TRANSMISSION OF FRUIT APPEARANCE AND SHAPE TO HYBRID DESCENDANTS OF ALMONDS

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Abstract

A study conducted on 432 hybrids from two hybrid series (Texas and Primorski) and 11 crossings, revealed that, compared to their genitors, hybrids from the following crossings stand out when it comes to the attractive shape and appearance of their fruit: Texas x Saucaret, Texas x Nikitski 62 and Primorski x Texas.

Key words: fruit appearance, genitor, hybrid.

INTRODUCTION

The notion of appearance and shape of the fruit refers to the form and porosity of the endocarp, the shape of the almond, the smooth straw-yellow aspect of the tegument and, last but not least, the taste (Cociu V., Stanciu Gh., 1973; Grasselly Ch., P. Crossa-Raymond, 1972; Şcheau V., 1998).

MATERIAL AND METHODS

In 2003, crossings were performed, using the Texas and Primorski cultivars as maternal parents.

The hybrid seed was tiered during a cold patch, in November, and in March 2004 it was planted in pots. In June, after removing the seedlings attacked by Phytium, the albino or variegated ones, the hybrids were planted in the field at 5/1 m.

During the first three years, traditional maintenance work was performed, and between 2008 and 2010, the 432 hybrids and samples of 25 pieces of fruit were used to make observations and to give grades from 0 – non-classical shape and appearance to 5 – ideal shape and appearance.

RESULTS AND DISCUSSION

Table 1 presents fruit shape and appearance in almond genotypes and hybrids.

Regarding the Texas series of crossings, its standard deviation ranges from 0.25 for Texas x Saucaret to 0.53 for Texas x Nikitski 62. With the exception of the Texas x Saucaret and Texas x Tétényi bőtermő crossings, where the correlation coefficient below 10 leads to homogeneous, uniform

individuals, the other five crossings give hybrids that are variable within admissible limits.

Table 1

Fruit appearance and shape in almond genotypes and hybrids
(average values for 3 years)

Nr. Crt	Combination	No.of analyzed hybrids (items)	Genitors' average (grades)	Hybrids' average (grades)	Standard deviation (s)	Coefficient of variability (s%)	Hybrid limits (grades)	Hybrids with grades ≥ 4 (%)
1	Texas x Amestec polen (Tétényi Bötermö + H 1/ 9-1 fa)	74	2.33	3.02	0.52	17.2	1.0-5.0	16.21
2	Texas x Nikitski 62	18	3.00	4.11	0.53	12.9	1.0-5.0	83.33
3	Texas x H 1 / 9-1 fa	46	3.00	3.01	0.35	11.6	1,5-4,0	21.73
4	Texas x Mari de stepă	52	2.50	2.73	0.47	17.20	1.5-5.0	15.38
5	Texas x Preanâi	29	3.00	3.95	0.40	10.10	2.0-5.0	65.52
6	Texas x Tétényi Bötermö	7	2.50	3.14	0.30	9.6	2.0-4.0	14.29
7	Texas x Saucaret	27	3.00	4.13	0.29	7.00	2.0-5.0	81.48
8	Primorski x Texas	33	3.50	4.36	0.31	7.1	3.0-5.0	87.87
9	Primorski x Saucaret	32	2.50	3.56	0.41	11.5	2.0-5.0	43.75
10	Primorski x Mari de stepă	51	2.50	2.54	0.42	16.4	1.0-4.0	11.76
11	Primorski x Tétényi Bötermö	63	2.00	2.98	0.41	13.8	1.5-4.5	25.40
12	Media	432	2.71	3.41	-	-	-	-

As for the Primorski series of crossings, the standard deviation ranges from 0.31 for Primorski x Texas to 0.42 for Primorski x Mari de stepă.

Not including the Primorski x Texas crossing, which has a 7.1% coefficient of variability, therefore uniform, homogeneous individuals, the other crossings have coefficients of variability that classify hybrids as variable within medium limits.

Table 2 presents some comparative results regarding fruit shape and appearance in almond genotypes and hybrids.

Concerning the genitors, compared to the average of the hybrids, the Texas x pollen mixture crossing is statistically ensured as significantly negative, Primorski x Tétényi bőtermő as very significant and Primorski x Texas very significantly positive.

