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ADDENDUM

Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions

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The Annexes to this document contain a copy of the results on the practical exercises with a data set for a single characteristic (Stem: length from cotyledon scar to top boll) for flax for the years 2002-2012, of France, Germany, Italy, Japan and the United Kingdom.

Annex I	France
Annex II	Germany
Annex III	Italy
Annex IV	Japan
Annex V	United Kingdom

[Annexes follow]

ANNEX I

PRACTICAL EXERCISE OF FRANCE

1. The practical exercise was to illustrate on a common data set the methods used by different UPOV members to produce variety descriptions from measured, quantitative characteristics. The purpose of the practical exercise was to clarify the methods and so aid the development of common guidance on data processing for the production of variety descriptions.
2. A common data set on Flax varieties was produced by experts from France for the practical exercise. The data comprised 48668 plant observations on 303 varieties in 10 years on UPOV characteristic 21 (Stem: length from cotyledon scar to top boll). There were 1367 variety-by-year combinations, with not all varieties present every year. When present, there were between 20 and 120 observations on a variety in a year, depending on the variety and year.
3. The methods used in the United Kingdom (the UK methods) to produce variety descriptions require variety-by-year means comprised of equal numbers of observations. Consequently, the common data set was restricted to observations on the first 20 plants of those varieties and years where 20 or more plants of the variety were observed in the year, and such years included 2012. This reduced common data set comprised 936 variety-by-year combinations for 153 reference varieties and 30 candidates in 10 years from 2002 to 2012, for which the variety-by-year means were calculated on the original scale of the characteristics.

FR METHODS

Simple statistics method applied for different species: Maize, Oilseed rape, Flax... Combined use of example varieties and reference collection

4. In this method, we combine the use of UPOV example varieties and varieties from the reference collection.
5. If an authority has no experience on the species, he will only use the UPOV example varieties the first year (for this exercise in 2002). The middle of every class of notes is determined from the example varieties which are grown.

Note	Mean 2002	Middle class of	Number of varieties
1 (Banquise)		203.2	0
2		328.6	3 (variety 4, 48 and 122)
3 (Barbara)	454 = middle note 3	454	21
4	= middle 3 + (middle7-middle3)/4	579.4	25
5 (Bilton)		704.8	37
6		830.1	5
7 (Escalina)	955.5	955.5	34
8	= middle 7 + (middle9-middle7)/2	1035	3
9 (Drakkar)	1114.5	1114.5	1

6. The classes limits are calculated by this way: Minimum (note2) = [Mean (note1) + Mean (note2)] / 2.
7. The next year, 2003, the mean of example varieties is compared to the mean of varieties for each class:

Note	Mean of example varieties in 2003	Mean of reference collection varieties in 2003
1		
2		295 (=Mean of variety 4, 48 and 122 in 2003)
3	434.25	417.5
4		478.8
5	594.5	554.5
6		673.7
7	802.5	797.4
8		850.5
9	959	959

8. The method allows us to adjust the note every year by taking into account more varieties for the middle classes calculation.

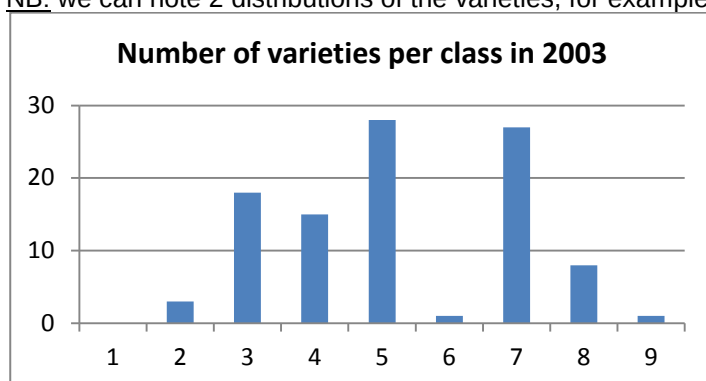
9. The middle of every class and their upper limit by year are represented in the table below:

	2002	2003	2004	2005	2006	2008	2009	2010	2011	2012
Middle 1	203.2	172.5	205.2	237.0	323.4	376.5	324.1	358	264.5	366.3
Max 1	265.9	233.8	260.5	273.0	362.5	382.2	372.8	378.1	288.9	371.6
Middle 2	328.6	295	315.8	309.0	401.6	387.9	421.4	398.1	313.2	376.9
Max 2	391.3	356.3	374.4	345.0	440.7	393.4	452.6	424.8	322.6	391.2
Middle 3	454.0	417.5	432.9	381	479.8	398.8	483.7	451.4	332	405.5
Max 3	516.7	448.2	438.2	397.3	498.1	410.6	498.5	474.8	338.4	417.1
Middle 4	579.4	478.8	443.4	413.5	516.4	422.3	513.3	498.1	344.7	428.6
Max 4	642.1	516.7	485.1	437.0	553.1	431.9	531.1	513.7	350.5	441.6
Middle 5	704.8	554.5	526.7	460.4	589.8	441.5	548.9	529.3	356.3	454.6
Max 5	767.4	614.1	576.1	539.5	664.8	506.9	636.4	619.6	422.0	534.7
Middle 6	830.1	673.7	625.5	618.5	739.7	572.2	723.9	709.8	487.6	614.7
Max 6	892.8	735.6	686.0	644.2	765.8	593.7	747.7	733.4	496.5	634.6
Middle 7	955.5	797.4	746.5	669.8	791.9	615.1	771.4	757	505.4	654.4
Max 7	995.3	824.0	772.7	699.9	805.2	626.2	788.2	767.8	515.0	665.2
Middle 8	1035.0	850.5	798.9	730	818.4	637.3	805	778.5	524.5	676
Max 8	1074.8	904.8	872.1	796.5	862.7	653.1	827.6	781.9	532.5	696.0
Middle 9	1114.5	959	945.3	863	907	668.9	850.2	785.3	540.5	716

10. To establish the description of the candidate, the transformations of the two years of study are taken into account.

11. This method is very reliable but it also needs expertise, mainly concerning limits of classes. Indeed it is very important to be careful to the distribution of the varieties. We have especially to check the number of varieties in the extreme classes in order to avoid a drift and we check the normal distribution of varieties.

NB: we can note 2 distributions of the varieties, for example in 2003:



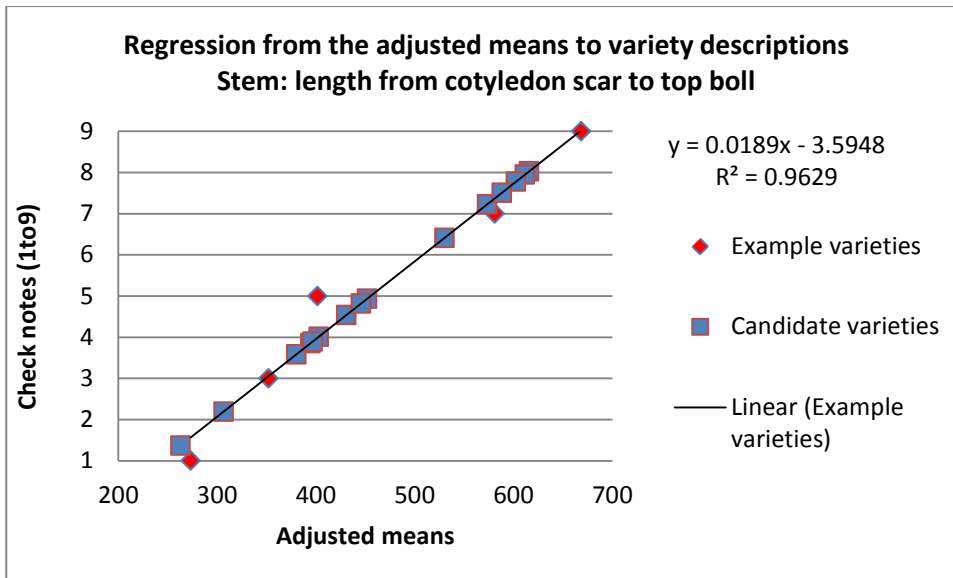
12. These 2 distributions match the 2 kind of varieties: linseed (which is smaller) and flax (group of varieties which are taller).

Linear regression method applied mainly on forage crops

13. The principle to establish the description of varieties is based on a linear regression from the adjusted means of 2 or 3 cycles provided by the COY program.

14. A graph is created with, for abscissa the adjusted means of the example varieties and for ordinate the notes of these varieties.

15. Then the candidate varieties are reported on the regression, using their adjusted means.



16. This method is applied to candidate varieties after 2 or 3 growing cycles. We consider that adjusted means is not reliable enough after just one growing cycle. If there is an high interaction between the candidate variety and its environment, we think that one growing cycle is not enough to establish its description. For this exercise, we have taken into account candidate varieties for which there were data for 2011 and 2012.

17. This method needs a good set of reliable example varieties. In this case, the example varieties are not good enough:

Example varieties	Adjusted means	Adjusted according to the regression	note	Rounded note
1	273.13	1.56208		2
3	351.9	3.04932		3
5	401.55	3.98675		4
7	580.88	7.37263		7
9	668.62	9.02923		9

18. In this dataset, example varieties of note 3 and 5 are too close; their real note according to the regression is 3.05 and 3.99.

