQ	Rachis: curvature of first segment	STEFFI	1					1					1	1	
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	SCARLETT	7			7							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BARONESSE	5	5									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	DANUTA	4	4									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	EUNOVA	4			4							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	LANDORA	4			4							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	OPTIC	4			4							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PONGO	4			4							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PRISMA	4			4							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ADONIS	3			3							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ANGORA	3		3								1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ANNABELL	3	3									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ARAMIR	3			3							1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ASTRID	3			3							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BACCARA	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BRAZIL	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CELLAR	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CHALICE	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	DANOR	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	DERKADO	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	GOLF	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MAGDA	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PROLOG	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	RENI	3	3									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	RIVIERA	3				3						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	TIFFANY	3			3							1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BOLINA	2	2									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ELISA	2				2						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HENNI	2	2									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MAUD	2				2						1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	OTIRA	2	2									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	VISKOSA	2	2									1	1	0
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	THURINGIA	9			1	8						2	2	0.33
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HANKA	7			1	6						2	2	0.38
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PASADENA	7			1	6						2	2	0.38
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	EXTRACT	6			1	5						2	2	0.41
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ORTHEGA	6			1	5						2	2	0.41
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PRESTIGE	5			1	4						2	2	0.41
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ALEXIS	5			1	4						2	2	0.45
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	APEX	5			1	4						2	2	0.45
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BRAEMAR	5			1	4						2	2	0.45
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MADONNA	5			1	4						2	2	0.45
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	SALOON	6			2	4						2	2	0.49
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CHARIOT	4			1	3						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HANNA	4	1		3							2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	KRONA	4			3	1						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	OHARA	4			1	3						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PEWTER	4			1	3						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PHILADELPHIA	4			1	3						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	SEBASTIAN	4			1	3						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	STEFFI	4			3	1						2	2	0.5
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MELTAN	6			2	4						2	2	0.52
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BARKE	7			3	4						2	2	0.53
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BRITTA	5			2	3						2	2	0.55
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MARESI	5			2	3						2	2	0.55
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ROXANA	5			2	3						2	2	0.55
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ASPEN	4			2	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BRENDA	4			2	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BRISE	4			2	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	PENELOPE	4			2	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	ASTORIA	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BONAIRE	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CALGARY	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CAMERA	3	1		2							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CELINKA	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CEYLON	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CHANTAL	3			2	1						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	CLASS	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	DITTA	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HARRIOT	3			2	1						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HELLANA	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	HENDRIX	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	JERSEY	3			1	2						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	JOLANTE	3			2	1						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MADEIRA	3			2	1						2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	MESSINA	3			2	1						2	2	0.58

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	REGINA	3	1	2								2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	SW WIKINGETT	3		1	2							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	TUNIKA	3		1	2							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	URSA	3		2	1							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	VANESSA	3		2	1							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	VIDEO	3		1	2							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	VORTEX	3		1	2							2	2	0.58
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	BABYLONE	2	1	1								2	2	0.71
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	OTIS	2		1	1							2	2	0.71
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	TOLAR	2		1	1							2	2	0.71
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	VOLGA	2		1	1							2	2	0.71
20	*	PQ	Sterile spikelet: attitude (in mid-third of ear)	FELICITAS	1	1									1	1	
21		PQ	Median spikelet: length of glume and its awn relative to grain	ANNABELL	8		8								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	THURINGIA	8		8								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BARKE	7		7								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BARONESSE	6		6								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HANKA	6		6								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ORTHEGA	6		6								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PASADENA	6		6								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	SALOON	6		6								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BRAEMAR	5		5								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MADONNA	5		5								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MELTAN	5		5								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PRESTIGE	5		5								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ALEXIS	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	APEX	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ASPEN	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BRENDA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BRISE	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BRITTA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CAROLA	4			4							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CHARIOT	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HANNA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	KRONA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	OPTIC	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PEWTER	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PHILADELPHIA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PONGO	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ROXANA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	SEBASTIAN	4		4								1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
21		PQ	Median spikelet: length of glume and its awn relative to grain	VISKOSA	4		4								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ADONIS	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ANGELA	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ARAMIR	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	ASTORIA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BOGESA	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BOLINA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BRAZIL	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CELINKA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CELLAR	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CEYLON	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CHALICE	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CHANTAL	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CLASS	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	DANOR	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	DANUTA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	DERKADO	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	EUNOVA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	GOLF	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HARRIOT	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HENDRIX	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HENNI	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	JERSEY	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	JOLANTE	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	LANDI	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	LANDORA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MADEIRA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MARESI	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	NELLY	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	OHARA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	OTIRA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	REGINA	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	RENI	3		3								1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	SW WIKINGETT	3		3								1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
21		PQ	Median spikelet: length of glume and its awn relative to grain	TIFFANY	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	URSA	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	VORTEX	3			3							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BABYLONE	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BACCARA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	BONAIRE	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CALGARY	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	CAMERA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	DITTA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	HELLANA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MAGDA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MAUD	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	MESSINA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	OTIS	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	PROLOG	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	TOLAR	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	TRAMINER	2				2						1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	TUNIKA	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	VIDEO	2			2							1	1	0
21		PQ	Median spikelet: length of glume and its awn relative to grain	SCARLETT	7			6	1						2	2	0.38
21		PQ	Median spikelet: length of glume and its awn relative to grain	EXTRACT	6			3	3						2	2	0.55
21		PQ	Median spikelet: length of glume and its awn relative to grain	PRISMA	4			2	2						2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	ANGORA	3			2	1						2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	LOMERIT	3			2	1						2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	PENELOPE	3			2	1						2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	RIVIERA	3			2	1						2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	VANESSA	3	1		2							2	2	0.58
21		PQ	Median spikelet: length of glume and its awn relative to grain	ASTRID	2			1	1						2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	FELICITAS	2			1	1						2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	PETRA	2			1	1						2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	STEFFI	2			1	1						2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	VENUS	2			1	1						2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	VOLGA	2	1		1							2	2	0.71
21		PQ	Median spikelet: length of glume and its awn relative to grain	CATANIA	3				2						2	7	3.46
21		PQ	Median spikelet: length of glume and its awn relative to grain	ELISA	1				1						1	1	

