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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

TECHNICAL WORKING PARTY ON AUTOMATION AND COMPUTER PROGRAMS

Thirty-First Session
Seoul, Republic of Korea, June 4 to 7, 2013

REVISION OF DOCUMENT TGP/8: PART II:
NEW SECTION: DATA PROCESSING FOR THE ASSESSMENT OF DISTINCTNESS AND FOR PRODUCING VARIETY DESCRIPTIONS

Document prepared by the Office of the Union

1. The purpose of this document is to present the developments concerning a possible new section for document TGP/8: "Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions".

2. The following abbreviations are used in this document:

CAJ:	Administrative and Legal Committee
TC:	Technical Committee
TC-EDC:	Enlarged Editorial Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs
TWF:	Technical Working Party for Fruit Crops
TWO:	Technical Working Party for Ornamental Plants and Forest Trees
TWV:	Technical Working Party for Vegetables
TWPs:	Technical Working Parties

3. The structure of this document is as follows:

BACKGROUND

4. The Technical Committee (TC), at its forty-eighth session, held in Geneva from March 26 to 28, 2012, considered Annex III: "TGP/8 PART I: DUS Trial Design and data analysis, New Section 6 – Data processing for the assessment of distinctness and for producing variety Descriptions" in conjunction with Annex VIII: "TGP/8 PART II: Techniques used in DUS Examination, New Section 13 - Methods for data processing for the assessment of distinctness and for producing variety descriptions" of document TC/48/19 Rev. It agreed that the information provided in Annex VIII of document TC/48/19 Rev. and at the UPOV DUS Seminar, held in Geneva in March 2010, together with the method provided by Japan and the method used in France for producing variety descriptions for herbage crops, as presented at the TWC at its twenty-sixth session (see document TWC/26/15, TWC/26/15 Add. and TWC/26/24), provided a very important first step in developing common guidance on data processing for the assessment of distinctness and for producing variety descriptions, but concluded that the information as presented in Annex VIII of document TC/48/19 Rev. would not be appropriate for inclusion in document TGP/8. It agreed that the Office of the Union should summarize the different approaches set out in Annex VIII of document TC/48/19 Rev. with regard to aspects in common and aspects where there was divergence. As a next step, on the basis of that summary, consideration could be given to developing general guidance. The TC agreed that the section should include examples to cover the range of variation of characteristics. It further agreed that the detailed information on the methods should be made available via the UPOV website, with references in document TGP/8 (see document TC/48/22 "Report on the Conclusions" paragraph 52).

DEVELOPMENTS IN 2012

Technical Working Parties

5. At their sessions in 2012, the TWA, TWV, TWC, TWF and TWO, considered documents TWA/41/30, TWV/46/30, TWC/30/30, TWF/43/30 and TWO/45/30 respectively, which contained a presentation on "Summary of different approaches of transformation of measurements into notes for Variety Description", as reproduced in the Annex to this document.

6. The TWPs, at their sessions in 2012, made the following comments:

General	The TWA noted the information that a summary of different approaches used for data processing for the assessment of distinctness and for producing variety descriptions would be developed by the Office of the Union (see document TWA/41/34 "Report", paragraph 44).	TWA
	The TWV considered document TWV/46/30 and received a presentation made by the Office containing a summary of different approaches for transforming means into notes for variety descriptions. The TWV was informed that the summary would be presented to the TWC at its thirtieth session and that it would be further developed (see document TWV/46/41 "Report", paragraphs 43 and 44).	TWV
	The TWC noted information provided in documents TWC/30/30 and TWC/30/30 Add. and agreed that the experts from Finland, Italy and the United Kingdom would support the Office of the Union to summarize the different approaches for further developing common guidance on data processing for the assessment of distinctness and for producing variety descriptions (see document TWC/30/41 "Report", paragraph 42). The TWC agreed that experts from the United Kingdom in cooperation with experts from France and Germany should conduct a practical exercise. The exercise would be to process a common data set to produce variety descriptions in order to determine the aspects in common and where there was divergence among the methods (see document TWC/30/41 "Report", paragraph 43).	TWC
	The TWF considered documents TWF/43/30 and TWF/43/30 Add. and received a presentation made by the Office containing a summary of different approaches for transforming means into notes for variety descriptions. The TWF expressed concern that a specific country may have difficulty in	TWF