19. This method is very powerful though with a reliable set of example varieties. Each year the set of our example varieties is checked and optimized.

20. To conclude, according to the French methods, the candidate notes are:

Variety	Mean 2011	Note 2011	Mean 2012	Note 2012	Note method 1	Adjusted means	Note method 2
Variety 287			350.7	1			
Variety 284			366.1	1			
Variety 283			370.1	1			
Variety 262	207.4	1	316.4	1	1	262.76	1
Variety 263	225.5	1	382.1	2	2	306.51	2
Variety 288			435.5	4	4	380.25	4
Variety 269	330.1	3	480.7	5	4	396.75	4
Variety 275	329.2	3	458.2	5	4	402.94	4
Variety 289			455	5	5		
Variety 290			453.6	5	5		
Variety 277	381.2	5	485.7	5	5	430.73	5
Variety 274	405.7	5	486.3	5	5	445.53	5
Variety 302			453.5	5	5		
Variety 303			455.7	5	5		
Variety 297			463.1	5	5		
Variety 228	479.4	6	594.4	6	6	530.08	6
Variety 293			630.5	6	6		
Variety 270	551.3	9	615.2	6	7	573.17	7
Variety 267	522.4	8	646.8	7	7	588.16	8
Variety 268	549.2	9	647.4	7	7	602.42	8
Variety 300			649.2	7	7		
Variety 295			658.1	7	7		
Variety 299			661.2	7	7		
Variety 291			661.3	7	7		
Variety 272	522.5	8	666.8	8	8	611.4	8
Variety 273	548.3	9	692.4	8	8	615.59	8
Variety 294			680.8	8	8		
Variety 292			683.4	8	8		
Variety 298			733.1	9	9		
Variety 301			749.3	9	9		
Variety 296			764.8	9	9		

[Annex II follows]

ANNEX II

PRACTICAL EXERCISE OF GERMANY

Variety	Example variety	Mean 2011	Note 2011	Mean 2012	Note 2012
1		568.58	8	635.48	7
12		475.18	6	621.60	7
14		253.90	2	353.05	2
17				481.18	4
20				675.60	7
21		465.13	6	725.20	8
24	Barbara (3)	280.08	2	420.28	3
26				458.59	4
28		497.80	7	727.68	8
30		267.03	2	341.15	2
33		351.10	4	452.75	4
35	Escalina (7)	506.70	7	654.08	7
36		506.75	7	626.58	7
38		522.23	7	695.88	8
39		495.65	6	653.38	7
40		317.20	3	421.30	3
42				548.00	5
44		306.78	3	443.83	3
45		301.75	3	430.05	3
48		259.63	2		
49		498.23	7	624.65	7
52				667.35	7
56		343.80	4	354.60	2
61		305.85	3	380.48	2
63		405.33	5	418.50	3
70		391.23	4	532.05	5
71		479.65	6	668.93	7
73		306.63	3	444.65	3
76		286.75	2	408.88	3
77		473.60	6	601.18	6
78		302.55	3	462.63	4
79		304.53	3	325.73	1
80		355.93	4	435.55	3
81		242.78	2		
82		240.13	2	317.15	1
83		267.75	2	361.80	2
84		342.78	4	423.08	3
85		270.23	2	431.90	3
87		325.20	3	429.13	3
88		326.75	3	401.83	3
90		367.63	4	473.68	4
96		529.95	7	710.94	8
97	Dakkar (9)	605.80	9	733.25	8
98		553.81	8	668.89	7
99		469.78	6	673.98	7

Variety	Example variety	Mean 2011	Note 2011	Mean 2012	Note 2012
102		550.10	8	674.18	7
103		287.03	2	394.43	3
108		369.15	4		
109		403.78	5	518.83	5
110		336.40	3		
113		324.85	3	454.60	4
114		346.98	4	430.65	3
115		344.25	4	427.55	3
121		327.40	3	489.85	4
124		251.48	2	426.95	3
126		258.23	2		
128		230.65	1	352.33	2
130		503.08	7	610.23	6
131		343.38	4	452.18	4
132		321.58	3	435.50	3
136		345.63	4	417.60	3
137		320.83	3		
140		511.15	7	682.33	8
142		518.43	7	700.93	8
143		383.83	4	494.85	4
144				390.00	3
146	Bilton (5)	355.83	4	448.38	4
147		335.55	3	442.50	3
148		472.04	6	657.93	7
149		320.26	3	337.28	2
150		514.18	7	665.78	7
151		302.04	3	419.56	3
152		319.20	3	413.30	3
153		339.75	3	375.68	2
154				435.08	3
156		429.95	5	625.23	7
157		410.65	5	616.40	6
158		528.55	7	619.15	6
159		389.03	4	504.73	5
160		282.98	2	384.03	2
162		524.25	7		
163		329.23	3	434.38	3
164		419.40	5	488.05	4
165		541.78	7	659.38	7
166		301.08	3	366.00	2
167				502.70	4
168	Banquise (1)	247.58	2	301.25	1
169		225.15	1	316.58	1
170		540.90	7	675.70	7
172		371.80	4	417.85	3
173		294.96	3	367.69	2

Variety	Example variety	Mean 2011	Note 2011	Mean 2012	Note 2012
174		353.45	4	389.68	3
175		520.23	7	687.88	8
177		318.63	3	434.73	3
178		248.10	2	373.38	2
179		330.55	3	539.25	5
180		528.33	7	698.53	8
181		575.48	8	682.35	8
182		297.73	3	334.00	2
183		356.68	4	421.10	3
184		252.18	2	353.10	2
185		528.85	7	653.63	7
188		479.18	6	616.68	6
189		339.20	3	469.25	4
190		379.10	4	513.78	5
194		266.90	2		
195		344.40	4	369.63	2
196		317.55	3	430.13	3
197		227.60	1	372.55	2
200		402.04	5	570.78	6
201		263.93	2	373.03	2
202		220.68	1	374.75	2
203		276.68	2	385.20	2
204		302.69	3	468.60	4
205		496.10	7	682.48	8
206		550.85	8	620.60	7
207		515.03	7	627.75	7
208		438.35	5	596.03	6
209		521.33	7	679.58	8
210		568.00	8	645.98	7
211		533.93	7	621.15	7
212		392.60	4	398.48	3
213		362.93	4	471.13	4
214		378.30	4	459.28	4
215		560.85	8	674.08	7
216		562.73	8	682.45	8
217		507.78	7	677.20	7
219		260.75	2	397.25	3
221		561.28	8	739.98	9
222		596.90	8	725.13	8
224		314.03	3	374.28	2
225				656.48	7
226		340.40	3	374.25	2
227		495.43	6	604.78	6
228		479.35	6	594.40	6
229		503.64	7	601.23	6
230		385.21	4	415.43	3
231		357.69	4	396.68	3

Variety	Example variety	Mean 2011	Note 2011	Mean 2012	Note 2012
232		401.28	5		
233		284.10	2		
235		503.15	7		
237		478.53	6	644.73	7
238		300.69	3	438.50	3
239		353.19	4	408.90	3
241		529.38	7	669.70	7
243		286.35	2	416.60	3
244		489.95	6	616.13	6
247				375.65	2
248		347.95	4	433.85	3
249		393.98	5	412.23	3
250				426.28	3
251		346.10	4	383.35	2
252		392.93	5	472.28	4
253		487.03	6	663.13	7
256		610.30	9		
257		604.88	9	709.85	8
258		548.28	8	620.98	7
259		621.03	9		
260		581.58	8	660.03	7
261		625.33	9		
262		211.74	1	316.43	1
263		223.08	1	373.41	2
264		269.54	2		
265		240.98	2		
266		311.30	3		
267		522.44	7	646.80	7
268		549.23	8	647.39	7
269		330.05	3	480.69	4
270		551.31	8	615.20	6
271		578.55	8		
272		522.50	7	666.78	7
273		548.34	8	692.41	8
274		405.73	5	486.28	4
275		329.23	3	458.23	4
276		352.63	4		
277		381.20	4	485.69	4
278		362.75	4	438.00	3
279		382.10	4	525.43	5
280		277.18	2	423.20	3
281		286.78	2	402.00	3
282		527.88	7	647.93	7
283				370.09	2
284				366.11	2
285				434.20	3
286				351.28	2

Variety	Example variety	Mean 2011	Note 2011	Mean 2012	Note 2012
287				350.73	2
288				435.50	3
289				455.00	4
290				453.55	4
291				661.29	7
292				683.41	8
293				630.48	7
294				680.83	8
295				658.05	7
296				764.80	9
297				463.13	4
298				733.06	8
299				661.21	7
300				649.19	7
301				749.34	9
302				453.54	4
303				455.70	4

Characteristic: Stem: length from cotyledon scar to top boll

Flax

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
14	470	350	347	339	397	368	338	338	272	333	355
169					488	324	384	387	240	301	383
168					516	293	422	357	290	288	390
45	470	390	375	354	458		427	362	318	403	391
184						351	407	342	276	339	392
83	545	402	403	350	472	342	444	397	303	309	397
128	548	415	418	338	516	328	449	372	274	334	399
44	443		454		422				288	422	399
166				380	465	330	465	263	356	352	405
173					485	422	423	325	264	349	407
202							447	351	245	382	408
40	476	397	424	381	449	419	385	395	350	406	408
124	462					484	362	383	273	412	410
160				352	439	375	391	408	345	354	412
79	534	391	399	379	483	448	437	385	356	312	412
286										358	414
178						383	429	368	277	379	416
203							415	367	295	385	417
182						446	375	375	317	329	417
24	461	426	469	416	439	439	452	347	321	425	419
149			387		435	429	455	364	384	335	421