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
22	*-g	QL	Grain: rachilla hair type	ANNABELL	9			9							1	1	0
22	*-g	QL	Grain: rachilla hair type	BARKE	8			8							1	1	0
22	*-g	QL	Grain: rachilla hair type	SCARLETT	8			8							1	1	0
22	*-g	QL	Grain: rachilla hair type	THURINGIA	8			8							1	1	0
22	*-g	QL	Grain: rachilla hair type	HANKA	7			7							1	1	0
22	*-g	QL	Grain: rachilla hair type	PASADENA	7			7							1	1	0
22	*-g	QL	Grain: rachilla hair type	DANUTA	6			6							1	1	0
22	*-g	QL	Grain: rachilla hair type	EXTRACT	6	6									1	1	0
22	*-g	QL	Grain: rachilla hair type	ORTHEGA	6			6							1	1	0
22	*-g	QL	Grain: rachilla hair type	SALOON	6			6							1	1	0
22	*-g	QL	Grain: rachilla hair type	ALEXIS	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	BARONESSE	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	BRAEMAR	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	BRITTA	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	CAROLA	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	MADONNA	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	MARESI	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	MELTAN	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	PRESTIGE	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	ROXANA	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	VISKOSA	5			5							1	1	0
22	*-g	QL	Grain: rachilla hair type	APEX	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	ASPEN	4	4									1	1	0
22	*-g	QL	Grain: rachilla hair type	BRENDA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	BRISE	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	CHARIOT	4	4									1	1	0
22	*-g	QL	Grain: rachilla hair type	EUNOVA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	HANNA	4	4									1	1	0
22	*-g	QL	Grain: rachilla hair type	KRONA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	LANDORA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	OHARA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	OPTIC	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	PENELOPE	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	PEWTER	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	PHILADELPHIA	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	PONGO	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	RENI	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	SEBASTIAN	4			4							1	1	0
22	*-g	QL	Grain: rachilla hair type	ADONIS	3	3									1	1	0
22	*-g	QL	Grain: rachilla hair type	ANGELA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	ANGORA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	ASTORIA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	ASTRID	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	BACCARA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	BOGESA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	BOLINA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	BONAIRE	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	BRAZIL	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CALGARY	3	3									1	1	0
22	*-g	QL	Grain: rachilla hair type	CAMERA	3	3									1	1	0
22	*-g	QL	Grain: rachilla hair type	CATANIA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CELINKA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CELLAR	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CEYLON	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CHALICE	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CHANTAL	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	CLASS	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	DANOR	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	DERKADO	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	DITTA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	FELICITAS	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	HARRIOT	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	HELLANA	3			3							1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
22	*-g	QL	Grain: rachilla hair type	HENDRIX	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	HENNI	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	JERSEY	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	JOLANTE	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	LANDI	3	3									1	1	0
22	*-g	QL	Grain: rachilla hair type	LOMERIT	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	MADEIRA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	MAGDA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	MESSINA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	NELLY	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	OTIRA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	PETRA	3	3									1	1	0
22	*-g	QL	Grain: rachilla hair type	PRISMA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	PROLOG	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	RIVIERA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	STEFFI	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	SW WIKINGETT TRAMINER	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	TUNIKA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	URSA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	VANESSA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	VENUS	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	VIDEO	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	VOLGA	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	VORTEX	3			3							1	1	0
22	*-g	QL	Grain: rachilla hair type	ARAMIR	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	BABYLONE	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	ELISA	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	GOLF	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	OTIS	2	2									1	1	0
22	*-g	QL	Grain: rachilla hair type	PRIMA	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	TOLAR	2			2							1	1	0
22	*-g	QL	Grain: rachilla hair type	MAUD	3	1		2							2	2	0.58
22	*-g	QL	Grain: rachilla hair type	REGINA	3	2		1							2	2	0.58
22	*-g	QL	Grain: rachilla hair type	TIFFANY	3	2		1							2	2	0.58
23	*	QL	Grain: husk	ANNABELL	9									9	1	1	0
23	*	QL	Grain: husk	BARKE	8									8	1	1	0
23	*	QL	Grain: husk	SCARLETT	8									8	1	1	0
23	*	QL	Grain: husk	THURINGIA	8									8	1	1	0
23	*	QL	Grain: husk	HANKA	7									7	1	1	0
23	*	QL	Grain: husk	PASADENA	7									7	1	1	0
23	*	QL	Grain: husk	BARONESSE	6									6	1	1	0
23	*	QL	Grain: husk	DANUTA	6									6	1	1	0
23	*	QL	Grain: husk	EXTRACT	6									6	1	1	0
23	*	QL	Grain: husk	MARESI	6									6	1	1	0
23	*	QL	Grain: husk	ORTHEGA	6									6	1	1	0
23	*	QL	Grain: husk	SALOON	6									6	1	1	0
23	*	QL	Grain: husk	ALEXIS	5									5	1	1	0
23	*	QL	Grain: husk	APEX	5									5	1	1	0
23	*	QL	Grain: husk	BRAEMAR	5									5	1	1	0
23	*	QL	Grain: husk	BRITTA	5									5	1	1	0
23	*	QL	Grain: husk	CAROLA	5									5	1	1	0
23	*	QL	Grain: husk	MADONNA	5									5	1	1	0
23	*	QL	Grain: husk	MELTAN	5									5	1	1	0
23	*	QL	Grain: husk	PRESTIGE	5									5	1	1	0
23	*	QL	Grain: husk	ROXANA	5									5	1	1	0
23	*	QL	Grain: husk	VISKOSA	5									5	1	1	0
23	*	QL	Grain: husk	ASPEN	4									4	1	1	0
23	*	QL	Grain: husk	BRENDA	4									4	1	1	0
23	*	QL	Grain: husk	BRISE	4									4	1	1	0
23	*	QL	Grain: husk	CHARIOT	4									4	1	1	0
23	*	QL	Grain: husk	EUNOVA	4									4	1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
23	*	QL	Grain: husk	HANNA	4										4	1	1	0
23	*	QL	Grain: husk	KRONA	4										4	1	1	0
23	*	QL	Grain: husk	LANDORA	4										4	1	1	0
23	*	QL	Grain: husk	OHARA	4										4	1	1	0
23	*	QL	Grain: husk	OPTIC	4										4	1	1	0
23	*	QL	Grain: husk	PENELOPE	4										4	1	1	0
23	*	QL	Grain: husk	PEWTER	4										4	1	1	0
23	*	QL	Grain: husk	PHILADELPHIA	4										4	1	1	0
23	*	QL	Grain: husk	PONGO	4										4	1	1	0
23	*	QL	Grain: husk	RENI	4										4	1	1	0
23	*	QL	Grain: husk	SEBASTIAN	4										4	1	1	0
23	*	QL	Grain: husk	STEFFI	4										4	1	1	0
23	*	QL	Grain: husk	ADONIS	3										3	1	1	0
23	*	QL	Grain: husk	ANGELA	3										3	1	1	0
23	*	QL	Grain: husk	ANGORA	3										3	1	1	0
23	*	QL	Grain: husk	ASTORIA	3										3	1	1	0
23	*	QL	Grain: husk	ASTRID	3										3	1	1	0
23	*	QL	Grain: husk	BABYLONE	3										3	1	1	0
23	*	QL	Grain: husk	BACCARA	3										3	1	1	0
23	*	QL	Grain: husk	BOGESA	3										3	1	1	0
23	*	QL	Grain: husk	BOLINA	3										3	1	1	0
23	*	QL	Grain: husk	BONAIRE	3										3	1	1	0
23	*	QL	Grain: husk	BRAZIL	3										3	1	1	0
23	*	QL	Grain: husk	CALGARY	3										3	1	1	0
23	*	QL	Grain: husk	CAMERA	3										3	1	1	0
23	*	QL	Grain: husk	CELINKA	3										3	1	1	0
23	*	QL	Grain: husk	CELLAR	3										3	1	1	0
23	*	QL	Grain: husk	CEYLON	3										3	1	1	0
23	*	QL	Grain: husk	CHALICE	3										3	1	1	0
23	*	QL	Grain: husk	CHANTAL	3										3	1	1	0
23	*	QL	Grain: husk	CLASS	3										3	1	1	0
23	*	QL	Grain: husk	DANOR	3										3	1	1	0
23	*	QL	Grain: husk	DERKADO	3										3	1	1	0
23	*	QL	Grain: husk	DITTA	3										3	1	1	0
23	*	QL	Grain: husk	ELISA	3										3	1	1	0
23	*	QL	Grain: husk	FELICITAS	3										3	1	1	0
23	*	QL	Grain: husk	HARRIOT	3										3	1	1	0
23	*	QL	Grain: husk	HELLANA	3										3	1	1	0
23	*	QL	Grain: husk	HENDRIX	3										3	1	1	0
23	*	QL	Grain: husk	HENNI	3										3	1	1	0
23	*	QL	Grain: husk	JERSEY	3										3	1	1	0
23	*	QL	Grain: husk	JOLANTE	3										3	1	1	0
23	*	QL	Grain: husk	LANDI	3										3	1	1	0
23	*	QL	Grain: husk	LOMERIT	3										3	1	1	0
23	*	QL	Grain: husk	MADEIRA	3										3	1	1	0
23	*	QL	Grain: husk	MAGDA	3										3	1	1	0
23	*	QL	Grain: husk	MESSINA	3										3	1	1	0
23	*	QL	Grain: husk	NELLY	3										3	1	1	0
23	*	QL	Grain: husk	OTIRA	3										3	1	1	0
23	*	QL	Grain: husk	OTIS	3										3	1	1	0
23	*	QL	Grain: husk	PETRA	3										3	1	1	0
23	*	QL	Grain: husk	PRIMA	3										3	1	1	0
23	*	QL	Grain: husk	PRISMA	3										3	1	1	0
23	*	QL	Grain: husk	PROLOG	3										3	1	1	0
23	*	QL	Grain: husk	REGINA	3										3	1	1	0
23	*	QL	Grain: husk	RIVIERA	3										3	1	1	0
23	*	QL	Grain: husk	SW WIKINGETT	3										3	1	1	0
23	*	QL	Grain: husk	TIFFANY	3										3	1	1	0
23	*	QL	Grain: husk	TRAMINER	3										3	1	1	0
23	*	QL	Grain: husk	TUNIKA	3										3	1	1	0
23	*	QL	Grain: husk	URSA	3										3	1	1	0
23	*	QL	Grain: husk	VANESSA	3										3	1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
23	*	QL	Grain: husk	VENUS	3									3	1	1	0
23	*	QL	Grain: husk	VIDEO	3									3	1	1	0
23	*	QL	Grain: husk	VOLGA	3									3	1	1	0
23	*	QL	Grain: husk	VORTEX	3									3	1	1	0
23	*	QL	Grain: husk	ARAMIR	2									2	1	1	0
23	*	QL	Grain: husk	GOLF	2									2	1	1	0
23	*	QL	Grain: husk	TOLAR	2									2	1	1	0
23	*	QL	Grain: husk	CATANIA	3	1								2	2	9	4.62
23	*	QL	Grain: husk	MAUD	3	1								2	2	9	4.62
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CAROLA	5	5									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	RENI	4	4									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ANGELA	3	3									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ASTRID	3		3								1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CELLAR	3						3				1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CHALICE	3					3					1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PEWTER	3					3					1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	REGINA	3	3									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	TIFFANY	3	3									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	TRAMINER	3	3									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BABYLONE	2	2									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MAUD	2		2								1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PRIMA	2	2									1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	TOLAR	2					2					1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VOLGA	2			2							1	1	0
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MADONNA	5			4	1						2	2	0.45
24		PQ	Grain: anthocyanin coloration of nerves of lemma	KRONA	4		1	3							2	2	0.5
24		PQ	Grain: anthocyanin coloration of nerves of lemma	OPTIC	4					1	3				2	2	0.5
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PENELOPE	4		3	1							2	2	0.5
24		PQ	Grain: anthocyanin coloration of nerves of lemma	SALOON	6				1	4	1				3	3	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ADONIS	3						1	2			2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ASPEN	3					2	1				2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ASTORIA	3					1	2				2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CAMERA	3	2	1								2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	DERKADO	3						2	1			2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	JERSEY	3						2	1			2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MADEIRA	3		1	2							2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MAGDA	3				1	2					2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	SEBASTIAN	3						1	2			2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VENUS	3	2	1								2	2	0.58
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BOGESA	2		1	1							2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CLASS	2						1	1			2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HENNI	2								1	1	2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	OTIS	2					1	1				2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	URSA	2				1	1					2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VANESSA	2		1	1							2	2	0.71
24		PQ	Grain: anthocyanin coloration of nerves of lemma	THURINGIA	8	1	3	4							3	3	0.74
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BARKE	7		4	2	1						3	3	0.79
24		PQ	Grain: anthocyanin coloration of nerves of lemma	SCARLETT	6					1	2	3			3	3	0.82
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VISKOSA	5						1	2	2		3	3	0.82
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BRISE	4				1	2	1				3	3	0.82
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PHILADELPHIA	4					1	2	1			3	3	0.82
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HANNA	4							2	1	1	3	3	0.96
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PRISMA	4	1	1	2							3	3	0.96
24		PQ	Grain: anthocyanin coloration of nerves of lemma	STEFFI	4					2	1	1			3	3	0.96
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PRESTIGE	5					2	1	2			3	3	0.98
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BRAEMAR	4			1		3					2	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PONGO	4				1		3				2	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BACCARA	3							1	1	1	3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BONAIRE	3					1	1	1			3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BRAZIL	3					1	1	1			3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CALGARY	3		1	1	1						3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CHANTAL	3		1	1	1						3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	DANOR	3					1	1	1			3	3	1

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HARRIOT	3				1	1	1				3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HELLANA	3						1	1	1		3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	JOLANTE	3			1	1	1					3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MESSINA	3			1	1	1					3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PROLOG	3				1	1	1				3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	SW WIKINGETT	3	1	1	1							3	3	1
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BRITTA	5		1	2	1	1					4	4	1.14
24		PQ	Grain: anthocyanin coloration of nerves of lemma	EUNOVA	4					2		2			2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	LANDORA	4	2		2							2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	OHARA	4					2		2			2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ARAMIR	3					1		2			2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	FELICITAS	3	1		2							2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	LOMERIT	3	1		2							2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	TUNIKA	3	2		1							2	3	1.15
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ORTHEGA	6					1	1	2	2		4	4	1.17
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BRENDA	4		1	2		1					3	4	1.26
24		PQ	Grain: anthocyanin coloration of nerves of lemma	APEX	5				1	1	1	2			4	4	1.3
24		PQ	Grain: anthocyanin coloration of nerves of lemma	EXTRACT	6		1	3	1		1				4	5	1.38
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PASADENA	7			2		1	4				3	4	1.41
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ALEXIS	5			1		3		1			3	5	1.41
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MELTAN	5			1			3	1			3	5	1.52
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ANGORA	3	1		1	1						3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CATANIA	3	1		1	1						3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	DITTA	3				1	1		1			3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	GOLF	3					1		1	1		3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	LANDI	3			1		1	1				3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	OTIRA	3					1	1		1		3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VORTEX	3			1		1	1				3	4	1.53
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ANNABELL	9				1	1		2	4	1	5	6	1.62
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ROXANA	5					3			2		2	4	1.64
24		PQ	Grain: anthocyanin coloration of nerves of lemma	DANUTA	6			1	2	1		2			4	5	1.67
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CEYLON	3			1			2				2	4	1.73
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HENDRIX	3	1			2						2	4	1.73
24		PQ	Grain: anthocyanin coloration of nerves of lemma	VIDEO	3			1			2				2	4	1.73
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BARONESSE	6				1	1		3		1	4	6	1.76
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CHARIOT	4			1	1		1	1			4	5	1.83
24		PQ	Grain: anthocyanin coloration of nerves of lemma	HANKA	7	1	1	1	3			1			5	7	1.9
24		PQ	Grain: anthocyanin coloration of nerves of lemma	NELLY	3	1		1		1					3	5	2
24		PQ	Grain: anthocyanin coloration of nerves of lemma	RIVIERA	3			1		1		1			3	5	2
24		PQ	Grain: anthocyanin coloration of nerves of lemma	MARESI	5	1	1	1		1	1				5	6	2.07
24		PQ	Grain: anthocyanin coloration of nerves of lemma	BOLINA	3				1			1	1		3	5	2.08
24		PQ	Grain: anthocyanin coloration of nerves of lemma	CELINKA	3			1				2			2	5	2.31
24		PQ	Grain: anthocyanin coloration of nerves of lemma	PETRA	3	1			1		1				3	6	2.52
24		PQ	Grain: anthocyanin coloration of nerves of lemma	ELISA	2		1				1				2	5	2.83
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ANNABELL	9	9									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PASADENA	7	7									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	DANUTA	6	6									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ORTHEGA	6	6									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ALEXIS	5	5									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MADONNA	5	5									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MARESI	5	5									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VISKOSA	5	5									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ASPEN	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BRENDA	4	4									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	EUNOVA	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	LANDORA	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	OHARA	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PEWTER	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	SEBASTIAN	4	4									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ASTORIA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BACCARA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BOLINA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CALGARY	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CELINKA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CELLAR	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CEYLON	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CHALICE	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CHANTAL	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CLASS	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	DANOR	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	DITTA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HANNA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HARRIOT	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HELLANA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HENDRIX	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HENNI	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	JERSEY	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	JOLANTE	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MADEIRA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MAGDA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MESSINA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	OTIRA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PRISMA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PROLOG	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	RIVIERA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	STEFFI	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	TUNIKA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	URSA	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VIDEO	3	3									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VORTEX	3	3									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ARAMIR	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	DERKADO	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ELISA	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	GOLF	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MAUD	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	TOLAR	2	2									1	1	0
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	SCARLETT	7	6	1								2	2	0.38
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BRITTA	5	4	1								2	2	0.45
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ANGELA	3								1	2	2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ANGORA	3			2	1						2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ASTRID	3				2	1					2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BONAIRE	3	2	1								2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BRAZIL	3			2	1						2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	FELICITAS	3	2	1								2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	KRONA	3	2	1								2	2	0.58
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	THURINGIA	8	7		1							2	3	0.71
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VOLGA	2						1	1			2	2	0.71
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BARONESSE	5	4		1							2	3	0.89
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ROXANA	5	3	1	1							3	3	0.89
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PHILADELPHIA	4	2	1	1							3	3	0.96
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	RENI	4	1	1	2							3	3	0.96
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BRISE	4	3		1							2	3	1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PENELOPE	4							3		1	2	3	1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VANESSA	3	1	1	1							3	3	1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BRAEMAR	5	2		3							2	3	1.1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CAROLA	5							3		2	2	3	1.1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PRESTIGE	5	3		2							2	3	1.1
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	ADONIS	3	2		1							2	3	1.15
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	REGINA	3							2		1	2	3	1.15
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	SW WIKINGETT	3	2		1							2	3	1.15
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	OPTIC	4						1	2		1	3	4	1.26
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BABYLONE	2					1		1			2	3	1.41
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CATANIA	2							1		1	2	3	1.41
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	HANKA	7	6				1					2	5	1.51