	describing the full range of states of expression of a characteristic because some varieties might not be available. A universal set of example varieties, the use of historical data and experience of the experts could be a way to address this issue. The TWF recommended that consideration be given to the construction of a meaningful range of expression in the case of a limited range of available varieties. (see document TWF/43/38 "Report", paragraphs 29 to 31)	
	The TWO agreed with the recommendations of the TWF that consideration be given to the construction of a meaningful scale of expression in the case of a limited range of available example varieties (see document TWO/45/37 "Report", paragraph 32).	TWO

7. In accordance with the proposal of the TWC, the Office of the Union invited experts from the United Kingdom, France and Germany to make a proposal for a practical exercise.

DEVELOPMENTS IN 2013

Technical Committee

8. The Technical Committee (TC), at its forty-ninth session held in Geneva from March 18 to 20, 2013, considered document TC/49/29 "Revision of document TGP/8: Part II: Techniques Used in DUS Examination, New Section: Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions ".

9. The TC requested the Office of the Union to request experts from the United Kingdom, France and Germany, or other members of the Union, to provide a common data set of self-pollinated and/or vegetatively propagated varieties, because the COY method was already well established for cross-pollinated varieties, for performing a practical exercise. (see document TC/49/41 "Report on the Conclusions", paragraph 66).

Practical exercise with a common data set

10. Following the request from the TC at its forty-ninth session, experts from the United Kingdom, France and Germany have been asked to provide a common data set of self-pollinated and/or vegetatively propagated varieties for performing a practical exercise. In response to some of the experts expressing difficulties in providing the data requested by the TC, the other members of the Union that have contributed to the information provided in the Annex of this document (Netherlands, Finland, Republic of Korea and Japan), have been invited to contribute to the practical exercise by providing a common data set of self-pollinated and/or vegetatively propagated varieties.

11. A report on developments with regard to the practical exercise will be made to the TWC at its thirty-first session.

13. The TWC is invited to consider developments on a practical exercise with a common data set to produce variety descriptions of self-pollinated and/or vegetatively propagated varieties, in order to determine the aspects in common and divergence between methods, with a view to developing general guidance.

[Annex follows]