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
82	636	444	459	400	558	343	451	368	263	309	423
197							429	487	233	354	427
219							430	365	310	402	428
144		455	439				443			407	429
247								413		378	430
30	632	441	427	384	518	360	424	461	299	360	430
103	574	460							286	408	434
73	500							407	339	424	435
281									270	388	437
224							414	445	307	377	437
151			494	420	481	348	431	404	315	415	439
195						407	439	414	356	336	439
26	519									467	440
85	541	457	458	403	502	439	449	388	356	416	441
56									344	328	443
152			411	363	562	430	496	349	355	384	445
88	515								344	420	445
226								399	340	366	445
250								428		404	451
154			411	405		408	469	486		426	454
280									285	413	457
201							456	519	287	362	457
87	564	445	443	438	542	449	522	462	340	435	464
196							483	436	347	394	466
248								404	359	417	469
76	615					491	426	461	317	420	469
251								457	359	364	469
183						462	441	368	412	418	469
177									318	407	470
80	589								341	436	473
174					527	484	473	455	360	372	474
231								425	393	380	475
153			433	424	565	480	515	471	354	361	476
239								434	358	411	477
212							441	474	411	382	478
84	610	534	486	443	539	492	491	423	397	397	481
238								465	318	440	484
113	649			434					318	435	484
163				414	574	488	469	453	352	421	485
243								516	304	409	485
230								399	430	405	488
249								479	388	392	496
136	604	537	522	436	570	496	540	498	362	396	496
61	713			437		523	491	497	338	350	497

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
78	653	575	547	408	555				314	460	497
115	721	525	496	438	607	409	526	514	344	410	499
278									345	438	499
131	654	515	496	455	622	476	528	512	344	450	505
204							553	496	338	441	508
17	652	575	557	455	541					461	508
285										454	510
109	621	556	482				511	457	464	498	510
63	597	549	507	468	585	526	565	494	429	400	512
189						496	558	476	324	466	513
146		595	564	449	625	360	543	526	381	423	514
252								489	379	447	514
172					553	487	539	553	385	407	516
114	737					542	482	468	386	415	519
213							557	468	399	459	522
143		544	586	469	620	376	563	519	402	479	524
121	663								363	494	525
132	728	540	524	465	640	517	549	533	346	406	525
179						462	646	484	259	540	527
147		578	533	487	620	522	508	553	382	405	528
214							569	519	386	434	528
159				436	580				399	535	535
90	764	564	495	460	640	528	554	579	393	456	543
167				493	621					491	546
33	737	612	549	461	654	626	581	479	376	423	550
190						507	552	558	416	488	553
164				491	611	475	572	571	449	492	555
70	752							506	365	540	557
279									389	537	570
42	712	748	612	590	709	565	699	560		572	623
200							685	623	410	604	632
229								601	471	645	648
208							726	719	378	605	658
77	875		697	611	795	580	714	675	399	626	669
227								702	472	639	681
157			712	683	725	665	733	691	415	616	681
282									475	672	681
49	874	769	712	630	746	558	739	661	493	634	682
188						646	719	675	485	649	684
156			714	684	766	692	749	712	391	638	694
244								699	527	629	694
253								729	486	663	702
36	926	783	726	643	775	621	743	662	518	633	703
130	902	770	723	675	782	660	779	665	509	639	710

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
185						621	752	752	491	695	711
241								692	503	725	716
206							712	714	629	626	722
150			733	682	824	668	781	729	471	680	722
209							727	771	518	667	722
258									578	651	722
217							709	733	532	713	723
142		811	769	666	804	641	715	750	481	714	723
211							763	743	567	624	726
158			774	694	771	662	750	805	533	629	728
99	955	814	760	647	791	664	746	714	476	719	728
237								754	520	690	731
12	916	827	736	659	788	722	750	729	531	662	732
210							737	765	595	628	732
207							804	730	555	638	733
268									590	662	733
225							701	737		721	735
165				713	813	675	820	752	497	657	735
170					799	680	813	712	542	692	735
71	960	784	753	691	792	674	812	744	462	697	737
215							792	751	508	702	739
140		814	739		801	680	814	703	535	728	741
175					805	642	806	758	570	692	741
1	942	803	782	717	781	664	773	749	564	645	742
39	922	820	804	690	797	666	745	756	545	674	742
35	953	803	742	675	805	665	798	760	551	673	742
205							776	801	508	684	744
260									584	694	747
38	979					719	769	691	520	720	747
98	946	817	741	691	804	697	787	733	569	706	749
216							801	730	553	723	753
148			802	699	854	675	771	869	542	686	763
21	995	827	800	744	826	687	856	726	438	734	763
102	975	828	820	739	822	723	821	685	521	707	764
180						715	843	745	599	713	772
96	1006	809	795	702	838	704	827	765	540	741	772
181						716	817	809	566	719	774
20	975		801				726	807		734	783
28	1044	848	865	753	836	718	766	803	522	748	790
222							811	839	564	775	798
221							819	812	591	780	802
257									655	734	802
52	1024	895					719	829		721	806
97	1104	959	937	863	907	736	886	717	662	761	853

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
262									247	301	382
263									234	353	401
287										349	406
284										357	413
283										381	437
288										422	478
290										433	489
289										434	490
303										449	506
275									341	469	512
269									351	467	516
297										463	519
302										468	525
277									417	456	544
274									405	481	550
228								671	467	624	664
270									557	616	694
293										650	707
267									591	642	724
295										677	733
273									549	716	740
292										685	741
300										700	757
291										704	761
272									580	726	761
294										707	764
299										713	769
298										751	808
296										783	839
301										784	840

[1] bold font: delineating variety

[2] Ref': reference varieties / Cand': candidate varieties

[Annex III follows]

PRACTICAL EXERCISE OF ITALY

Italian procedure

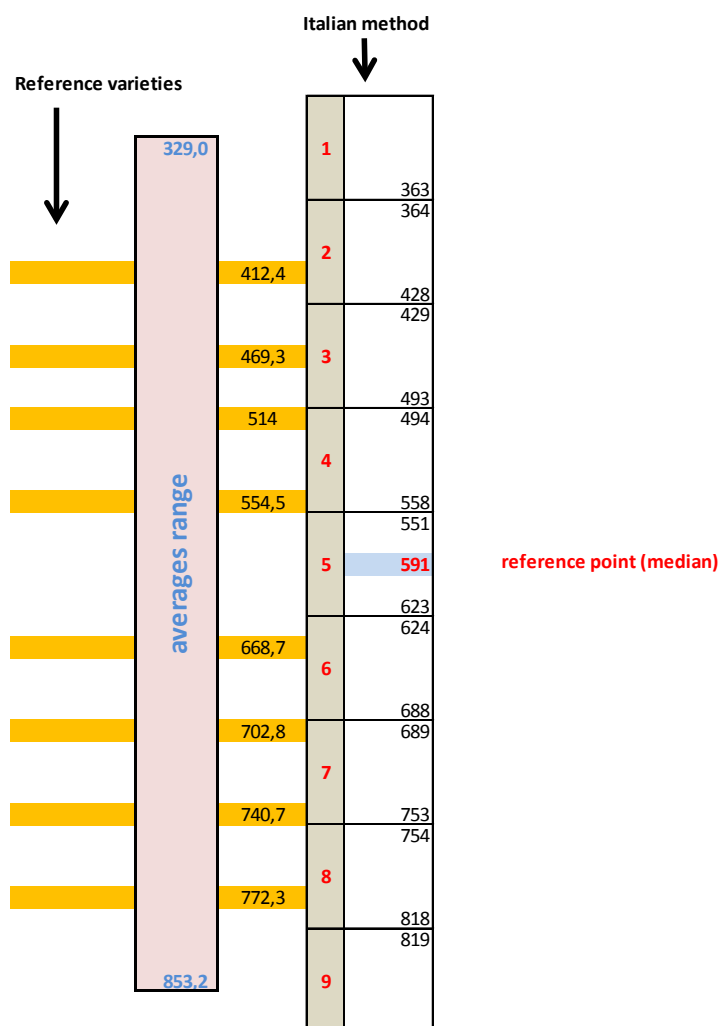
1. Averages range of historical means: 329,00 – 853,20 mm (~ **525 mm**).
2. Because in “flax” the averages distribution is not normal and has two maximums (see histogram and descriptive statistics – file excel) it was preferred to use the *median* (591mm) instead of the average (535mm) as “reference point”.

Conditions for partitioning into states (9 notes):

- Leave a space for future expansion
- Equal notes
- Take into consideration example varieties (and past varietal descriptions)
- Calibration to determine the space of each note

Calculus based on conditions and experience:

3. **525 mm** + [some space at the lowest limit (note 1) and at the upper limit of the range (note 9)] = ~ 585 mm.
585 / 9 notes= 65 mm (space of each note).