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	SALOON	6	5				1					2	5	1.51
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	LANDI	3						1	1		1	3	4	1.53
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	TIFFANY	3						1	1		1	3	4	1.53
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	TRAMINER	3						1	1		1	3	4	1.53
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	EXTRACT	6	5				1					2	5	1.63
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CHARIOT	4	1		2		1					3	5	1.63
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PONGO	4	1		1	1	1					4	5	1.71
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BOGESA	3					1		1		1	3	5	2
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PETRA	3		1			1	1				3	5	2.08
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	LOMERIT	3				1			1		1	3	6	2.52
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	BARKE	7			2	1		1	1		2	5	7	2.61
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	VENUS	3				1					2	2	6	2.89
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	MELTAN	5	4							1		2	8	3.13
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	CAMERA	3			1					1	1	3	7	3.21
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	APEX	4	3							1		2	8	3.5
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	NELLY	3	1				1				1	3	9	4
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	OTIS	1	1									1	1	
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	PRIMA	1					1					1	1	
26	*-g	QL	Grain: hairiness of ventral furrow	ANNABELL	9	9									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	THURINGIA	8	8									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BARKE	7	7									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HANKA	7	7									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PASADENA	7	7									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	SCARLETT	7	7									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BARONESSE	6	6									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	EXTRACT	6	6									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MARESI	6	6									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ORTHEGA	6	6									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	SALOON	6	6									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ALEXIS	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	APEX	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BRAEMAR	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BRITTA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CAROLA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	DANUTA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MADONNA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MELTAN	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PRESTIGE	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ROXANA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	VISKOSA	5	5									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ASPEN	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BRENDA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BRISE	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	EUNOVA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HANNA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	KRONA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	LANDORA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	OHARA	4	4									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
26	*-g	QL	Grain: hairiness of ventral furrow	OPTIC	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PENELOPE	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PEWTER	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PHILADELPHIA	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PONGO	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	RENI	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	SEBASTIAN	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	STEFFI	4	4									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ADONIS	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ANGELA	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ANGORA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ASTORIA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ASTRID	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BACCARA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BOGESA	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BOLINA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BONAIRE	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BRAZIL	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CALGARY	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CAMERA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CELINKA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CELLAR	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CEYLON	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CHALICE	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CHANTAL	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CLASS	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	DANOR	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	DERKADO	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	DITTA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ELISA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	FELICITAS	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HARRIOT	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HELLANA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HENDRIX	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	HENNI	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	JERSEY	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	JOLANTE	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	LANDI	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	LOMERIT	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MADEIRA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MAGDA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	MESSINA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	OTIRA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	OTIS	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PETRA	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PRISMA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	PROLOG	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	REGINA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	RIVIERA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	SW WIKINGETT TIFFANY	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	TRAMINER	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	TUNIKA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	URSA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	VANESSA	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	VENUS	3									3	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	VIDEO	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	VORTEX	3	3									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	ARAMIR	2	2									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	BABYLONE	2	2									1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	CATANIA	2									2	1	1	0
26	*-g	QL	Grain: hairiness of ventral furrow	GOLF	2	2									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std	
26	*-g	QL	Grain: hairiness of ventral furrow	MAUD	2	2									1	1	0	
26	*-g	QL	Grain: hairiness of ventral furrow	PRIMA	2									2	1	1	0	
26	*-g	QL	Grain: hairiness of ventral furrow	TOLAR	2	2									1	1	0	
26	*-g	QL	Grain: hairiness of ventral furrow	VOLGA	2	2									1	1	0	
26	*-g	QL	Grain: hairiness of ventral furrow	CHARIOT	4	3								1	2	9	4	
26	*-g	QL	Grain: hairiness of ventral furrow	NELLY	3	1								2	2	9	4.62	
27	*	PQ	Grain: disposition of lodicules	ANNABELL	8		8								1	1	0	
27	*	PQ	Grain: disposition of lodicules	HANKA	7		7								1	1	0	
27	*	PQ	Grain: disposition of lodicules	EXTRACT	6		6								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PASADENA	6		6								1	1	0	
27	*	PQ	Grain: disposition of lodicules	SALOON	6		6								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BARKE	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BRAEMAR	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BRITTA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CAROLA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	MADONNA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PRESTIGE	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ROXANA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	THURINGIA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	VISKOSA	5		5								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ASPEN	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BRISE	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	DANUTA	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	EUNOVA	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	LANDORA	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	OHARA	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	OPTIC	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ORTHEGA	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PEWTER	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PONGO	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PRISMA	4	4									1	1	0	
27	*	PQ	Grain: disposition of lodicules	RENI	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	SEBASTIAN	4		4								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ADONIS	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ALEXIS	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	ANGELA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	APEX	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BACCARA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BARONESSE	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BOGESA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BOLINA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BRAZIL	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	BRENDA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CAMERA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CELINKA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CELLAR	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CEYLON	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CHALICE	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CHANTAL	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	CLASS	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	DANOR	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	FELICITAS	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	HARRIOT	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	HENDRIX	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	JERSEY	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	LOMERIT	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	MADEIRA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	MARESI	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	MESSINA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	NELLY	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	OTIRA	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PENELOPE	3		3								1	1	0	
27	*	PQ	Grain: disposition of lodicules	PHILADELPHIA	3		3								1	1	0	

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
27	*	PQ	Grain: disposition of lodicules	PROLOG	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	SCARLETT	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	SW WIKINGETT	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	TOLAR	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	TRAMINER	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	TUNIKA	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	URSA	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	VANESSA	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	VIDEO	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	VORTEX	3			3							1	1	0
27	*	PQ	Grain: disposition of lodicules	ANGORA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	ARAMIR	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	ASTORIA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	BONAIRE	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	CHARIOT	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	DERKADO	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	DITTA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	GOLF	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	HANNA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	HELLANA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	KRONA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	MAGDA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	MELTAN	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	PETRA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	REGINA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	RIVIERA	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	TIFFANY	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	VENUS	2			2							1	1	0
27	*	PQ	Grain: disposition of lodicules	CALGARY	3	1		2							2	2	0.58
27	*	PQ	Grain: disposition of lodicules	ASTRID	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	BABYLONE	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	ELISA	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	HENNI	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	JOLANTE	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	LANDI	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	MAUD	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	OTIS	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	PRIMA	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	STEFFI	1			1							1	1	
27	*	PQ	Grain: disposition of lodicules	VOLGA	1	1									1	1	
28		PQ	Kernel: color of aleurone layer	BARKE	8	8									1	1	0
28		PQ	Kernel: color of aleurone layer	THURINGIA	8	8									1	1	0
28		PQ	Kernel: color of aleurone layer	HANKA	7	7									1	1	0
28		PQ	Kernel: color of aleurone layer	EXTRACT	6	6									1	1	0
28		PQ	Kernel: color of aleurone layer	MARESI	6	6									1	1	0
28		PQ	Kernel: color of aleurone layer	ORTHEGA	6	6									1	1	0
28		PQ	Kernel: color of aleurone layer	ALEXIS	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	APEX	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	BRAEMAR	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	BRITTA	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	CAROLA	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	PRESTIGE	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	ROXANA	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	VISKOSA	5	5									1	1	0
28		PQ	Kernel: color of aleurone layer	ASPEN	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	BRENDA	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	CHARIOT	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	EUNOVA	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	KRONA	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	LANDORA	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	OPTIC	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	PENELOPE	4	4									1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
28		PQ	Kernel: color of aleurone layer	PEWTER	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	PHILADELPHIA	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	PONGO	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	RENI	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	SEBASTIAN	4	4									1	1	0
28		PQ	Kernel: color of aleurone layer	ADONIS	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	ASTORIA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	ASTRID	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	BACCARA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	BRAZIL	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	CELLAR	3		3								1	1	0
28		PQ	Kernel: color of aleurone layer	CEYLON	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	CHALICE	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	CHANTAL	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	CLASS	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	DANOR	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	DITTA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	ELISA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	FELICITAS	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	HARRIOT	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	HELLANA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	HENDRIX	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	HENNI	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	JERSEY	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	LOMERIT	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	MADEIRA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	MAGDA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	MAUD	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	NELLY	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	PRISMA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	PROLOG	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	REGINA	3		3								1	1	0
28		PQ	Kernel: color of aleurone layer	RIVIERA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	SW WIKINGETT TIFFANY	3		3								1	1	0
28		PQ	Kernel: color of aleurone layer	TRAMINER	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	TUNIKA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	URSA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	VANESSA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	VENUS	3		3								1	1	0
28		PQ	Kernel: color of aleurone layer	VIDEO	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	VOLGA	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	VORTEX	3	3									1	1	0
28		PQ	Kernel: color of aleurone layer	ARAMIR	2	2									1	1	0
28		PQ	Kernel: color of aleurone layer	CATANIA	2	2									1	1	0
28		PQ	Kernel: color of aleurone layer	GOLF	2	2									1	1	0
28		PQ	Kernel: color of aleurone layer	OTIS	2	2									1	1	0
28		PQ	Kernel: color of aleurone layer	PRIMA	2		2								1	1	0
28		PQ	Kernel: color of aleurone layer	ANNABELL	9	8	1								2	2	0.33
28		PQ	Kernel: color of aleurone layer	PASADENA	7	6	1								2	2	0.38
28		PQ	Kernel: color of aleurone layer	SCARLETT	7	6	1								2	2	0.38
28		PQ	Kernel: color of aleurone layer	SALOON	6	5	1								2	2	0.38
28		PQ	Kernel: color of aleurone layer	DANUTA	5	4	1								2	2	0.45
28		PQ	Kernel: color of aleurone layer	BRISE	4	3	1								2	2	0.5
28		PQ	Kernel: color of aleurone layer	OHARA	4	1	3								2	2	0.5
28		PQ	Kernel: color of aleurone layer	BARONESSE	5	3	2								2	2	0.55
28		PQ	Kernel: color of aleurone layer	MADONNA	5	3	2								2	2	0.55
28		PQ	Kernel: color of aleurone layer	ANGELA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	ANGORA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	BOGESA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	BOLINA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	BONAIRE	3	2	1								2	2	0.58