ANNEX

Technical Working Party on
Automation and Computer Programs

Thirtieth Session

TRANSFORMATION OF MEASUREMENTS INTO NOTES FOR VARIETY DESCRIPTIONS

SUMMARY OF DIFFERENT APPROACHES

Chisinau, Republic of Moldova
June 26 to 29, 2012

1

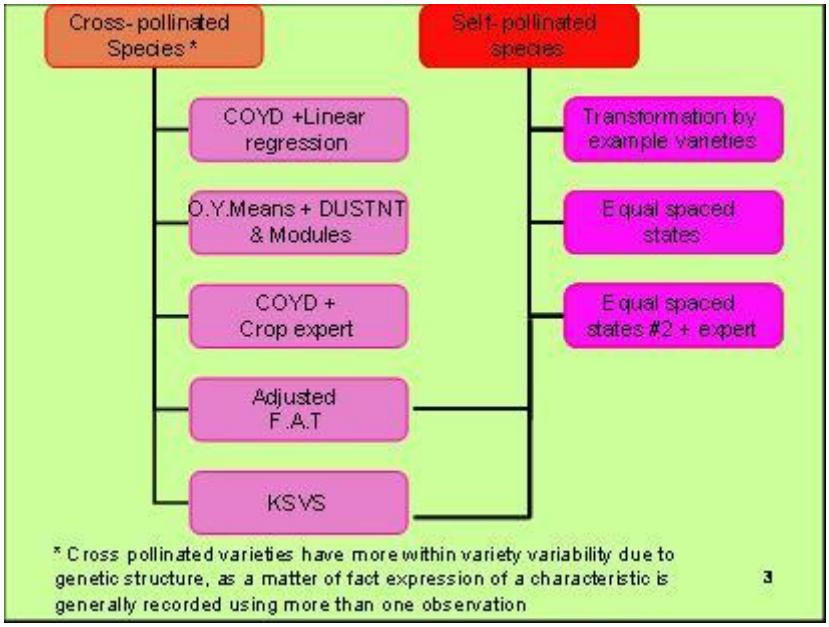
OVERVIEW/ CONTEXT/ BACKGROUND

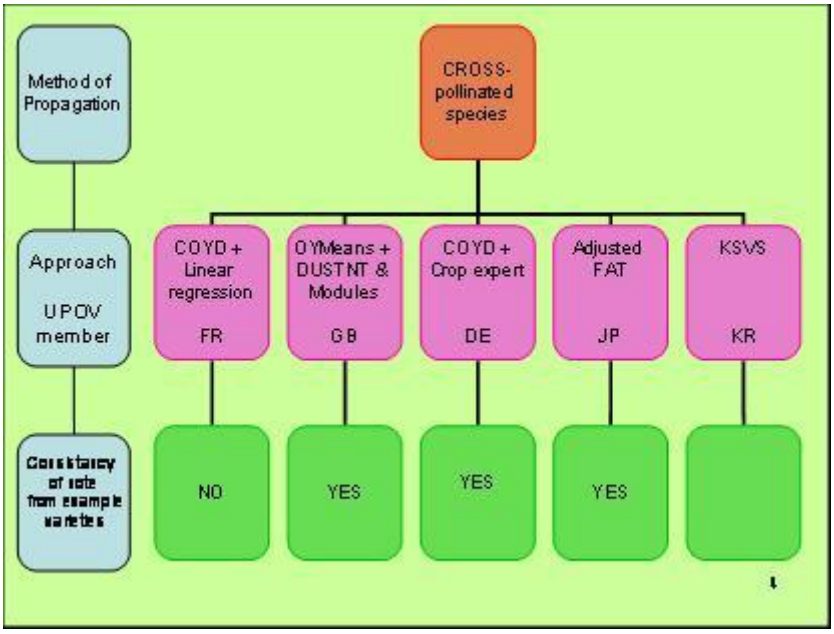
- In order to produce a summary of different approaches on data processing

  (see document TC/48/22 "Report on conclusions", paragraph 52)

- For transforming means into notes
- For Quantitative (QN) characteristics recorded by measurements (M)
- In order to develop a common guidance and harmonized processes

2


Cross-pollinated Species *
Self-pollinated species
COYD +Linear regression
O.Y.Means + DUSTNT & Modules
COYD + Crop expert
Adjusted F.A.T
KSVS
Transformation by example varieties
Equal spaced states
Equal spaced states #2 + expert
* Cross pollinated varieties have more within variety variability due to genetic structure, as a matter of fact expression of a characteristic is generally recorded using more than one observation
3

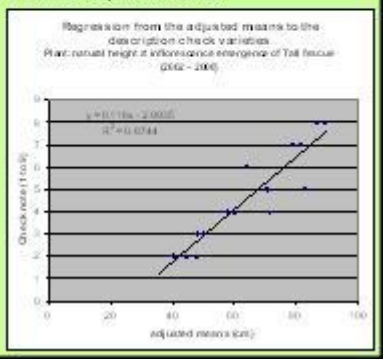

Method of Propagation
Approach
UPOV member
Consistency of vote from example varieties
CROSS-pollinated species
COYD + Linear regression
FR
OYMeans + DUSTNT & Modules
GB
COYD + Crop expert
DE
Adjusted FAT
JP
KSVS
KR
NO
YES
YES
YES
4