Candidates varieties				Note
262		274,00		1
263		293,50		1
287		349,00		1
284		357,00		1
283		381,00		2
275		405,00		2
269		409,00		2
288		422,00		2
290		433,00		3
289		434,00		3
277		436,50		3
274		443,00		3
303		449,00		3
297		463,00		3
302		468,00		3
270		586,50		5
228		587,33		5
267		616,50		5
273		632,50		6
293		650,00		6
272		653,00		6
295		677,00		6
292		685,00		6
300		700,00		7
291		704,00		7
294		707,00		7
299		713,00		7
298		751,00		7
296		783,00		8
301		784,00		8

Flax Characteristic: Stem: length from cotyledon scar to top boll Over-year-mean

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
14	470	350	347	339	397	368	338	338	272	333	355
169					488	324	384	387	240	301	383
168					516	293	422	357	290	288	390
45	470	390	375	354	458		427	362	318	403	390.6
184						351	407	342	276	339	392
83	545	402	403	350	472	342	444	397	303	309	396.6
128	548	415	418	338	516	328	449	372	274	334	399.1
44	443		454		422				288	422	399.2
166				380	465	330	465	263	356	352	404.8
173					485	422	423	325	264	349	407
202							447	351	245	382	407.6
40	476	397	424	381	449	419	385	395	350	406	408.2
124	462					484	362	383	273	412	410
160				352	439	375	391	408	345	354	412.1
79	534	391	399	379	483	448	437	385	356	312	412.4

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
286										358	414.1
178						383	429	368	277	379	416.2
203							415	367	295	385	416.7
182						446	375	375	317	329	417.4
24	461	426	469	416	439	439	452	347	321	425	419.3
149			387		435	429	455	364	384	335	421.1
82	636	444	459	400	558	343	451	368	263	309	422.9
197							429	487	233	354	426.7
219							430	365	310	402	427.8
144		455	439				443			407	428.9
247								413		378	430
30	632	441	427	384	518	360	424	461	299	360	430.4
103	574	460							286	408	434.1
73	500							407	339	424	434.5
281									270	388	436.5
224							414	445	307	377	436.8
151			494	420	481	348	431	404	315	415	439.1
195						407	439	414	356	336	439.4
26	519									467	440.4
85	541	457	458	403	502	439	449	388	356	416	440.8
56									344	328	443.3
152			411	363	562	430	496	349	355	384	444.5
88	515								344	420	444.5
226								399	340	366	444.6
250								428		404	450.8
154			411	405		408	469	486		426	453.7
280									285	413	456.6
201							456	519	287	362	457.2
87	564	445	443	438	542	449	522	462	340	435	463.7
196							483	436	347	394	466.3
248								404	359	417	469.2
76	615					491	426	461	317	420	469.3
251								457	359	364	469.3
183						462	441	368	412	418	469.4
177									318	407	470
80	589								341	436	473.3
174					527	484	473	455	360	372	474.1
231								425	393	380	475.3
153			433	424	565	480	515	471	354	361	476
239								434	358	411	477.3
212							441	474	411	382	478.2
84	610	534	486	443	539	492	491	423	397	397	481.1
238								465	318	440	483.5

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
113	649			434					318	435	484.4
163				414	574	488	469	453	352	421	484.5
243								516	304	409	485.4
230								399	430	405	487.5
249								479	388	392	495.5
136	604	537	522	436	570	496	540	498	362	396	495.9
61	713			437		523	491	497	338	350	497.1
78	653	575	547	408	555				314	460	497.2
115	721	525	496	438	607	409	526	514	344	410	498.8
278									345	438	498.9
131	654	515	496	455	622	476	528	512	344	450	505.1
204							553	496	338	441	508.2
17	652	575	557	455	541					461	508.4
285										454	510
109	621	556	482				511	457	464	498	510.1
63	597	549	507	468	585	526	565	494	429	400	511.8
189						496	558	476	324	466	512.9
146		595	564	449	625	360	543	526	381	423	514.0
252								489	379	447	514.4
172					553	487	539	553	385	407	516.2
114	737					542	482	468	386	415	519.2
213							557	468	399	459	521.8
143		544	586	469	620	376	563	519	402	479	524.2
121	663								363	494	524.7
132	728	540	524	465	640	517	549	533	346	406	524.8
179						462	646	484	259	540	527.4
147		578	533	487	620	522	508	553	382	405	527.5
214							569	519	386	434	528.2
159				436	580				399	535	535.3
90	764	564	495	460	640	528	554	579	393	456	543.1
167				493	621					491	545.7
33	737	612	549	461	654	626	581	479	376	423	549.7
190						507	552	558	416	488	553.1
164				491	611	475	572	571	449	492	554.5
70	752							506	365	540	557.3
279									389	537	570.3
42	712	748	612	590	709	565	699	560		572	623
200							685	623	410	604	632
229								601	471	645	648.3
208							726	719	378	605	658.2
77	875		697	611	795	580	714	675	399	626	668.7
227								702	472	639	680.5

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
157			712	683	725	665	733	691	415	616	680.6
282									475	672	680.7
49	874	769	712	630	746	558	739	661	493	634	681.6
188						646	719	675	485	649	683.8
156			714	684	766	692	749	712	391	638	694
244								699	527	629	694.4
253								729	486	663	702.2
36	926	783	726	643	775	621	743	662	518	633	702.8
130	902	770	723	675	782	660	779	665	509	639	710.3
185						621	752	752	491	695	711.2
241								692	503	725	716.1
206							712	714	629	626	721.7
150			733	682	824	668	781	729	471	680	721.8
209							727	771	518	667	722
258									578	651	722
217							709	733	532	713	723.1
142		811	769	666	804	641	715	750	481	714	723.4
211							763	743	567	624	725.6
158			774	694	771	662	750	805	533	629	727.9
99	955	814	760	647	791	664	746	714	476	719	728.3
237								754	520	690	730.9
12	916	827	736	659	788	722	750	729	531	662	731.9
210							737	765	595	628	732.3
207							804	730	555	638	732.6
268									590	662	733.1
225							701	737		721	735.1
165				713	813	675	820	752	497	657	735.3
170					799	680	813	712	542	692	735.3
71	960	784	753	691	792	674	812	744	462	697	736.7
215							792	751	508	702	739.4
140		814	739		801	680	814	703	535	728	740.7
175					805	642	806	758	570	692	741.1
1	942	803	782	717	781	664	773	749	564	645	741.7
39	922	820	804	690	797	666	745	756	545	674	741.7
35	953	803	742	675	805	665	798	760	551	673	742.4
205							776	801	508	684	743.5
260									584	694	746.5
38	979					719	769	691	520	720	746.9
98	946	817	741	691	804	697	787	733	569	706	749
216							801	730	553	723	753
148			802	699	854	675	771	869	542	686	762.6
21	995	827	800	744	826	687	856	726	438	734	763
102	975	828	820	739	822	723	821	685	521	707	764

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
180						715	843	745	599	713	772
96	1006	809	795	702	838	704	827	765	540	741	772.3
181						716	817	809	566	719	774.4
20	975		801				726	807		734	782.5
28	1044	848	865	753	836	718	766	803	522	748	790.2
222							811	839	564	775	798.2
221							819	812	591	780	801.7
257									655	734	801.9
52	1024	895					719	829		721	805.7
97	1104	959	937	863	907	736	886	717	662	761	853.1
262									247	301	381.7
263									234	353	400.7
287										349	405.7
284										357	413.4
283										381	437.1
288										422	478.1
290										433	489
289										434	490.4
303										449	505.6
275									341	469	512.2
269									351	467	516.2
297										463	518.8
302										468	524.6
277									417	456	544.1
274									405	481	550.2
228								671	467	624	663.5
270									557	616	693.8
293										650	706.6
267									591	642	723.8
295										677	733.3
273									549	716	739.9
292										685	741.3
300										700	756.6
291										704	760.5
272									580	726	760.6
294										707	763.7
299										713	769.2
298										751	807.5
296										783	839
301										784	840.3

[1] bold font: delineating variety

[2] Ref': reference varieties / Cand': candidate varieties

Flax Characteristic: Stem: length from cotyledon scar to top boll: Average of historical mean

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
281									270	388	329.00
56									344	328	336.00
184						351	407	342	276	339	343.00
280									285	413	349.00
169					488	324	384	387	240	301	354.00
14	470	350	347	339	397	368	338	338	272	333	355.20
202							447	351	245	382	356.25
286										358	358.00
168					516	293	422	357	290	288	361.00
177									318	407	362.50
203							415	367	295	385	365.50
178						383	429	368	277	379	367.20
226								399	340	366	368.33
182						446	375	375	317	329	368.40
166				380	465	330	465	263	356	352	373.00
197							429	487	233	354	375.75
219							430	365	310	402	376.75
173					485	422	423	325	264	349	378.00
160				352	439	375	391	408	345	354	380.57
224							414	445	307	377	385.75
195						407	439	414	356	336	390.40
278									345	438	391.50
248								404	359	417	393.33
251								457	359	364	393.33
45	470	390	375	354	458		427	362	318	403	395.22
247								413		378	395.50
124	462					484	362	383	273	412	396.00
83	545	402	403	350	472	342	444	397	303	309	396.70
149			387		435	429	455	364	384	335	398.43
128	548	415	418	338	516	328	449	372	274	334	399.20
231								425	393	380	399.33
239								434	358	411	401.00
44	443		454		422				288	422	405.80
201							456	519	287	362	406.00
238								465	318	440	407.67
40	476	397	424	381	449	419	385	395	350	406	408.20
243								516	304	409	409.67
230								399	430	405	411.33
79	534	391	399	379	483	448	437	385	356	312	412.40
151			494	420	481	348	431	404	315	415	413.50
196							483	436	347	394	415.00