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
28		PQ	Kernel: color of aleurone layer	CALGARY	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	CAMERA	3		1	2							2	2	0.58
28		PQ	Kernel: color of aleurone layer	CELINKA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	JOLANTE	3	1	2								2	2	0.58
28		PQ	Kernel: color of aleurone layer	LANDI	3		2	1							2	2	0.58
28		PQ	Kernel: color of aleurone layer	MESSINA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	OTIRA	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	STEFFI	3	2	1								2	2	0.58
28		PQ	Kernel: color of aleurone layer	BABYLONE	2		1	1							2	2	0.71
28		PQ	Kernel: color of aleurone layer	DERKADO	2	1	1								2	2	0.71
28		PQ	Kernel: color of aleurone layer	TOLAR	2	1	1								2	2	0.71
28		PQ	Kernel: color of aleurone layer	MELTAN	5	4		1							2	3	0.89
28		PQ	Kernel: color of aleurone layer	HANNA	3	1	1	1							3	3	1
28		PQ	Kernel: color of aleurone layer	PETRA	3	1	1	1							3	3	1
29	*-g	PQ	Seasonal type	ANNABELL	9			9							1	1	0
29	*-g	PQ	Seasonal type	THURINGIA	8			8							1	1	0
29	*-g	PQ	Seasonal type	BARKE	7			7							1	1	0
29	*-g	PQ	Seasonal type	HANKA	7			7							1	1	0
29	*-g	PQ	Seasonal type	PASADENA	7			7							1	1	0
29	*-g	PQ	Seasonal type	SCARLETT	7			7							1	1	0
29	*-g	PQ	Seasonal type	BARONESSE	6			6							1	1	0
29	*-g	PQ	Seasonal type	EXTRACT	6			6							1	1	0
29	*-g	PQ	Seasonal type	MARESI	6			6							1	1	0
29	*-g	PQ	Seasonal type	ORTHEGA	6			6							1	1	0
29	*-g	PQ	Seasonal type	SALOON	6			6							1	1	0
29	*-g	PQ	Seasonal type	APEX	5			5							1	1	0
29	*-g	PQ	Seasonal type	BRAEMAR	5			5							1	1	0
29	*-g	PQ	Seasonal type	BRITTA	5			5							1	1	0
29	*-g	PQ	Seasonal type	CAROLA	5	5									1	1	0
29	*-g	PQ	Seasonal type	DANUTA	5			5							1	1	0
29	*-g	PQ	Seasonal type	PRESTIGE	5			5							1	1	0
29	*-g	PQ	Seasonal type	ROXANA	5			5							1	1	0
29	*-g	PQ	Seasonal type	VISKOSA	5			5							1	1	0
29	*-g	PQ	Seasonal type	ALEXIS	4			4							1	1	0
29	*-g	PQ	Seasonal type	ASPEN	4			4							1	1	0
29	*-g	PQ	Seasonal type	BRENDA	4			4							1	1	0
29	*-g	PQ	Seasonal type	BRISE	4			4							1	1	0
29	*-g	PQ	Seasonal type	CHARIOT	4			4							1	1	0
29	*-g	PQ	Seasonal type	EUNOVA	4			4							1	1	0
29	*-g	PQ	Seasonal type	KRONA	4			4							1	1	0
29	*-g	PQ	Seasonal type	LANDORA	4			4							1	1	0
29	*-g	PQ	Seasonal type	MADONNA	4			4							1	1	0
29	*-g	PQ	Seasonal type	MELTAN	4			4							1	1	0
29	*-g	PQ	Seasonal type	OHARA	4			4							1	1	0
29	*-g	PQ	Seasonal type	OPTIC	4			4							1	1	0
29	*-g	PQ	Seasonal type	PENELOPE	4			4							1	1	0
29	*-g	PQ	Seasonal type	PEWTER	4			4							1	1	0
29	*-g	PQ	Seasonal type	PHILADELPHIA	4			4							1	1	0
29	*-g	PQ	Seasonal type	PONGO	4			4							1	1	0
29	*-g	PQ	Seasonal type	RENI	4	4									1	1	0
29	*-g	PQ	Seasonal type	SEBASTIAN	4			4							1	1	0
29	*-g	PQ	Seasonal type	STEFFI	4			4							1	1	0
29	*-g	PQ	Seasonal type	ADONIS	3			3							1	1	0
29	*-g	PQ	Seasonal type	ANGELA	3	3									1	1	0
29	*-g	PQ	Seasonal type	ANGORA	3	3									1	1	0
29	*-g	PQ	Seasonal type	ASTORIA	3			3							1	1	0
29	*-g	PQ	Seasonal type	BABYLONE	3	3									1	1	0
29	*-g	PQ	Seasonal type	BACCARA	3			3							1	1	0
29	*-g	PQ	Seasonal type	BOGESA	3	3									1	1	0
29	*-g	PQ	Seasonal type	BOLINA	3			3							1	1	0
29	*-g	PQ	Seasonal type	BONAIRE	3			3							1	1	0
29	*-g	PQ	Seasonal type	BRAZIL	3			3							1	1	0
29	*-g	PQ	Seasonal type	CALGARY	3			3							1	1	0

char_no	CHAR_TYPE1	CHAR_type2	CHAR_TXT	var_id	prov_desc	_1	_2	_3	_4	_5	_6	_7	_8	_9	freq_notes	range	std
29	*-g	PQ	Seasonal type	CAMERA	3	3									1	1	0
29	*-g	PQ	Seasonal type	CELINKA	3			3							1	1	0
29	*-g	PQ	Seasonal type	CELLAR	3			3							1	1	0
29	*-g	PQ	Seasonal type	CEYLON	3			3							1	1	0
29	*-g	PQ	Seasonal type	CHALICE	3			3							1	1	0
29	*-g	PQ	Seasonal type	CHANTAL	3			3							1	1	0
29	*-g	PQ	Seasonal type	CLASS	3			3							1	1	0
29	*-g	PQ	Seasonal type	DANOR	3			3							1	1	0
29	*-g	PQ	Seasonal type	DERKADO	3			3							1	1	0
29	*-g	PQ	Seasonal type	DITTA	3			3							1	1	0
29	*-g	PQ	Seasonal type	ELISA	3			3							1	1	0
29	*-g	PQ	Seasonal type	FELICITAS	3			3							1	1	0
29	*-g	PQ	Seasonal type	HANNA	3	3									1	1	0
29	*-g	PQ	Seasonal type	HARRIOT	3			3							1	1	0
29	*-g	PQ	Seasonal type	HELLANA	3			3							1	1	0
29	*-g	PQ	Seasonal type	HENDRIX	3			3							1	1	0
29	*-g	PQ	Seasonal type	HENNI	3			3							1	1	0
29	*-g	PQ	Seasonal type	JERSEY	3			3							1	1	0
29	*-g	PQ	Seasonal type	LOMERIT	3	3									1	1	0
29	*-g	PQ	Seasonal type	MADEIRA	3			3							1	1	0
29	*-g	PQ	Seasonal type	MAGDA	3			3							1	1	0
29	*-g	PQ	Seasonal type	MESSINA	3			3							1	1	0
29	*-g	PQ	Seasonal type	NELLY	3	3									1	1	0
29	*-g	PQ	Seasonal type	OTIRA	3			3							1	1	0
29	*-g	PQ	Seasonal type	OTIS	3			3							1	1	0
29	*-g	PQ	Seasonal type	PETRA	3	3									1	1	0
29	*-g	PQ	Seasonal type	PRISMA	3			3							1	1	0
29	*-g	PQ	Seasonal type	PROLOG	3			3							1	1	0
29	*-g	PQ	Seasonal type	REGINA	3	3									1	1	0
29	*-g	PQ	Seasonal type	RIVIERA	3			3							1	1	0
29	*-g	PQ	Seasonal type	SW WIKINGETT	3			3							1	1	0
29	*-g	PQ	Seasonal type	TIFFANY	3	3									1	1	0
29	*-g	PQ	Seasonal type	TRAMINER	3	3									1	1	0
29	*-g	PQ	Seasonal type	TUNIKA	3			3							1	1	0
29	*-g	PQ	Seasonal type	URSA	3			3							1	1	0
29	*-g	PQ	Seasonal type	VANESSA	3	3									1	1	0
29	*-g	PQ	Seasonal type	VENUS	3	3									1	1	0
29	*-g	PQ	Seasonal type	VIDEO	3			3							1	1	0
29	*-g	PQ	Seasonal type	VORTEX	3			3							1	1	0
29	*-g	PQ	Seasonal type	ARAMIR	2			2							1	1	0
29	*-g	PQ	Seasonal type	CATANIA	2	2									1	1	0
29	*-g	PQ	Seasonal type	GOLF	2			2							1	1	0
29	*-g	PQ	Seasonal type	JOLANTE	2	2									1	1	0
29	*-g	PQ	Seasonal type	MAUD	2			2							1	1	0
29	*-g	PQ	Seasonal type	PRIMA	2	2									1	1	0
29	*-g	PQ	Seasonal type	TOLAR	2			2							1	1	0
29	*-g	PQ	Seasonal type	VOLGA	2			2							1	1	0
29	*-g	PQ	Seasonal type	ASTRID	3	2	1								2	2	0.58
29	*-g	PQ	Seasonal type	LANDI	3	2	1								2	2	0.58

[Annex VI follows]

ANNEX VI

PROJECT TO CONSIDER THE PUBLICATION OF VARIETY DESCRIPTIONS: BARLEY

At the thirty-fourth session of the Technical Working Party for Agricultural Crops held in Christchurch, New Zealand, from October 31 to November 4, 2005, Mr. Gerhard Deneken (Denmark), Coordinator for the Model Study for Barley, made the following presentation concerning the Model Study for Barley, as reported in document TWA/34/13.

[Appendix follows]

APPENDIX TO ANNEX VI

Slide 1

Harmonisation of Descriptions of Barley Varieties
Summary/conclusions

- 12 characteristics from TG/19/10 are considered to be harmonised.
- 5 of 18 asterix characteristics are considered to be non harmonised.
  - maintenance of example varieties
  - routinely ring tests between testing offices
- Potential of the discriminative power depends on
  - the selected characteristics and
  - the estimated minimum distance.
  - A reduction of the minimum distance increases the discriminative power, but also increases the chance of declaring a variety distinct against itself.
- Using the grouping characteristics eliminate approximately 58% of all unnecessary variety comparisons.

Slide 2

Example of Harmonisation Evaluation
Selected characteristics of Meltan

						Stage of expression											
char_no		CHAR_TYPE	CHAR_TXT	var_id	prov_desc	1	2	3	4	5	6	7	8	9	freq_notes	range	std
1	*-g	PQ	Plant: growth habit	MELTAN	6			1	1	3	1				4	4	1,03
2	*	QL	Lowestleaves: hairiness of leafsheaths	MELTAN	5	5									1	1	0
3	*	QL	Flag leaf: anthocyanin coloration of auricles	MELTAN	6									5	2	5	1,63
4	*	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	MELTAN	6						1	2	2	1	4	4	1,05
5		PQ	Plant: frequency of plants with recurved flag leaves	MELTAN	5	1				1		3			3	7	2,61
6		PQ	Flag leaf: glaucosity of sheath	MELTAN	6							4	2		2	2	0,52
7	*	QN	Time of ear emergence (first spikelet visible on 50% of ea	MELTAN	6		1	1	2		2				4	5	1,6
8	*-g	QL	Awns: anthocyanin coloration of tips	MELTAN	6									6	1	1	0
9	*	PQ	Awns: intensity of anthocyanin coloration of tips	MELTAN	6			1		3	2				3	4	1,1
10	*	PQ	Ear: glaucosity	MELTAN	6					5	1				2	2	0,41
11		PQ	Ear: attitude	MELTAN	6		1	3	1	1					4	4	1,03
12	*	QN	Plant: length (stem, ear and awns)	MELTAN	5	1	1	1		2					4	5	1,79
13	*-g	QL	Ear: number of rows	MELTAN	6	6									1	1	0
14		PQ	Ear: shape	MELTAN	4					3					2	4	1,5
														total 287 1 records			

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Harmonised recordings

char_no		Char_type		CHAR_TXT	no_var	recordings	avg_freq nnotes	avg_range	avg_std
2		g	QL	Lowest leaves: hairiness of leaf sheaths	100	331	1,00	1	0
13		g	QL	Ear: number of rows	100	408	1,00	1	0
27			PQ	Grain: disposition of lodicules	99	328	1,02	1	0
22		g	QL	Grain: rachilla hair type	100	396	1,03	1	0
29		g	PQ	Seasonal type	100	391	1,03	1	0
26		g	QL	Grain: hairiness of ventral furrow	100	395	1,02	1,2	0,1
21			PQ	Median spikelet: length of glume and its awn relative to grain	99	358	1,22	1,3	0,1
3			QL	Flag leaf: anthocyanin coloration of auricles	100	412	1,07	1,5	0,3
8		g	QL	Awns: anthocyanin coloration of tips	100	403	1,08	1,6	0,3
20			PQ	Sterile spikelet: attitude (in mid-third of ear)	89	348	1,64	1,6	0,3
28			PQ	Kernel: colour of aleurone layer	100	393	1,43	1,8	0,4
23			QL	Grain: husk	100	403	1,17	1,9	0,4

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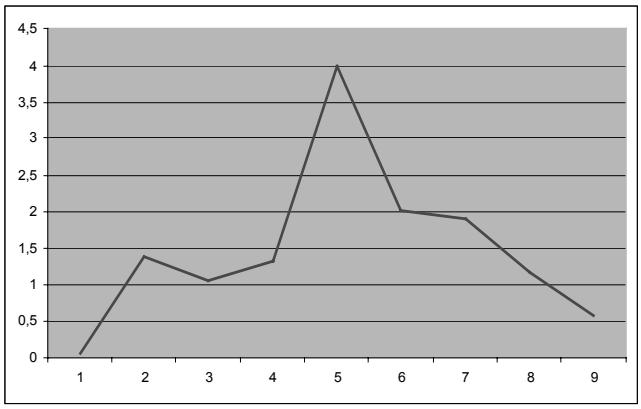
Acceptable Harmonised Recordings

char_no		CHAR_type	CHAR_TXT	no_var	recordings	Avg notes	avg_range	avg_std
25		PQ	Grain: spiculation of inner lateral nerves of dorsal side of lemma	100	385	1,65	2,3	0,6
6		PQ	Flag leaf: glaucosity of sheath	100	402	2,22	2,5	0,7
7		QN	Time of ear emergence (first spikelet visible on 50% of ears)	100	387	2,28	2,5	0,7
18		PQ	Rachis: length of first segment	99	328	1,97	2,3	0,7
1		PQ	Plant: growth habit	100	407	2,30	2,5	0,7
15		PQ	Ear: density	100	398	2,24	2,5	0,7
16		QN	Ear: length (excluding awns)	100	341	2,11	2,4	0,7
14		PQ	Ear: shape	100	345	1,79	2,4	0,8