COYD + Linear regression <France>

Use of COYD that provides adjusted means for each characteristics for example varieties & candidate varieties

Transformation into notes by using linear regression (generate a formula) in order to provide the predicted note based on the adjusted mean

Example: Festuca / Grass



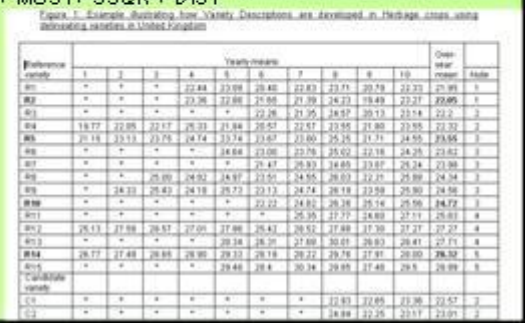
Means + DUSTNT software <United Kingdom>

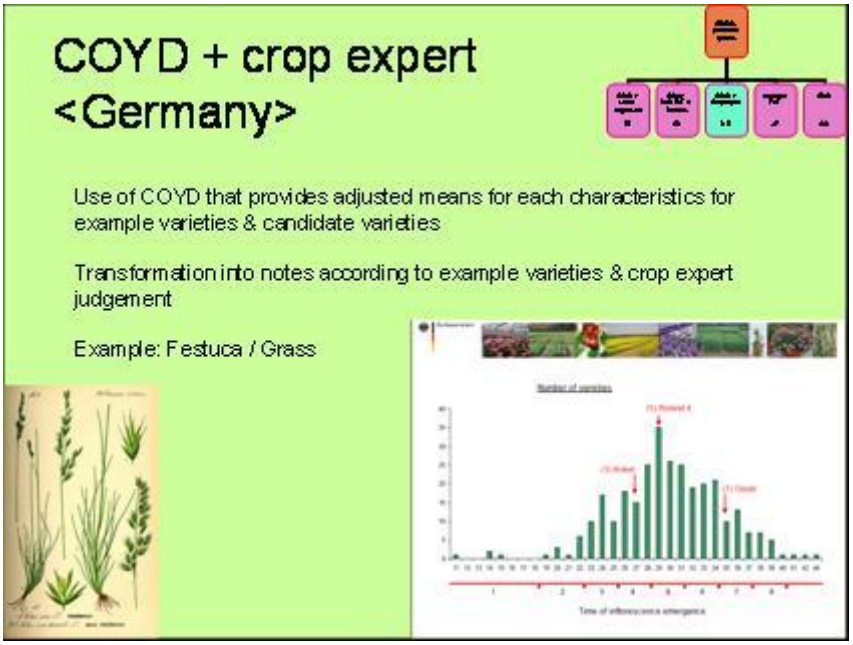
Using over year variety means are calculated on the original scale of characteristics (DUSTNT module FITC in conjonction with module FIND)