Table 2

Comparative results regarding fruit appearance and shape in almond genotypes and hybrids (average values for 3 years)

Nr. Crt.	Hybrid combination	X genitors		±d (grades)	Signifi cance	X hybrids		±d (grades)	Signifi cance
		grades	%			grades	%		
1	Texas x Amestec polen (Tétényi Bötermö + H 1/ 9-1 fa)	2.33	86.0	-0.38	o	3.02	88.6	-0.39	-
2	Texas x Nikitski 62	3.00	110.7	+0.29	-	4.11	120.5	+0.70	xx
3	Texas x H 1 / 9-1 fa	3.00	110.7	+0.29	-	3.01	88.3	-0.40	-
4	Texas x Mari de stepă	2.50	92.3	-0.21	-	2.73	80.1	-0.68	oo
5	Texas x Preanâi	3.00	110.7	+0.29	-	3.95	115.8	+0.54	x
6	Texas x Tétényi Bötermö	2.50	92.3	-0.21	-	3.14	92.1	-0.27	-
7	Texas x Saucaret	3.00	110.7	+0.29	-	4.13	121.1	+0.72	xx
8	Primorski x Texas	3.50	129.2	+0.79	xxx	4.36	127.9	+0.95	xxx
9	**Primorski x Saucaret**	2.50	92.3	-0.21	-	3.56	104.4	+0.15	-
10	Primorski x Mari de stepă	2.50	92.3	-0.21	-	2.54	74.5	-0.87	ooo
11	Primorski x Tétényi Bötermö	2.00	73.8	-0.71	ooo	2.98	87.4	-0.43	o
12	Media	2.71	100.0	-	-	3.41	100.0	-	-
				DL 5%=0.33 DL 1%=0.47 DL 0.1%=0.67				DL 5%=0.42 DL 1%=0.59 DL 0.1%=0.84	

As for the hybrids, the following are statistically ensured as negative: Primorski x Tétényi bőtermő significantly, Texas x Mari de stepă distinctly significant and Primorski x Mari de stepă very significant and the following as positive: Texas x Preanâi significant, Texas x Nikitski 62 and Texas x Saucaret distinctly significant, Primorski x Texas was very significant.

Figures 1 and 2 present the correlations between the genitors' and hybrids' regardless the number of hybrids and then taking it into account.

Although the data is correlated, it is not statistically ensured.

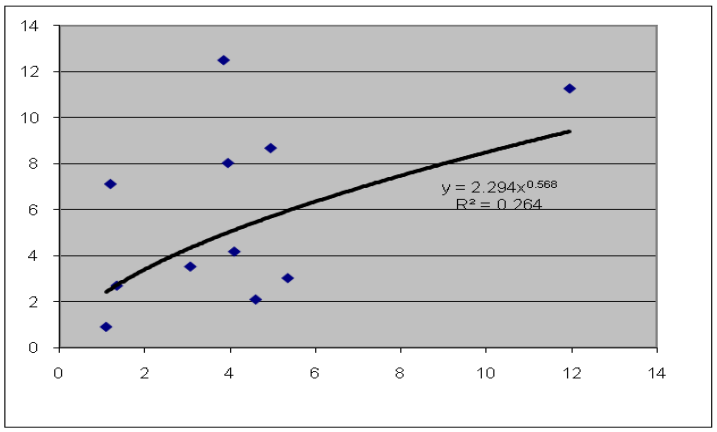

Fig. 1 Correlation between average of hybrids x average of genitors regardless of the number of hybrids (x, y).

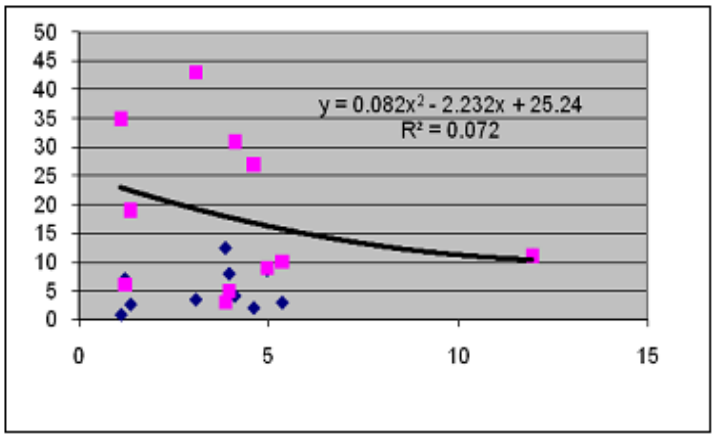

Fig. 2 Correlation between average of hybrids x average of genitors considering the number of hybrids (x, y, z).

CONCLUSIONS

The comparative study of the 432 hybrids and the genitors used for the crossings revealed that the following combinations stand out when it comes to remarkable fruit: Texas x Nikitski 62 with 83.3%, Texas x Saucaret with 81.5% and Primorski x Texas with 87.9%.

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