Slide 5

Average standard deviation between descriptions of characteristic 25 'Grain: spiculation of inner lateral nerves of dorsal side of lemma



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Acceptable Harmonised Recordings

char_no		CHAR_type	CHAR_TXT	no_var	recordings	Avg notes	avg_range	avg_std
			Grain: spiculation of inner lateral nerves of					
25		PQ	dorsal side of lemma	100	385	1,65	2,3	0,6
6		PQ	Flag leaf: glaucosity of sheath	100	402	2,22	2,5	0,7
			Time of ear emergence (first spikelet visible					
7	▮	QN	on 50% of ears)	100	387	2,28	2,5	0,7
18		PQ	Rachis: length of first segment	99	328	1,97	2,3	0,7
1	▮	PQ	Plant: growth habit	100	407	2,30	2,5	0,7
15	▮	PQ	Ear: density	100	398	2,24	2,5	0,7
16		QN	Ear: length (excluding awns)	100	341	2,11	2,4	0,7
14		PQ	Ear: shape	100	345	1,79	2,4	0,8

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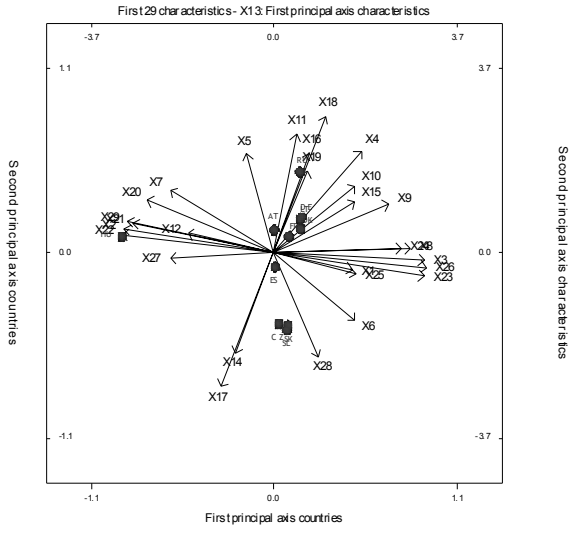
No Harmonised Recordings

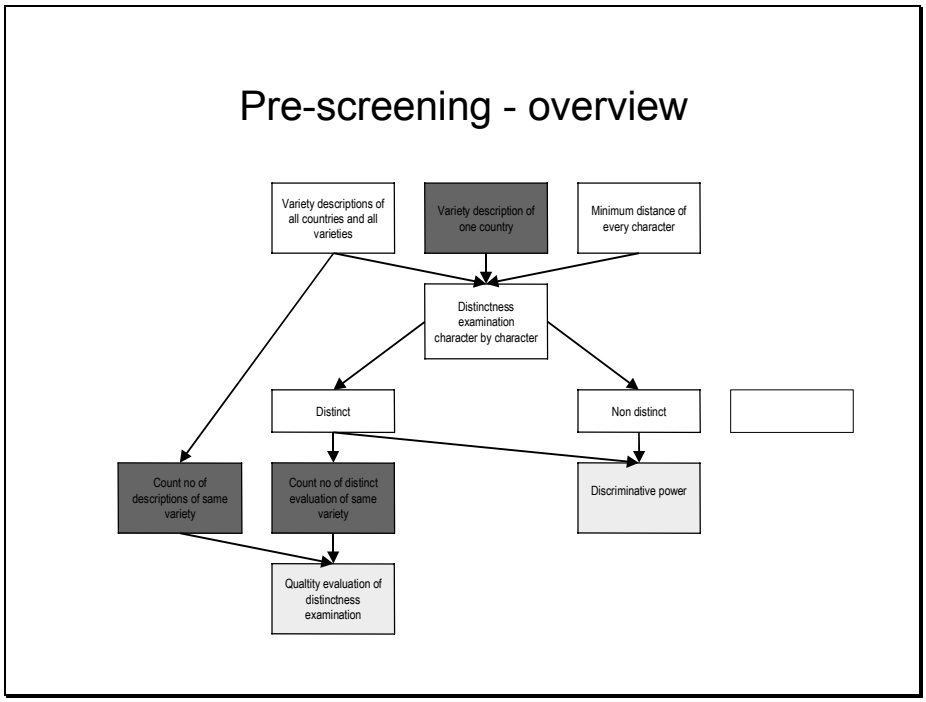
char_no	CHAR_type	CHAR_TXT	no_var	recordings	avg notes	avg_range	avg_std
12	QN	Plant: length (stem, ear and awns)	100	354	2,31	2,7	0,9
4	PQ	Flag leaf: intensity of anthocyanin coloration of auricles	93	370	2,42	2,9	0,9
19	PQ	Rachis: curvature of first segment	99	325	2,17	2,7	0,9
24	PQ	Grain: anthocyanin coloration of nerves of lemma	100	388	2,56	3,1	1
10	PQ	Ear: glaucosity	100	405	2,57	3,3	1,1
9	PQ	Awns: intensity of anthocyanin coloration of tips	93	369	2,77	3,6	1,3
5	PQ	Plant: frequency of plants with recurved flag leaves	100	381	2,68	3,8	1,4
17	QN	Awn: length (compared to ear)	100	395	2,69	3,9	1,4
11	PQ	Ear: attitude	100	402	2,79	4	1,4

Slide 8

Variation between countries and characteristics



Slide 9



Slide 10

Pre-screening – example acceptable harmonised characteristics

No	Characteristic	Scale		Type	MD level 1	MD level 2
1	Plant: growth habit	1-9	*	PQ	3	4
6	Flag leaf: glaucosity of sheath	1-9		PQ	2,5	3,5
7	Time of ear emergence (first spikelet visible on 50% of ears)	1-9	*	QN	2	2,5
14	Ear: shape	1-9		PQ	2,5	3,5
15	Ear: density	1-9	*	PQ	2,5	3,5
16	Ear: length (excluding awns)	1-9		QN	3	3,5
18	Rachis: length of first segment	1-9		PQ	2,5	3,5
25	Grain: spiculation of inner lateral nerves of dorsal side of lemma	1-9		PQ	2,5	3,5

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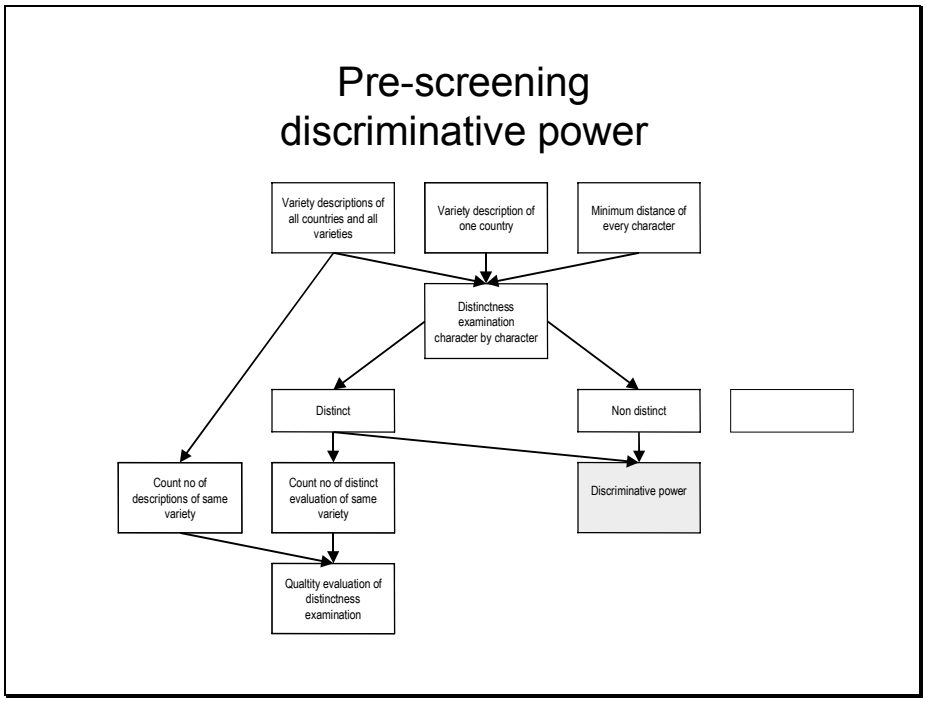

Slide 12

Distinctness evaluation - Apex

no	characteristic	CZ	DE	DK	ES	EST	FR	SK	MD
15	Ear: density		6	4	5	5	4		2.50
16	Ear: length (excluding awns)			5	5	4	6		3.00
18	Rachis: length of first segment			5	3	4	5		2.50
20	Sterile spikelet: attitude (in mid-third of ear)		2	3	2	3	3	3	1.10
23	Grain: husk	9	9	9	3	9	9		8.00
25	Grain: spiculation of inner lateral nerves of dorsal side		1	1	1	8	1		2.50
26	Grain: hairiness of ventral furrow	1	1	1	1	1	1		8.00
29	Seasonal type	3	3	3	3	3	3		0.90

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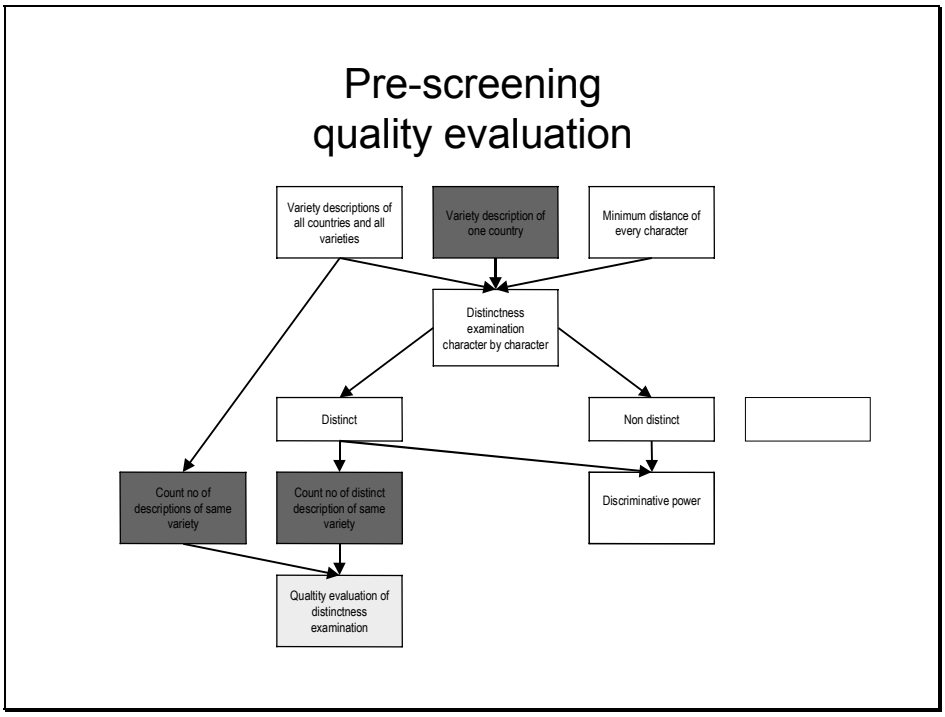

Slide 14

Discriminative power of morphological descriptions from different sources

	% distinct	% mistakes
Grouping	58	6
Harmonised - level 2 of min distance	65	13
Harmonised - level 1 of min distance	65	13
Asterix - level 2	68	11
Harmonised and acceptable harmonised 2-level of min distance	73	19
All characteristics - level 2 of min distance	74	19
Asterix - level 1	81	25
Harmonised and acceptable harmonised - level 1 of min distance	82	29
All characteristics - level 1 of min distance	87	34

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Harmonisation of Descriptions of Barley Varieties
Summary/conclusions