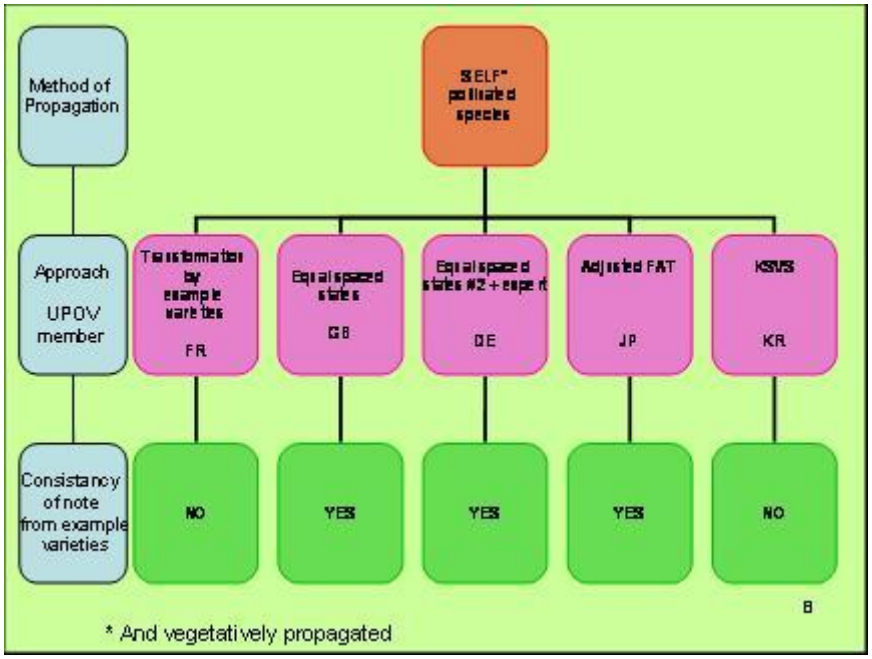
Transformations into notes by using DUSTNT module VDES by use of delineating varieties to divide the range into states

DUSTNT module SAME + MOST+ SSQR + DIST

Example: Herbage crops




COYD + crop expert
<Germany>
Use of COYD that provides adjusted means for each characteristics for example varieties & candidate varieties
Transformation into notes according to example varieties & crop expert judgement
Example: Festuca / Grass


Method of Propagation
"SELF" pollinated species
Approach
UPOV member
Transformation by example varieties
FR
Equal spaced states
GB
Equal spaced states #2 + expert
DE
Adjusted FAT
JP
KSVS
KR
Consistancy of note from example varieties
NO
YES
YES
YES
NO
* And vegetatively propagated

Transformation by example varieties <France>

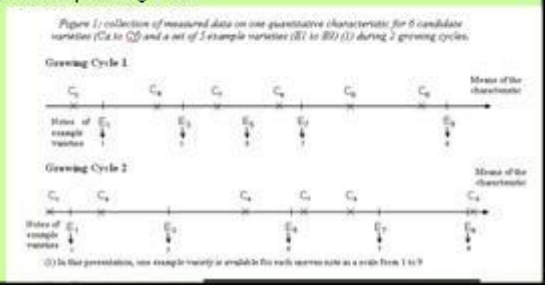
Adjustment on the basis of example varieties

Values are distributed on a axis with example (EV) & candidates varieties

Transformation into notes are given in relation to the EV in each growing cycle

Distribution on the axis of the Candidate is made in relation to the Example varieties and the corresponding notes

No clear example



Means + DUSTNT + VDES <United Kingdom>

Division of the range of expression of the over-year means for the reference collection varieties into equal spaced states

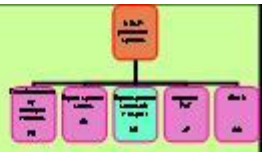
Transformations into notes by using DUSTNT module VDES by division of the range into equal spaced states

Range of notes can be expanded from a 5 to 9 scale

Example: Pea

Reference variety	Variety means									Over-year mean	Note
	1	2	3	4	5	6	7	8	9		
R1	*	*	*	*	*	21	36	22	24	30.8	3
R2	*	*	*	29	39	29	39	25	26	35.4	3
R3	*	56	65	69	48	44	59	56	26	54.7	4
R4	72	61	73	45	59	52	69	56	53	59.9	4
R5	*	*	*	*	*	66	70	59	60	68.4	4
R7	*	*	77	61	73	72	80	64	61	72.2	4
R8	*	*	*	*	96	107	102	101	91	102.7	6
R9	121	120	113	79	117	102	109	100	79	104.7	6
R10	*	97	112	95	124	110	117	112	96	108.7	6
R11	*	*	*	122	121	120	105	102	95	117.7	7
R12	*	*	*	*	110	130	129	106	97	114.8	7
R13	*	*	*	*	*	132	133	130	113	131.2	7
R15	*	*	*	*	*	121	155	157	106	139.8	7
Candidate variety											
C1	*	*	*	*	*	*	55	32	27	43.3	3
C2	*	*	*	*	*	*	55	56	26	51.2	3
C3	*	*	*	*	*	*	*	48	44	58.7	4