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
250								428		404	416.00
73	500							407	339	424	417.50
152			411	363	562	430	496	349	355	384	418.75
24	461	426	469	416	439	439	452	347	321	425	419.50
249								479	388	392	419.67
183						462	441	368	412	418	420.20
82	636	444	459	400	558	343	451	368	263	309	423.10
88	515								344	420	426.33
212							441	474	411	382	427.00
30	632	441	427	384	518	360	424	461	299	360	430.60
103	574	460							286	408	432.00
154			411	405		408	469	486		426	434.17
144		455	439				443			407	436.00
252								489	379	447	438.33
85	541	457	458	403	502	439	449	388	356	416	440.90
174					527	484	473	455	360	372	445.17
153			433	424	565	480	515	471	354	361	450.38
163				414	574	488	469	453	352	421	453.00
285										454	454.00
76	615					491	426	461	317	420	455.00
80	589								341	436	455.33
204							553	496	338	441	457.00
113	649			434					318	435	459.00
279									389	537	463.00
87	564	445	443	438	542	449	522	462	340	435	464.00
189						496	558	476	324	466	464.00
213							557	468	399	459	470.75
,							569	519	386	434	477.00
179						462	646	484	259	540	478.20
61	713			437		523	491	497	338	350	478.43
84	610	534	486	443	539	492	491	423	397	397	481.20
172					553	487	539	553	385	407	487.33
159				436	580				399	535	487.50
26	519									467	493.00
136	604	537	522	436	570	496	540	498	362	396	496.10
146		595	564	449	625	360	543	526	381	423	496.22
115	721	525	496	438	607	409	526	514	344	410	499.00
78	653	575	547	408	555				314	460	501.71
190						507	552	558	416	488	504.20
114	737					542	482	468	386	415	505.00
131	654	515	496	455	622	476	528	512	344	450	505.20
143		544	586	469	620	376	563	519	402	479	506.44
121	663								363	494	506.67
147		578	533	487	620	522	508	553	382	405	509.78

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
63	597	549	507	468	585	526	565	494	429	400	512.00
109	621	556	482				511	457	464	498	512.71
164				491	611	475	572	571	449	492	523.00
132	728	540	524	465	640	517	549	533	346	406	524.80
167				493	621					491	535.00
17	652	575	557	455	541					461	540.17
70	752							506	365	540	540.75
90	764	564	495	460	640	528	554	579	393	456	543.30
33	737	612	549	461	654	626	581	479	376	423	549.80
229								601	471	645	572.33
282									475	672	573.50
200							685	623	410	604	580.50
227								702	472	639	604.33
208							726	719	378	605	607.00
258									578	651	614.50
244								699	527	629	618.33
253								729	486	663	626.00
268									590	662	626.00
188						646	719	675	485	649	634.80
260									584	694	639.00
241								692	503	725	640.00
42	712	748	612	590	709	565	699	560		572	640.78
237								754	520	690	654.67
157			712	683	725	665	733	691	415	616	655.00
185						621	752	752	491	695	662.20
77	875		697	611	795	580	714	675	399	626	663.56
156			714	684	766	692	749	712	391	638	668.25
206							712	714	629	626	670.25
209							727	771	518	667	670.75
217							709	733	532	713	671.75
211							763	743	567	624	674.25
210							737	765	595	628	681.25
49	874	769	712	630	746	558	739	661	493	634	681.60
207							804	730	555	638	681.75
215							792	751	508	702	688.25
205							776	801	508	684	692.25
257									655	734	694.50
150			733	682	824	668	781	729	471	680	696.00
216							801	730	553	723	701.75
158			774	694	771	662	750	805	533	629	702.25
36	926	783	726	643	775	621	743	662	518	633	703.00
165				713	813	675	820	752	497	657	703.86
142		811	769	666	804	641	715	750	481	714	705.67
170					799	680	813	712	542	692	706.33

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
130	902	770	723	675	782	660	779	665	509	639	710.40
175					805	642	806	758	570	692	712.17
225							701	737		721	719.67
180						715	843	745	599	713	723.00
181						716	817	809	566	719	725.40
140		814	739		801	680	814	703	535	728	726.75
99	955	814	760	647	791	664	746	714	476	719	728.60
12	916	827	736	659	788	722	750	729	531	662	732.00
38	979					719	769	691	520	720	733.00
71	960	784	753	691	792	674	812	744	462	697	736.90
148			802	699	854	675	771	869	542	686	737.25
39	922	820	804	690	797	666	745	756	545	674	741.90
1	942	803	782	717	781	664	773	749	564	645	742.00
35	953	803	742	675	805	665	798	760	551	673	742.50
222							811	839	564	775	747.25
98	946	817	741	691	804	697	787	733	569	706	749.10
221							819	812	591	780	750.50
21	995	827	800	744	826	687	856	726	438	734	763.30
102	975	828	820	739	822	723	821	685	521	707	764.10
96	1006	809	795	702	838	704	827	765	540	741	772.70
28	1044	848	865	753	836	718	766	803	522	748	790.30
20	975		801				726	807		734	808.60
52	1024	895					719	829		721	837.60
97	1104	959	937	863	907	736	886	717	662	761	853.20

Candidates varieties

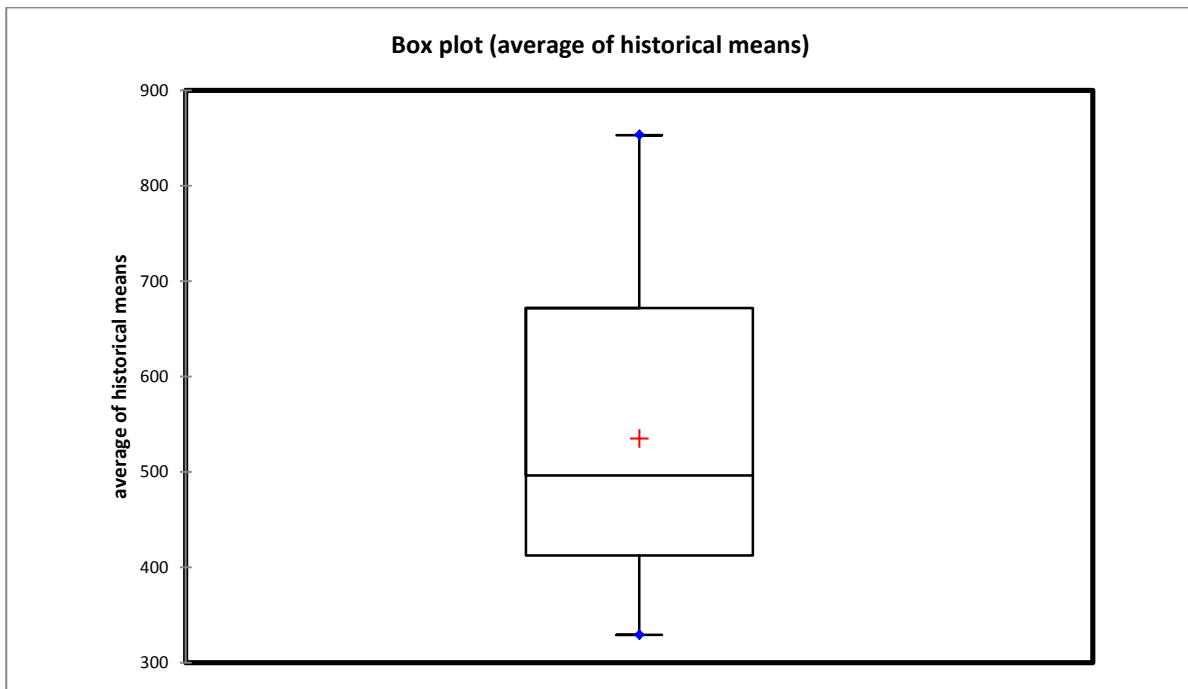
Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
262									247	301	274.00
263									234	353	293.50
287										349	349.00
284										357	357.00
283										381	381.00
275									341	469	405.00
269									351	467	409.00
288										422	422.00
290										433	433.00
289										434	434.00
277									417	456	436.50

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	average of historical means
274									405	481	443.00
303										449	449.00
297										463	463.00
302										468	468.00
270									557	616	586.50
228								671	467	624	587.33
267									591	642	616.50
273									549	716	632.50
293										650	650.00
272									580	726	653.00
295										677	677.00
292										685	685.00
300										700	700.00
291										704	704.00
294										707	707.00
299										713	713.00
298										751	751.00
296										783	783.00
301										784	784.00