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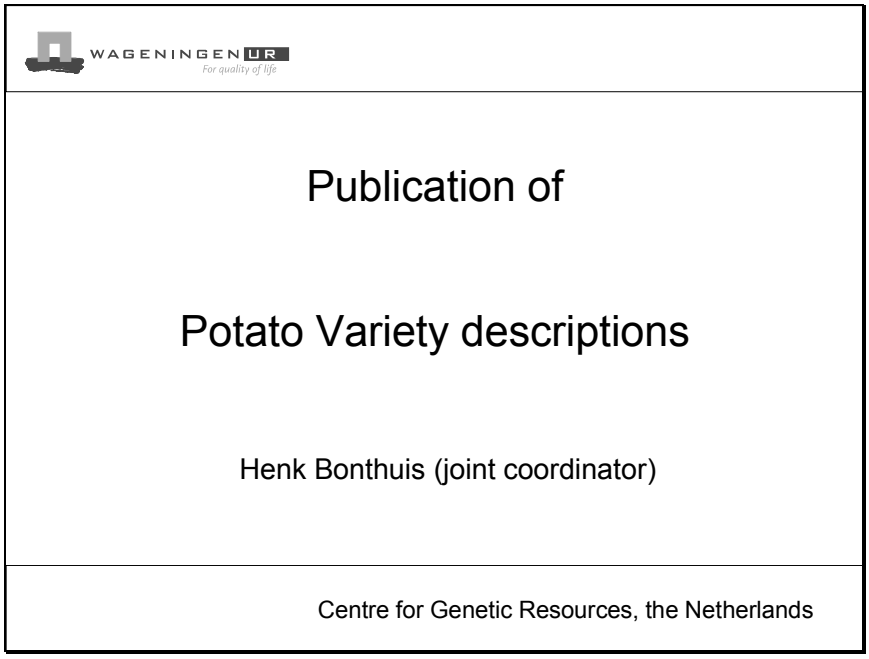
  - maintenance of example varieties
  - routinely ring tests between testing offices
- Potential of the discriminative power depends on
  - the selected characteristics and
  - the estimated minimum distance.
  - A reduction of the minimum distance increases the discriminative power, but also increases the chance of declaring a variety distinct against itself.
- Using the grouping characteristics eliminate approximately 58% of all unnecessary variety comparisons.

[Annex VII follows]

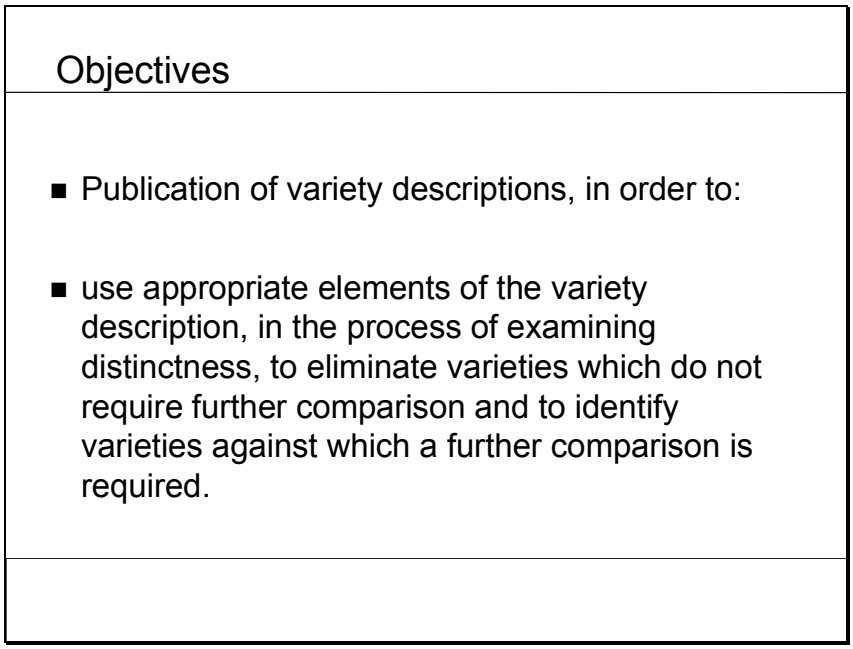
ANNEX VII

MODEL STUDY FOR POTATO

Slide 1



Slide 2



Slide 3

Study

- Stability of Characteristics
  - Similarities / differences across different environments
  - Patterns among descriptions from different sources
- Similarities among Environments for selected (groups of) characteristics
- Potential use and constraints on the Publication of variety descriptions

Slide 4

Dataset

- Data were received from 13 countries
- Model study to be based on 325 varieties
- Covering a total number of 1180 descriptions
- 1180 out of a potential # of (13 * 325 =) 4225 descr. That is 28 % real data.
- Based on TG 23/5

# varieties	# sources
2	10
2	9
9	8
12	7
20	6
37	5
68	4
72	3
90	2
13	1
Total # varieties = 325	

Slide 5

Number of common variety descriptions among countries

# cvs	# missing		NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL
301	24	**NL**	301	186	154	147	57	61	56	29	26	26	26	17	19
205	120	**DE**		205	107	102	40	45	23	9	7	20	18	8	10
175	149	**CZ**			175	126	51	47	39	18	15	22	23	10	11
160	165	**SL**				160	49	46	37	21	12	24	24	7	12
61	264	**PO**					61	18	19	10	8	18	12	4	10
63	262	**AT**						63	10	8	5	6	9	2	6
62	263	**CA**							62	16	12	8	9	12	9
31	294	**NZ**								31	8	3	3	5	2
29	296	**ZA**									29	1	1	7	2
28	297	**LT**										28	9	2	5
27	298	**EE**											27	1	3
22	303	**UK**												22	4
19	306	**IL**													19
28 %	**72 %**														

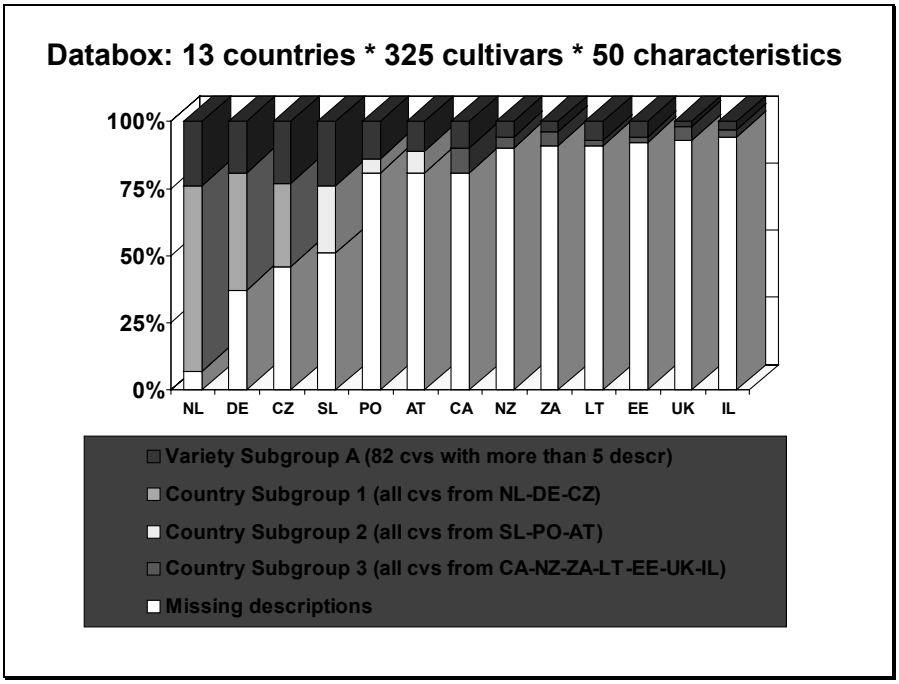
Slide 6

Incomplete dataset (13 cvs. only with > 7 descriptions) ■ **= missing value**

(H_0 = similar descriptions from different sources)

	NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL	Total # of descr
Adora	X	X	X	X	X	X	X			X		X	X	**10**
Asterix	X	X	X	X	X	X	X			X	X		X	**10**
Mondial	X		X	X	X	X	X	X				X	X	**9**
Remarka	X	X	X	X	X	X	X				X		X	**9**
Agria	X	X	X	X		X	X	X			X			**8**
Carlita	X	X		X	X		X			X	X		X	**8**
Felsina	X	X	X	X	X		X			X			X	**8**
Fresco	X	X	X	X	X					X	X	X		**8**
Impala	X	X	X	X	X	X				X	X			**8**
Innovator	X		X	X	X		X	X	X	X				**8**
Platina	X	X	X	X	X	X	X		X					**8**
Van Gogh	X	X	X	X		X	X	X			X			**8**
Victoria	X		X	X	X		X	X	X		X			**8**

Slide 7



Slide 8

Unbalanced dataset – without replications

sources of variation	*df*	*SS*	*MS*	*F-test prob.*
variety	324			
country	12			
variety*country = residual	843			
Total	1179			

Genstat – REML procedure = Residual maximum likelihood

Slide 9

Analyses – options (H_0 = similar descr. from different sources)

- 1. Over all varieties – across a subset of 3 countries (NL-DE-CZ)
  - Condensed dataset – (slightly) unbalanced – partial concl. on major set
- 2. Over all varieties – across a subset of 5 cnt. (NL-DE-CZ-SL-PO)
  - Unbalanced dataset – coherent set of countries
- 3. Over all varieties – across all countries
  - Highly unbalanced – overall conclusions
- 4. Per variety – across countries
  - Direct comparison - no replications – few df – standard dev. – min / max
- 5. Over a subset of varieties – across countries – ringtest Poland 2005
  - Concised dataset – slightly unbalanced – partial conclusions

Slide 10

Restrictions on the statistical analyses

- **Statistical variance analysis requirements**
  - Normal distribution of data
  - Constant error variance
- **Qualitative characteristics**
  - Discontinuous scale (mostly) – should be tested non-parametric
- **Pseudo Qualitative characteristics - short scales (< 1 - 9)**
  - Limited range of variance (not comparable with 1-9 scale)
  - Not always normally distributed (skew distributions and skew scales)
- **Quantitative characteristics (scale 1 – 9) – REML analysis**
  - No replications from similar sources – not always normally distributed
  - Test against interactions (small sign. differences indicate low interactions)
- **Constraints equally applicable for comparison of Standard deviations**
  - Standard deviations are relative to the range and relative to the average

Slide 11

Qualitative and Pseudo-qualitative char. (# cvs. 1 state different)

Char.		* and grouping	Char-type	Char. range	# cvs with diff descr	% total # of cvs
47	Tuber: color skin	* - G	PQ	1 – 5	8	2.5
48	T: color base eye		PQ	1 – 3	8	2.5
40	Fl.: anth. white fl.	*	QL	1 / 9	22	10.2
27	Lfl.:anth. ap. roset.		QL	1 / 9	36	11.5
3	L.spr.: anth. base	* - G	QL	1 – 2	37	11.9
38	Fl.: color inner side	* - G	PQ	1 – 3	42	12.9
14	Plant: type		PQ	1 – 3	148	47.1
49	Tuber: color flesh	*	PQ	1 – 5	201	61.8
2	L.sprout: shape	*	PQ	1 – 5	231	71.1

Slide 12

Differences for 'stable' QL-characteristics: X40

X40	# descr	NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL
Remarka	9	1	1	1	1	9	1	1				1		1
Fresco	8	1	1	1	1	1					9	1	1	
Agria	6	1		1	1		1	1				9		
Dorado	4	9		1		1				1				
Atlas	4	9	9	1	9									
Taiga	3	9	1		1									
Anosta	3			1	1							9		
Hilite Russet	3	1						1					9	
Allure	2	9	1											
Stefano	2	9	1											
Fianna	2	9						1						
Desiree	2						9							1
Felsina	8	1	9	9	1	1		1			1			1
Latona	7	1		1	9	9		1			1	1		
Sante	6	9		1	1			1			9	1		
Kuras	5	9	1	1	9		1							
Gloria	5		1	9	9	1		1						
Saturna	5		1	1	9	9	9							

X40 = Flower corolla: anthocyanin coloration of outer side of white flower

1 = absent

9 = present

Remaining cvs were stable

Slide 13

Interim Conclusion

- QL char. (3) are stable across environments
  - Differences for QL char. need to be checked

Slide 14

Differences for 'stable' PQ-characteristics: X47

X47	NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL
Cleopatra	2			2			1						
Diana	2	1										2	
Glamis	1											4	
Merlin							1		4			4	
Quarta	1	4	4	1		1					1		
Rasant	1	2	2										
Redstar	2			2	2		1	2					
Russet Burbank	1					2		1	1				

X47 = Tuber: color of skin (1 – 5) - grouping char.