Equal spaced states #2 <Germany>



Division of the range of expression of the over-year means for the reference collection varieties into equal spaced states

Adjustment of notes is done by reference to example varieties

Range of variation can be adjusted (expert judgement)

Example: Barley

- Range 38.3 cm / 7 Notes = 5.5 cm =Width of states

State	from	to	Example varieties
1		≤ 87.4	
2	> 87.4	≤ 92.8	
3	> 92.8	≤ 98.3	3 – Spectrum (93.8)
4	> 98.3	≤ 103.8	
5	> 103.8	≤ 109.2	5 – Reni (111.0)
6	> 109.2	≤ 114.7	
7	> 114.7	≤ 120.2	7 – Stephanie (118.6)
8	> 120.2	≤ 125.7	
9	> 125.7		

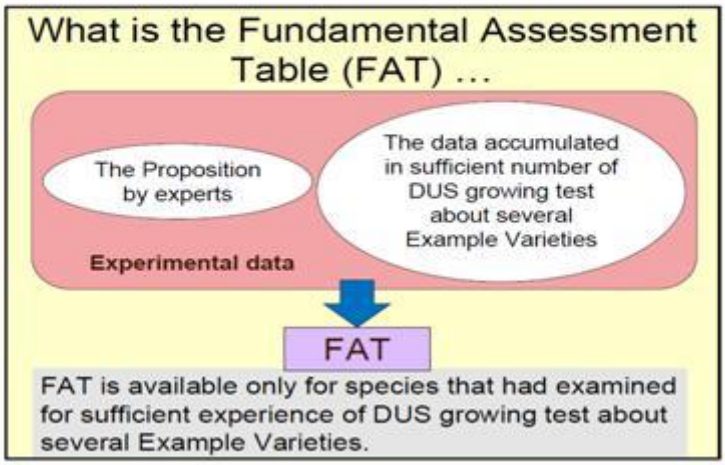
Adjusted Full Assesement Table (FAT) <Japan>

- FAT is a table to evaluate the notes from the datas of QN characteristics
- The notes are based on example variety's data from ONE growing trial + historical datas
- (Mainly use for ornamental & veg. crops)
- Same method for self and cross,
- The adjustable range changes according to dispersion of Historical data of the Example variety

12

<Japan (cont.)>

What is the Fundamental Assessment Table (FAT) …

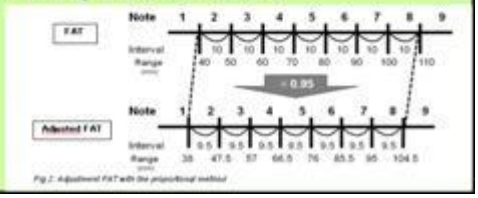


FAT is available only for species that had examined for sufficient experience of DUS growing test about several Example Varieties.

FAT proportional method

<Japan (cont.)>

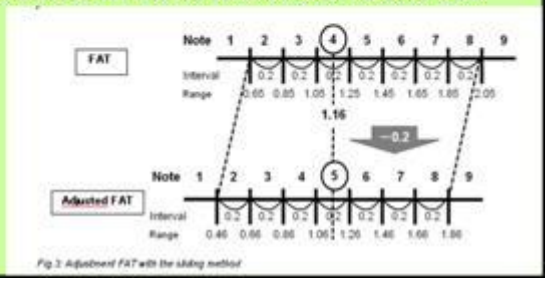
- **Range & interval of notes are adjusted once**
- **Calculate by the proportion of the measured data to Mean of the historical data about Example Varieties.**
- **The interval of notes is adjusted accordingly in equal spaced states**