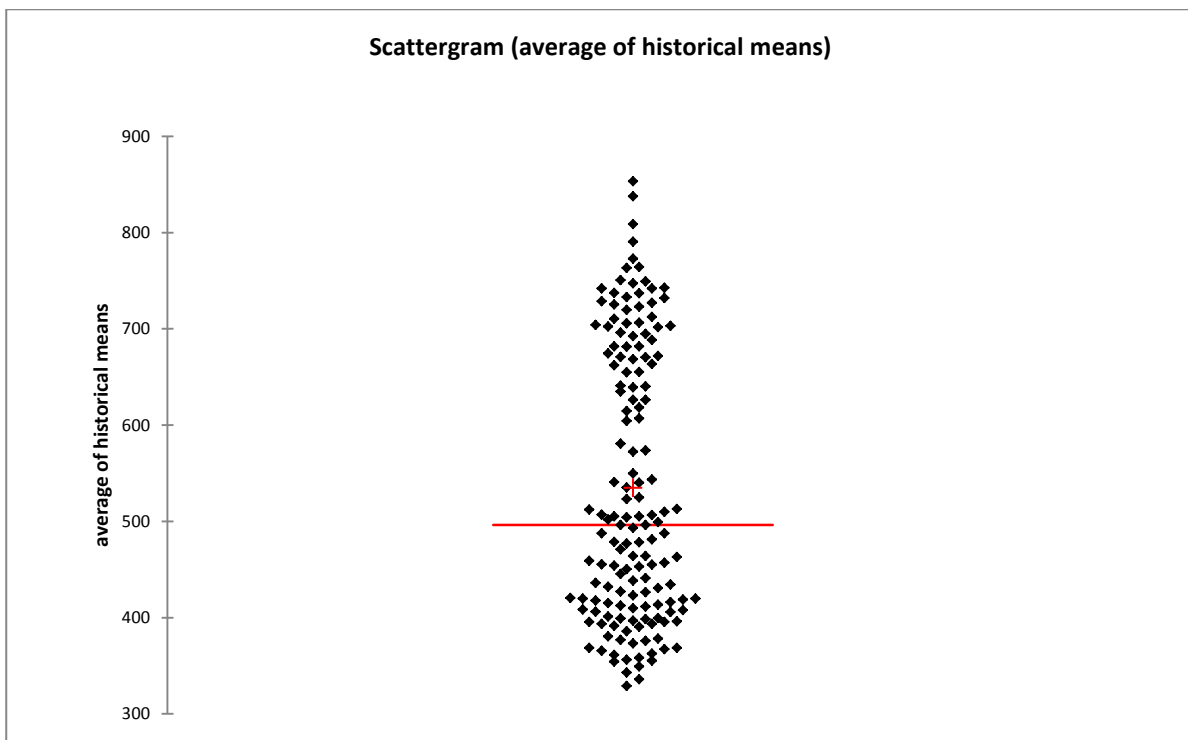
Descriptive statistics (Quantitative data):

Statistic	average of historical means
No. of observations	155
Minimum	329.000
Maximum	853.200
1st Quartile	412.400
Median	496.222
3rd Quartile	671.750
Mean	534.786
Variance (n-1)	19698.131
Standard deviation (n-1)	140.350

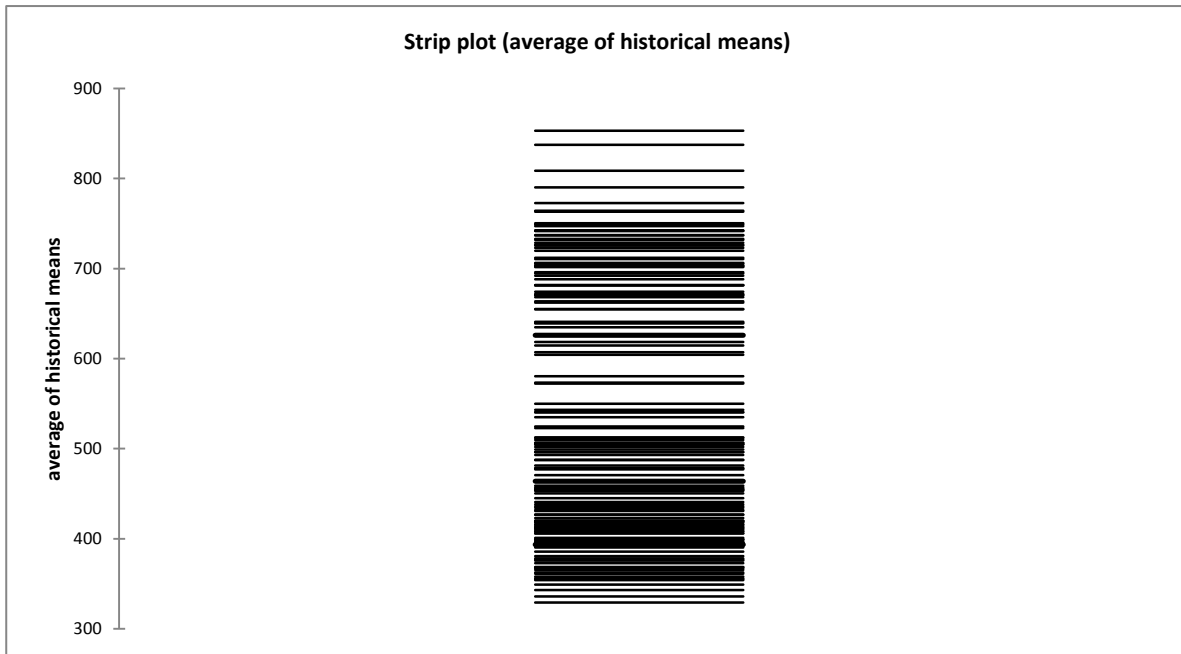
Box plot



Scattergram



Strip plots



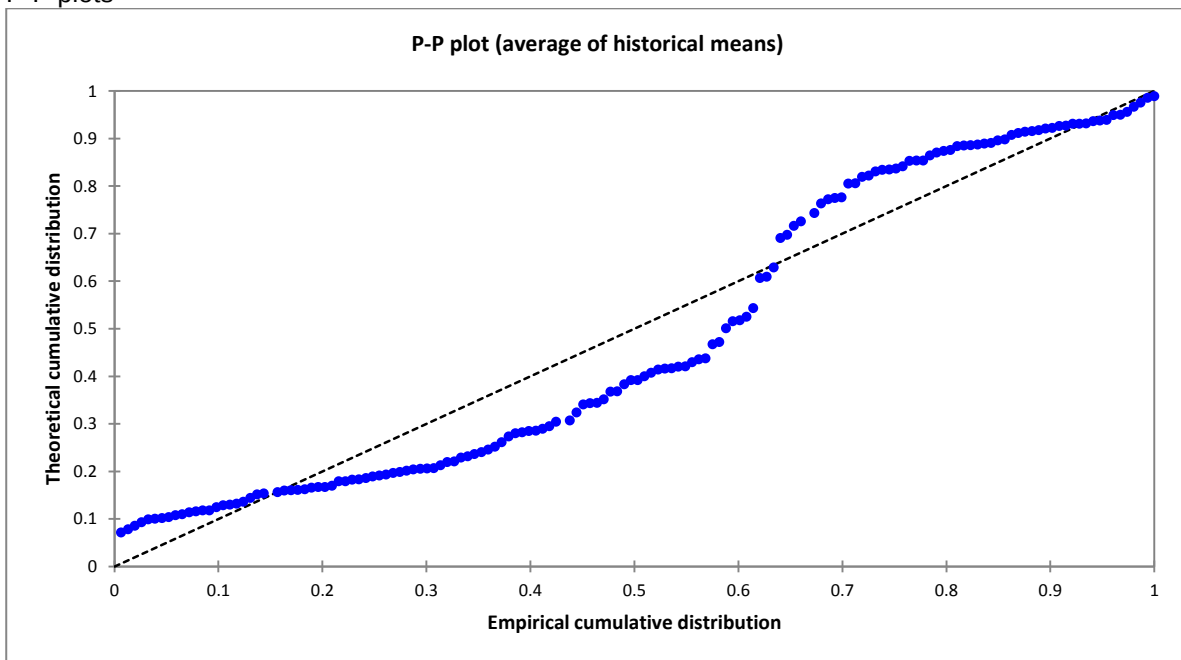
Stem-and-leaf plot (average of historical means):

Unit:

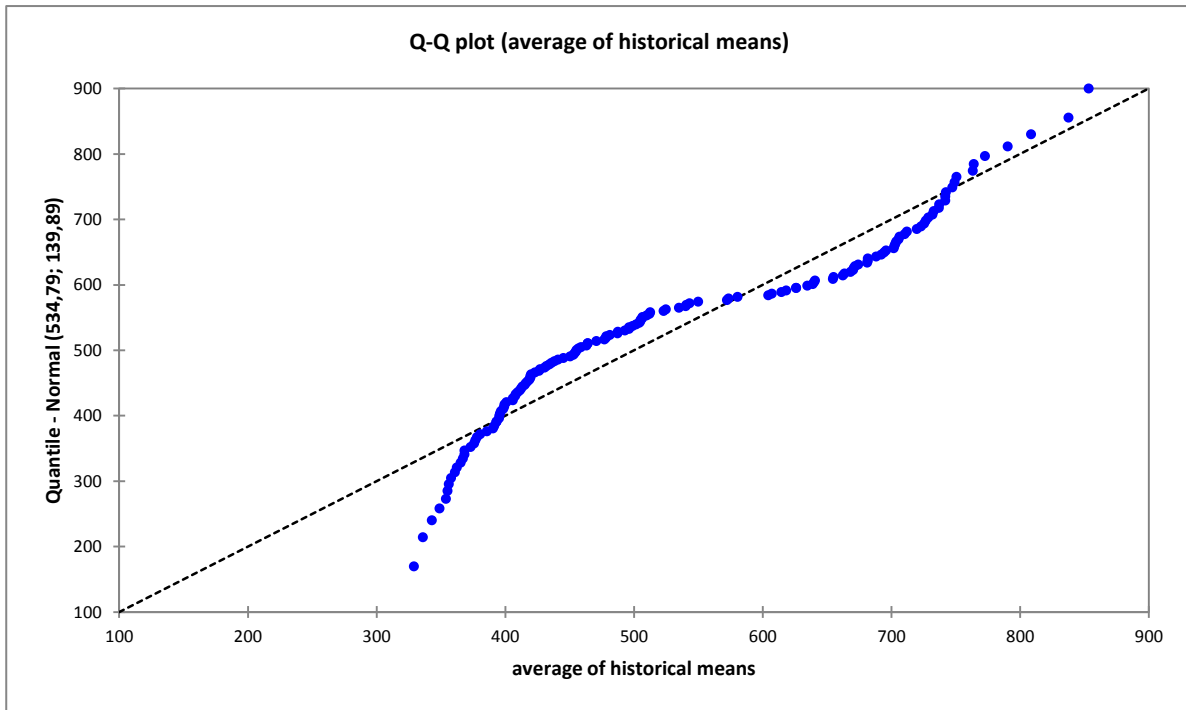
100

3	3	4	4	5	5	6	6	6	6	6	7	7	7	7	7	7	8	8	8	8	9	9	9	9	9	0	0	0	0	0	0													
4	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6	7	8	8	8	8	9	9	9	0	0
5	0	0	0	1	1	1	1	1	1	2	2	3	4	4	4	5	7	7	8																									
6	0	1	1	2	3	3	3	4	4	4	5	5	6	6	7	7	7	7	8	8	8	9	9	9	0																			
7	0	0	0	0	1	1	1	1	2	2	3	3	3	3	3	4	4	4	4	4	5	5	5	6	6	7	9																	
8	1	4	5																																									

P-P plots

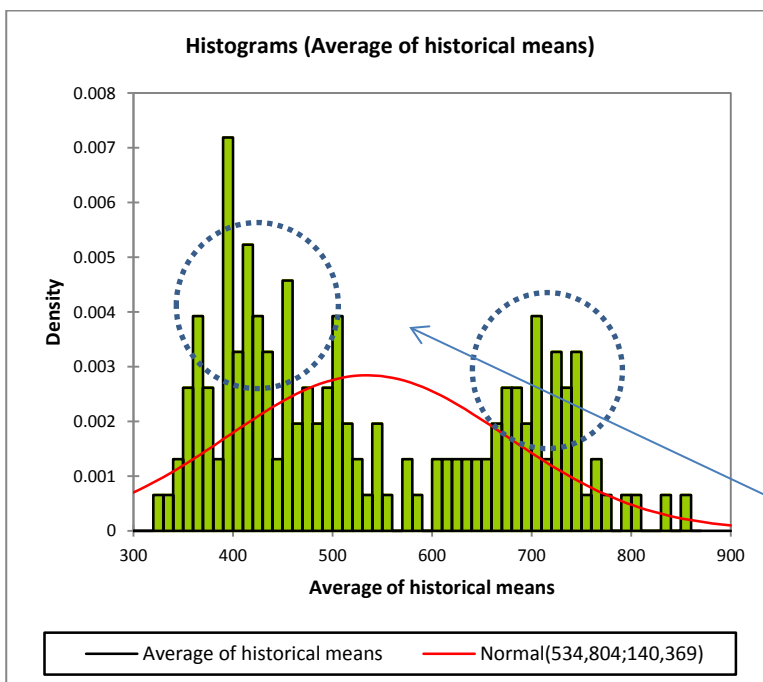


Q-Q Plots



Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Average of historical means	155	2	153	329.000	853.000	534.804	140.369



Average distribution is not normal (bimodal) and has 2 maximums.

Descriptive statistics for the intervals :

Lower bound	Upper bound	Frequency	Relative frequency	Density
300	310	0	0.000	0.000
310	320	0	0.000	0.000
320	330	1	0.007	0.001
330	340	1	0.007	0.001
340	350	2	0.013	0.001
350	360	4	0.026	0.003
360	370	6	0.039	0.004
370	380	4	0.026	0.003
380	390	2	0.013	0.001
390	400	11	0.072	0.007
400	410	5	0.033	0.003
410	420	8	0.052	0.005
420	430	6	0.039	0.004
430	440	5	0.033	0.003
440	450	2	0.013	0.001
450	460	7	0.046	0.005
460	470	3	0.020	0.002
470	480	4	0.026	0.003
480	490	3	0.020	0.002
490	500	4	0.026	0.003
500	510	6	0.039	0.004
510	520	3	0.020	0.002
520	530	2	0.013	0.001
530	540	1	0.007	0.001
540	550	3	0.020	0.002
550	560	1	0.007	0.001
560	570	0	0.000	0.000
570	580	2	0.013	0.001
580	590	1	0.007	0.001
590	600	0	0.000	0.000
600	610	2	0.013	0.001
610	620	2	0.013	0.001
620	630	2	0.013	0.001
630	640	2	0.013	0.001
640	650	2	0.013	0.001
650	660	2	0.013	0.001
660	670	3	0.020	0.002
670	680	4	0.026	0.003
680	690	4	0.026	0.003
690	700	3	0.020	0.002
700	710	6	0.039	0.004
710	720	2	0.013	0.001

Lower bound	Upper bound	Frequency	Relative frequency	Density
720	730	5	0.033	0.003
730	740	4	0.026	0.003
740	750	5	0.033	0.003
750	760	1	0.007	0.001
760	770	2	0.013	0.001
770	780	1	0.007	0.001
780	790	0	0.000	0.000
790	800	1	0.007	0.001
800	810	1	0.007	0.001
810	820	0	0.000	0.000
820	830	0	0.000	0.000
830	840	1	0.007	0.001
840	850	0	0.000	0.000
850	860	1	0.007	0.001
860	870	0	0.000	0.000

[Annex IV follows]

ANNEX IV
PRACTICAL EXERCISE OF JAPAN

1. Yearly data (2002-2011) of Flax Stem length in "Example Varieties".

note	Example varieties	2002	2003	2004	2005	2006	2007	2009	2010	2011	AVG.	STDEV	AVG. $\pm$ σ
1	Banquise					516	293	422	357	290	375.6	95.3	280.3 – 470.9
3	Barbara	461	426	469	416	439	439	452	347	321	418.9	51.2	367.7 – 470.1
5	Bilton		595	564	449	625	360	543	526	381	505.4	98.1	407.2 – 603.5
7	Escalina	953	803	742	675	805	665	798	760	551	750.2	112.9	637.3 – 863.1
9	Dakkar	1104	959	937	836	907	736	886	717	662	860.4	138.6	721.8 – 999.1

2. Ajusted Fundamental Assessment Table for 2012 of Flax: Stem: length from cotyledon scar to top boll

No.	Characteristics	d. p.	Note	1	2	3	4	5	6	7	8	9
21	Stem: length from cotyledon scar to top boll	1	Range	~	234.6	307.7	380.8	453.9	527.0	600.1	673.2	746.3
				234.5	307.6	380.7	453.8	526.9	600.0	673.1	746.2	~
			Distance		73.1	73.1	73.1	73.1	73.1	73.1	73.1	
			Median		271.1	344.2	417.3	490.4	563.5	636.6	709.7	
			Example variety	Banquise		Barbara		Bilton		Escalina		Dakkar
			Remarks		Banquise: 288		Barbara: 425 Bilton: 423			Escalina: 673		Dakkar: 761

3. Evaluation of 2012 data based on FAT

Variety	2012	Note
14	333	3
169	301	2
168	288	2
45	403	4
184	339	3
83	309	3
128	334	3
44	422	4
166	352	3
173	349	3
202	382	4
40	406	4
124	412	4

Variety	2012	Note
160	354	3
79	312	3
286	358	3
178	379	3
203	385	4
182	329	3
24	425	4
149	335	3
82	309	3
197	354	3
219	402	4
144	407	4
247	378	3

Variety	2012	Note
30	360	3
103	408	4
73	424	4
281	388	4
224	377	3
151	415	4
195	336	3
26	467	5
85	416	4
56	328	3
152	384	4
88	420	4
226	366	3

Variety	2012	Note
30	360	3
103	408	4
73	424	4
281	388	4
224	377	3
151	415	4
195	336	3
26	467	5
85	416	4
56	328	3
152	384	4
88	420	4
226	366	3
250	404	4
154	426	4
280	413	4
201	362	3
87	435	4
196	394	4
248	417	4
76	420	4
251	364	3
183	418	4
177	407	4
80	436	4
174	372	3
231	380	3
153	361	3
239	411	4
212	382	4
84	397	4
238	440	4
113	435	4
163	421	4
243	409	4
230	405	4
249	392	4
136	396	4
61	350	3
78	460	5
115	410	4
278	438	4
131	450	4
204	441	4
17	461	5