1 = yellow

2 = red

3 = blue

4 = red parti-colored

5 = blue part-colored

Remaining cvs. were stable

Slide 15

Differences for 'stable' PQ-characteristics: X48

X48	NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL
Argos			1						2			1	
Cycloon	1		2	1	1								
Diana	2	1										1	
Evita	1		1	1		2							
Karakter	2	1											
Sebago	1								2				
Serenade	1	1	1						3				
Solara	2	1	2	1	1	1							

X48 = Tuber: color of the base of the eyes (1 – 3)

1 = yellow

2 = red

3 = blue

Remaining cvs. were stable

Slide 16

Differences for 'stable' PQ-characteristics: X38

X38	NL	DE	CZ	SL	PO	AT	CA	NZ	ZA	LT	EE	UK	IL	Country A	Country B
28 cultivars														2	3
Romula	1	2	2	2	2										
Carrera	2		1	2	2										
Saxon	1						1	1				2			
L. Christl	2			2			1		2						
Sirius	2	1	1	1											
Platina	1					1	2		1						
Cleopatra	2			2			1								
Diana	1	2										1			
Jana	2	1	2												
Molli	3	1			1										
Verdi	1	2													
Rosella	2	2	2	2	2	1				1					
Draga	1			2			2	3							
Novita	3	2		1		1							3		

X38 = Flower corolla: color of inner side (grouping char.)

1 = white 2 = red-violet 3 = blue-violet

Remaining cvs. were stable

Slide 17

Interim Conclusion

- QL char. (3) are stable across environments
  - Differences for QL char. need to be checked
- PQ char. can be very stable and very unstable
  - Differences for stable PQ char. need to be checked
  - PQ char. can be unstable for various reasons
- Environment = environment wide sense
  - Year, location, growing cond., observer, TG interpretation etc.

Slide 18

QN char.: Increasing differences for Plant height

Central EU			Northern EU			New EU			World		
									IL	4.650	a . . . .
									UK	4.912	a b . . .
									NZ	5.035	a b . . .
									ZA	5.062	a b . . .
			PO	5.152	a . . .	PO	5.180	a . . .	PO	5.199	. b . . .
CZ	5.259	a . .	CZ	5.245	a . . .	CZ	5.249	a . . .	CZ	5.243	. b . . .
						AT	5.564	. b . .	AT	5.572	. . c . .
									CA	5.631	. . c . .
						EE	5.645	. b c .	EE	5.640	. . c d .
NL	5.692	. b .	NL	5.706	. b . .	NL	5.732	. b c .	NL	5.738	. . c d .
						LT	5.761	. b c .	LT	5.800	. . c d .
			SL	5.923	. . c .	SL	5.929	. . c .	SL	5.921	. . . d .
DE	6.789	. . c	DE	6.759	. . . d	DE	6.755	. . . d	DE	6.735	. . . . e

Significant differences (P = 0.05) in Plant height (QN – scale 1-9) among descriptions originating from 3 – 5 – 8 – 13 countries

Slide 19

QN char.: Increasing differences for Leaf size

Central EU			Northern EU			New EU			World		
									NZ	4.757	a . . . .
			PO	4.710	a . .	PO	4.727	a . . .	PO	4.765	a . . . .
									UK	4.806	a b . . .
									ZA	5.334	. b c . .
			SL	5.510	. b .	SL	5.504	. b . .	SL	5.521	. . c . .
									IL	5.540	. . c d .
DE	5.598	a	DE	5.589	. b c	DE	5.547	. b . .	DE	5.564	. . c d .
CZ	5.619	a	CZ	5.626	. b c	CZ	5.632	. b c .	CZ	5.680	. . c d .
						EE	5.706	. b c .	EE	5.724	. . c d .
NL	5.829	a	NL	5.847	. . c	NL	5.869	. . c .	NL	5.886	. . . d .
						LT	6.081	. . c d	LT	6.115	. . . d e
						AT	6.139	. . . d	AT	6.179	. . . . e

Significant differences (P = 0.05) in Leaf size (QN – scale 1-9) among descriptions originating from 3 – 5 – 8 – 13 countries

Slide 20

Interim Conclusion

- QL char. (3) are stable across environments
  - Differences for QL char. need to be checked (for mistakes)
- PQ char. can be very stable and very unstable
  - Differences for stable PQ char. need to be checked
  - PQ char. can be unstable for various reasons
- Most QN char. are unstable
  - Among these QN char. there are 7 asterisked characteristics
- Environment = environment wide sense
  - Year, location, growing cond., observer, TG interpretation etc.

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Asterisked QN characteristics

- Tuber: shape
- Leaflet: size
- Flower corolla: intensity of anthocyanin coloration of inner side in colored flower
- Lightsprout: intensity of anth. coloration of base
- Stem: extension of anthocyanin coloration
- Leaflet: waviness of margin
- Lightsprout: pubescence of base

Slide 22

Adora: 10 descriptions for asterisked QN characteristics

	NL	DE	CZ	SL	PO	AT	CA	LT	UK	IL	Actual Range	Avg. St.dev
Tuber: shape	3	3	3	3	2	3	4	3	3	5	3	0.6
Leaflet: size	7	6	7	6	5	7	*	7	6	7	2	0.8
Fl. cor: int. anth. Inner side	5	5	7	5	4	7	6	5	6	5	3	0.9
L.spr.: int. anth. col. base	4	6	6	5	5	3	5	4	4	7	4	1.0
Stem: ext. anth. coloration	4	3	5	6	5	3	3	4	9	2	7	1.0
Leaflet: waviness	4	5	5	3	3	3	5	4	3	9	6	1.1
L.spr: pubescence of base	4	7	2	6	6	7	3	4	7	9	7	1.1
Country effect	4.4	5.0	5.0	4.9	4.3	4.7	4.7	4.4	5.4	6.3		

Actual Range for all char. > Minimum distance = 2 sd ?

IL (and UK) are outliers.

Slide 23

Asterix: 10 descriptions for asterisked QN characteristics

	NL	DE	CZ	SL	PO	AT	CA	LT	EE	IL	Actual Range	Avg. St.dev
Tuber: shape	4	2	3	4	3	4	4	3	3	5	3	0.6
Leaflet: size	4	6	6	5	3	3	*	4	4	7	4	0.8
Fl. cor: int. anth. Inner side	6	4	7	6	5	7	2	6	6	*	5	0.9
L.spr.: int. anth. col. base	6	8	6	7	7	7	9	6	6	9	3	1.0
Stem: ext. anth. coloration	6	8	7	7	5	3	5	6	6	1	7	1.0
Leaflet: waviness	7	4	7	6	5	3	4	7	7	7	4	1.1
L.spr: pubescence of base	5	5	5	6	5	7	5	5	5	5	2	1.1
Country effect	5.4	5.3	5.9	5.9	4.7	4.9	4.9	5.3	5.3	5.7		

Actual Range for all char. > 2 st. dev

Individual “off-type scores”.

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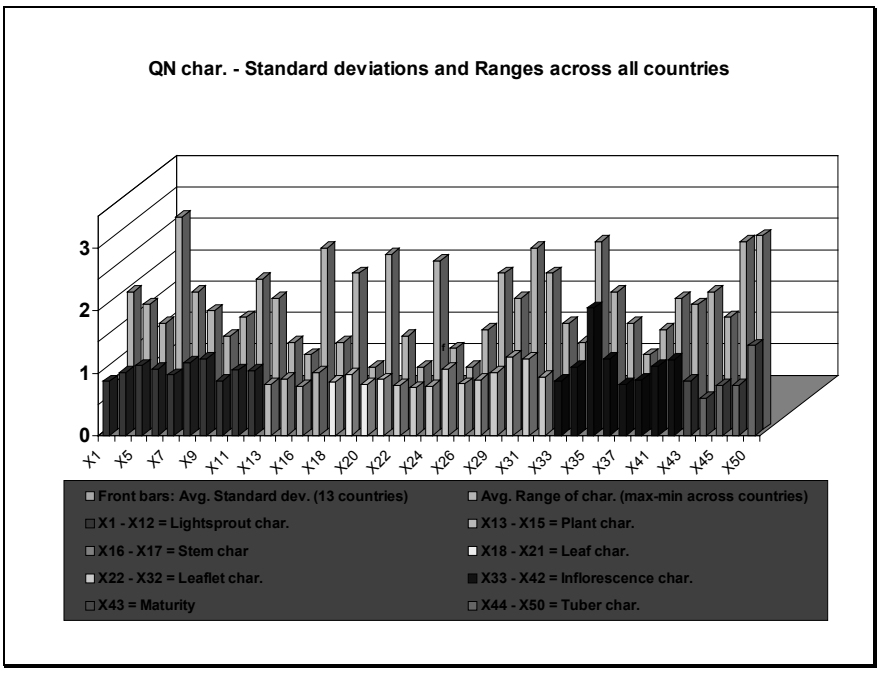
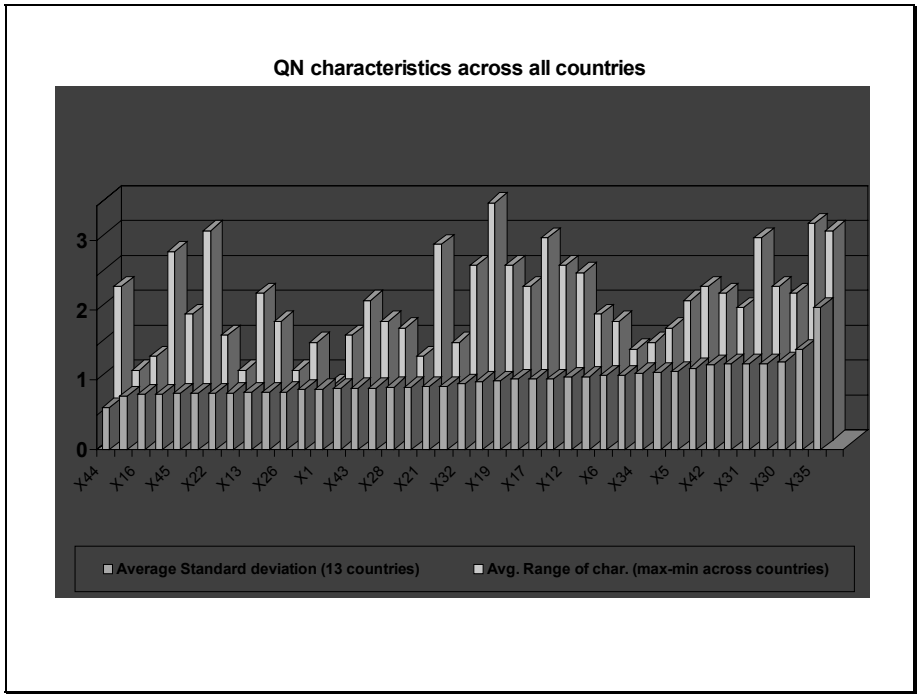
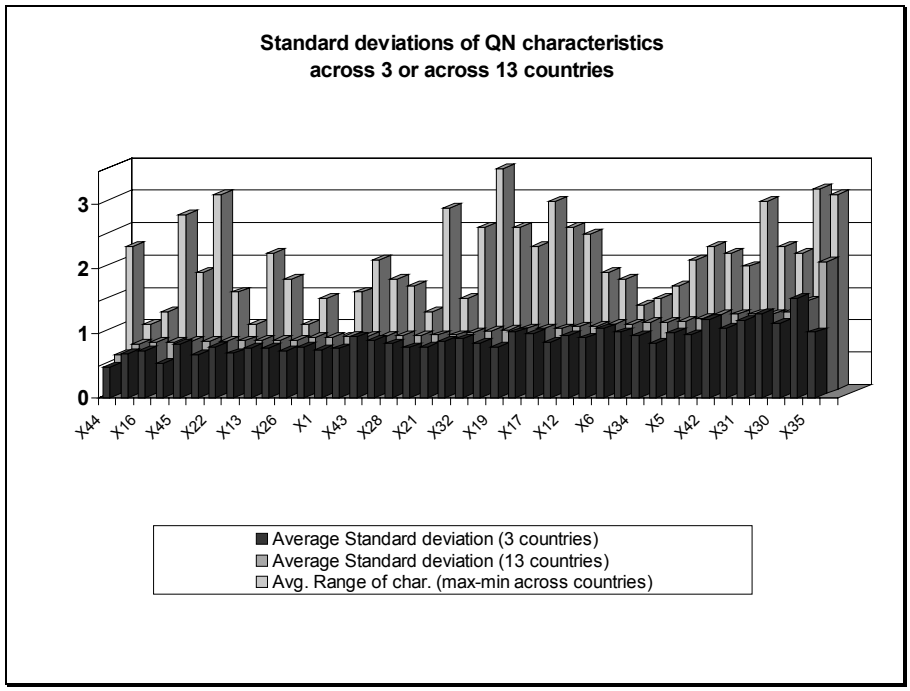


Slide 25



Slide 26



Slide 27

Similarities among environments

- Correspondence analysis (multivariate - biplot):
  - similarities among countries for different sets of char.
  - pca for differences among (groups of) countries:
    - group of 3 North West European countries (NL-DE-CZ)
    - group of 5 North West European countries (NL-DE-CZ-SL-PO)
    - All countries (NW-EU, Commonwealth and Israel).
  - multidimensional projection of correlations among characteristics on corresponding axes.