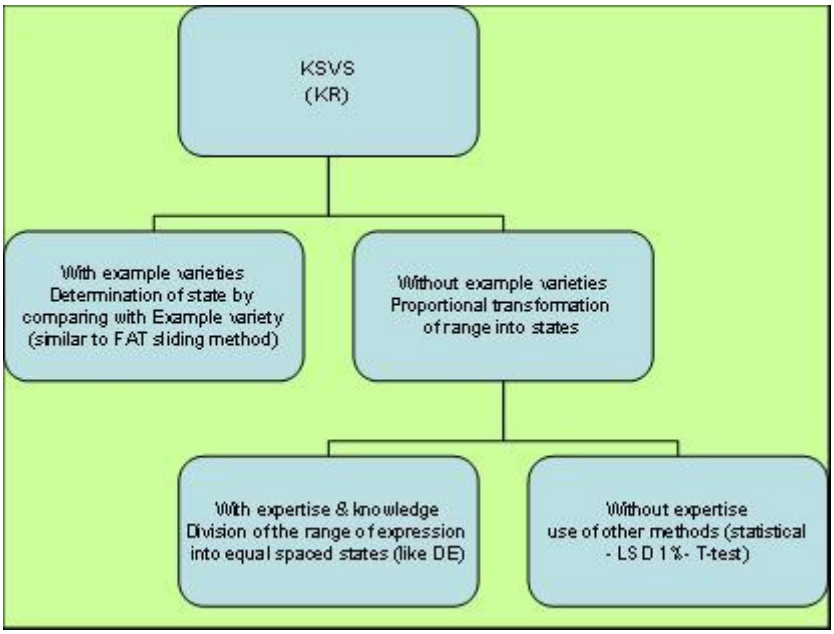


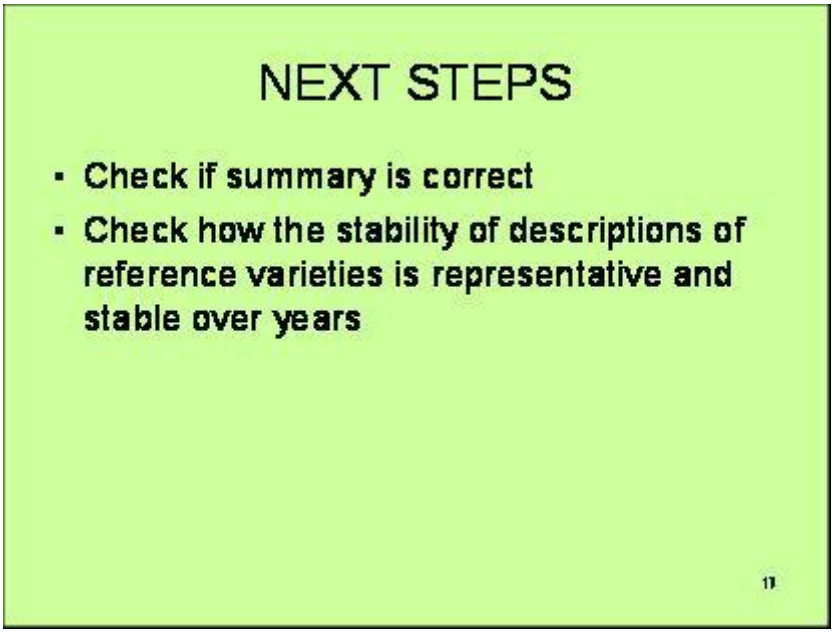
FAT Sliding method

<Japan (cont.)>

- **Range is adjusted- interval is not changed**
- **Calculate by the subtraction of Mean of the historical data from the measured data about Example Varieties (EV).**
- **Adjustment based on the least variable EV**







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