Variety	2012	Note
285	454	5
109	498	5
63	400	4
189	466	5
146	423	4
252	447	4
172	407	4
114	415	4
213	459	5
143	479	5
121	494	5
132	406	4
179	540	6
147	405	4
214	434	4
159	535	6
90	456	5
167	491	5
33	423	4
190	488	5
164	492	5
70	540	6
279	537	6
42	572	6
200	604	7
229	645	7
208	605	7
77	626	7
227	639	7
157	616	7
282	672	7
49	634	7
188	649	7
156	638	7
244	629	7
253	663	7
36	633	7
130	639	7
185	695	8
241	725	8
206	626	7
150	680	8
209	667	7
258	651	7
217	713	8

Variety	2012	Note
142	714	8
211	624	7
158	629	7
99	719	8
237	690	8
12	662	7
210	628	7
207	638	7
268	662	7
225	721	8
165	657	7
170	692	8
71	697	8
215	702	8
140	728	8
175	692	8
1	645	7
39	674	8
35	673	7
205	684	8
260	694	8
38	720	8
98	706	8
216	723	8
148	686	8
21	734	8
102	707	8
180	713	8
96	741	8
181	719	8
20	734	8
28	748	9
222	775	9
221	780	9
257	734	8
52	721	8
97	761	9
262	301	2
263	353	3
287	349	3
284	357	3
283	381	4
288	422	4
290	433	4
289	434	4

Variety	2012	Note
303	449	4
275	469	5
269	467	5
297	463	5
302	468	5
277	456	5
274	481	5
228	624	7
270	616	7
293	650	7
267	642	7
295	677	8
273	716	8
292	685	8
300	700	8
291	704	8
272	726	8
294	707	8
299	713	8
298	751	9
296	783	9
301	784	9

[Annex V follows]

PRACTICAL EXERCISE OF THE UNITED KINGDOM

Flax Characteristic: Stem: length from cotyledon scar to top boll

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
14	470	350	347	339	397	368	338	338	272	333	355
169					488	324	384	387	240	301	383
168					516	293	422	357	290	288	390
45	470	390	375	354	458		427	362	318	403	390.6
184						351	407	342	276	339	392
83	545	402	403	350	472	342	444	397	303	309	396.6
128	548	415	418	338	516	328	449	372	274	334	399.1
44	443		454		422				288	422	399.2
166				380	465	330	465	263	356	352	404.8
173					485	422	423	325	264	349	407
202							447	351	245	382	407.6
40	476	397	424	381	449	419	385	395	350	406	408.2
124	462					484	362	383	273	412	410
160				352	439	375	391	408	345	354	412.1
79	534	391	399	379	483	448	437	385	356	312	412.4
286										358	414.1
178						383	429	368	277	379	416.2
203							415	367	295	385	416.7
182						446	375	375	317	329	417.4
24	461	426	469	416	439	439	452	347	321	425	419.3
149			387		435	429	455	364	384	335	421.1
82	636	444	459	400	558	343	451	368	263	309	422.9
197							429	487	233	354	426.7
219							430	365	310	402	427.8
144		455	439				443			407	428.9
247								413		378	430
30	632	441	427	384	518	360	424	461	299	360	430.4
103	574	460							286	408	434.1
73	500							407	339	424	434.5
281									270	388	436.5
224							414	445	307	377	436.8
151			494	420	481	348	431	404	315	415	439.1
195						407	439	414	356	336	439.4
26	519									467	440.4
85	541	457	458	403	502	439	449	388	356	416	440.8
56									344	328	443.3
152			411	363	562	430	496	349	355	384	444.5
88	515								344	420	444.5
226								399	340	366	444.6
250								428		404	450.8

TWC/32/18 Add.
ANNEX V, Page 2

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
154			411	405		408	469	486		426	453.7
280									285	413	456.6
201							456	519	287	362	457.2
87	564	445	443	438	542	449	522	462	340	435	463.7
196							483	436	347	394	466.3
248								404	359	417	469.2
76	615					491	426	461	317	420	469.3
251								457	359	364	469.3
183						462	441	368	412	418	469.4
177									318	407	470
80	589								341	436	473.3
174					527	484	473	455	360	372	474.1
231								425	393	380	475.3
153			433	424	565	480	515	471	354	361	476
239								434	358	411	477.3
212							441	474	411	382	478.2
84	610	534	486	443	539	492	491	423	397	397	481.1
238								465	318	440	483.5
113	649			434					318	435	484.4
163				414	574	488	469	453	352	421	484.5
243								516	304	409	485.4
230								399	430	405	487.5
249								479	388	392	495.5
136	604	537	522	436	570	496	540	498	362	396	495.9
61	713			437		523	491	497	338	350	497.1
78	653	575	547	408	555				314	460	497.2
115	721	525	496	438	607	409	526	514	344	410	498.8
278									345	438	498.9
131	654	515	496	455	622	476	528	512	344	450	505.1
204							553	496	338	441	508.2
17	652	575	557	455	541					461	508.4
285										454	510
109	621	556	482				511	457	464	498	510.1
63	597	549	507	468	585	526	565	494	429	400	511.8
189						496	558	476	324	466	512.9
146		595	564	449	625	360	543	526	381	423	514
252								489	379	447	514.4
172					553	487	539	553	385	407	516.2
114	737					542	482	468	386	415	519.2
213							557	468	399	459	521.8
143		544	586	469	620	376	563	519	402	479	524.2
121	663								363	494	524.7
132	728	540	524	465	640	517	549	533	346	406	524.8

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
179						462	646	484	259	540	527.4
147		578	533	487	620	522	508	553	382	405	527.5
214							569	519	386	434	528.2
159				436	580				399	535	535.3
90	764	564	495	460	640	528	554	579	393	456	543.1
167				493	621					491	545.7
33	737	612	549	461	654	626	581	479	376	423	549.7
190						507	552	558	416	488	553.1
164				491	611	475	572	571	449	492	554.5
70	752							506	365	540	557.3
279									389	537	570.3
42	712	748	612	590	709	565	699	560		572	623
200							685	623	410	604	632
229								601	471	645	648.3
208							726	719	378	605	658.2
77	875		697	611	795	580	714	675	399	626	668.7
227								702	472	639	680.5
157			712	683	725	665	733	691	415	616	680.6
282									475	672	680.7
49	874	769	712	630	746	558	739	661	493	634	681.6
188						646	719	675	485	649	683.8
156			714	684	766	692	749	712	391	638	694
244								699	527	629	694.4
253								729	486	663	702.2
36	926	783	726	643	775	621	743	662	518	633	702.8
130	902	770	723	675	782	660	779	665	509	639	710.3
185						621	752	752	491	695	711.2
241								692	503	725	716.1
206							712	714	629	626	721.7
150			733	682	824	668	781	729	471	680	721.8
209							727	771	518	667	722
258									578	651	722
217							709	733	532	713	723.1
142		811	769	666	804	641	715	750	481	714	723.4
211							763	743	567	624	725.6
158			774	694	771	662	750	805	533	629	727.9
99	955	814	760	647	791	664	746	714	476	719	728.3
237								754	520	690	730.9
12	916	827	736	659	788	722	750	729	531	662	731.9
210							737	765	595	628	732.3
207							804	730	555	638	732.6
268									590	662	733.1
225							701	737		721	735.1

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
165				713	813	675	820	752	497	657	735.3
170					799	680	813	712	542	692	735.3
71	960	784	753	691	792	674	812	744	462	697	736.7
215							792	751	508	702	739.4
140		814	739		801	680	814	703	535	728	740.7
175					805	642	806	758	570	692	741.1
1	942	803	782	717	781	664	773	749	564	645	741.7
39	922	820	804	690	797	666	745	756	545	674	741.7
35	953	803	742	675	805	665	798	760	551	673	742.4
205							776	801	508	684	743.5
260									584	694	746.5
38	979					719	769	691	520	720	746.9
98	946	817	741	691	804	697	787	733	569	706	749
216							801	730	553	723	753
148			802	699	854	675	771	869	542	686	762.6
21	995	827	800	744	826	687	856	726	438	734	763
102	975	828	820	739	822	723	821	685	521	707	764
180						715	843	745	599	713	772
96	1006	809	795	702	838	704	827	765	540	741	772.3
181						716	817	809	566	719	774.4
20	975		801				726	807		734	782.5
28	1044	848	865	753	836	718	766	803	522	748	790.2
222							811	839	564	775	798.2
221							819	812	591	780	801.7
257									655	734	801.9
52	1024	895					719	829		721	805.7
97	1104	959	937	863	907	736	886	717	662	761	853.1
262									247	301	381.7
263									234	353	400.7
287										349	405.7
284										357	413.4
283										381	437.1
288										422	478.1
290										433	489
289										434	490.4
303										449	505.6
275									341	469	512.2
269									351	467	516.2
297										463	518.8
302										468	524.6
277									417	456	544.1
274									405	481	550.2
228								671	467	624	663.5

Variety[1]	2002	2003	2004	2005	2006	2007	2009	2010	2011	2012	Over-year mean
270									557	616	693.8
293										650	706.6
267									591	642	723.8
295										677	733.3
273									549	716	739.9
292										685	741.3
300										700	756.6
291										704	760.5
272									580	726	760.6
294										707	763.7
299										713	769.2
298										751	807.5
296										783	839
301										784	840.3

[1] bold font: delineating variety

[2] Ref': reference varieties / Cand': candidate varieties

[End of Annexes and of document]