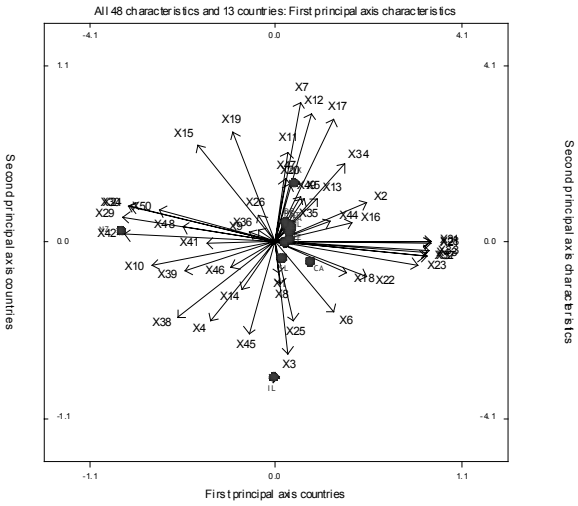
Slide 28

Total dataset

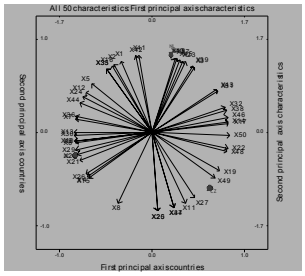
Countries cluster in the centre.

IL, NZ main outliers.

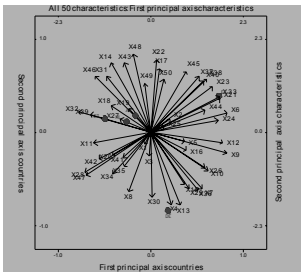
CA, ZA, UK deviating for some characteristics



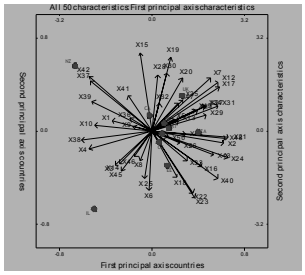
Slide 29



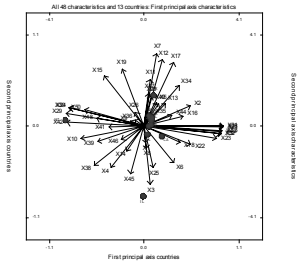
3 countries: 100 % expl.



5 countries: 57.2 % expl.



10 countries: 33.5 % expl.

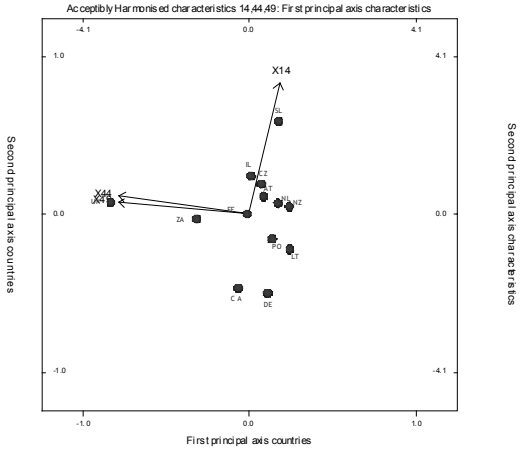


13 countries: 32.4 % expl.

Slide 30

Harmonised or not harmonised ?

X14 = Plant type (PQ; 1-3)
X49 = Tuber color of flesh (PQ; 1-5)
X44 = Tuber shape (QN; 1-9)



Slide 31

Colours influenced by light conditions ?

Light intensity or …

Observer / soil, fert, etc

X17 = Stem: extension of anthocyanin coloration (1-9)

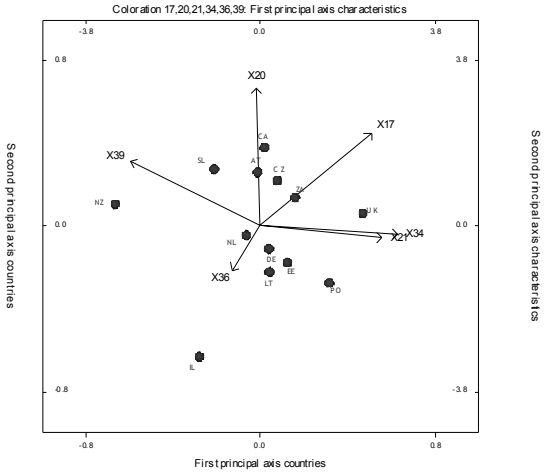
X20 = Leaf: intensity of green color (1-9)

X21 = Leaf: extension of anthocyanin coloration of midrib (1-9)

X34 = Inflorescence: anthocyanin coloration of peduncle (1-9)

X36 = Flower: anthocyanin coloration of bud (1-9)

X39 = Flower corolla: intensity of anthocyanin coloration of inner side of colored flower



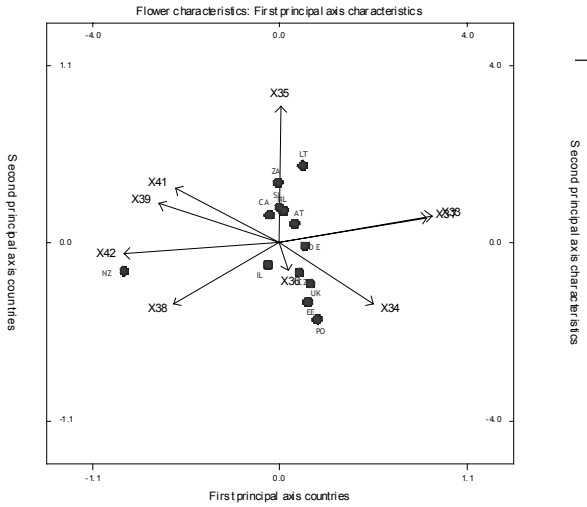
Slide 32

Frequency of flowers and fruits is strongly influenced by the environment

X42 = Plant: frequency of fruits.

QN; 1-9

X35 = Plant: frequency of flowers



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X3 = Lightsprout: anthocyanin coloration of base.

QL * - g ; 1-2

X38 = Flower corolla: color of inner side.

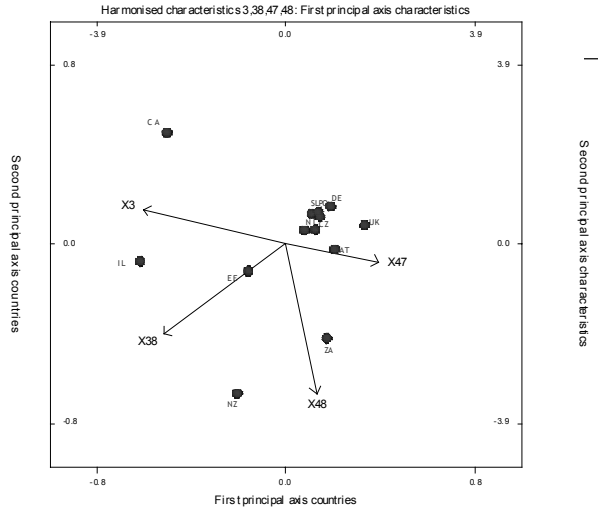
PQ * - g ; 1-3

X47 = Tuber: color of skin.

PQ * - g ; 1-5

X48 = Tuber: color of base of eye.

PQ ; 1-3



Slide 34

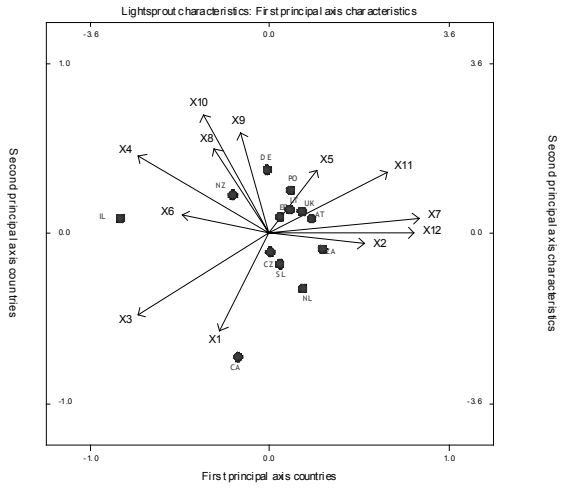
Lightsprout characteristics

Relatively large dispersal for lightsprout char.

"Controlled conditions"

Observer effects

No breeding goal



Slide 35

Shapes of plant and leaf

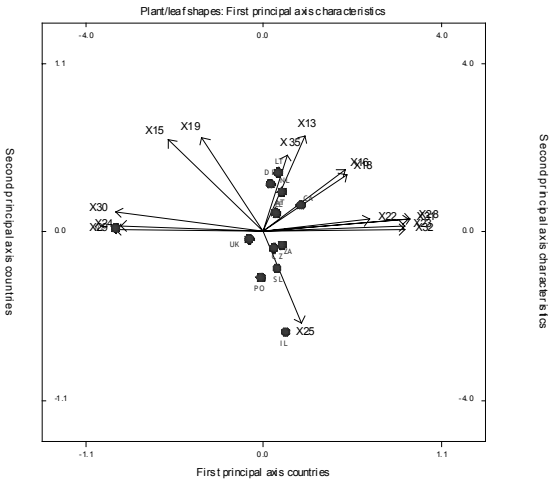
With, among others:

X25 = Leaflet: waviness of margin (QN; 1-9)

X24 = Leaflet: frequency of coalescence (QN; 1-9)

X29 = Leaf (midrib): frequency of secondary leaflets (QN; 1-9)

X30 = Terminal leaflet: frequency of secondary leaflets (QN; 1-9)



Slide 36

Tuber characteristics

Tuber

UK market specialties ?

Incl. commonwealth.

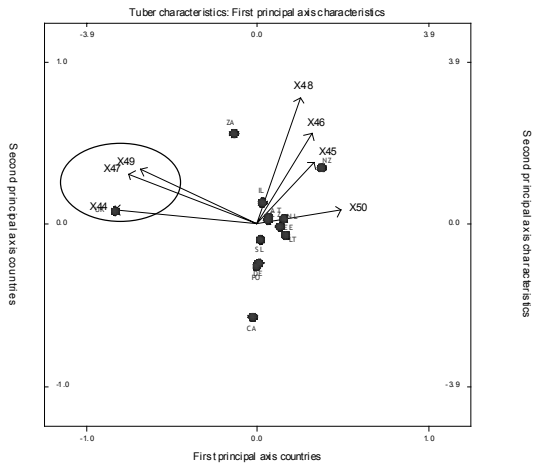
X47 = color of skin (PQ; 1-5)

X49 = color of flesh (PQ, 1-5)

X44 = tuber shape (QN, 1-9)

X45 = depth of eyes (QN, 1-9)

X48 = color eyebase (PQ, 1-3)



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Conclusions

- Characteristics
  - Some PQ and QL-characteristics are stable (skin and flower colour)
  - Most QN's are not stable across environments (in general)
  - Some QN-characteristics are more stable than others
  - Asterisked characteristics are not more stable than non-asterisked char.
- Regional similarities
  - Stability of char. across environments seems to increase in regional subsets
  - Further regional calibration is needed (especially on QN-characteristics)
  - Calibration can be achieved by use of ringtests and example varieties.
- Publication of Variety Descriptions ?
  - Descriptions should only be published when at least 3 descriptions per variety are available.
  - Mistakes and obvious deviations should be checked and (if necessary) corrected.
  - Descriptions can be based on stable (QL and PQ) characteristics.
  - Most QN-characteristics are not stable – they require special thresholds for distinctness.

[End of Annex VII and of document]