Rather low values have been found for heritability in broad sense which is a suggesting that this complex characteristic is greatly influenced by the specific environment. The very low, nonsignificant value of heritability in narrow sense ($h^2 = 0.001$) is a proof that additive effects of all polygenes in homozygote state which affect this characteristic actually are not observable in the analyzed experiment.

REZUMAT

STUDIUL IDEOTIPULUI ARHITECTURAL LA PUIETII DE PAR PROVENITI DIN CINCI COMBINATII HIBRIDE

Intr-o experienţă de tip topcroos au fost analizaţi puieţii hibrizi F_1 proveniţi din cinci combinaţii hibride în care selecţia Cluj 72-2-100 (spur tipic) a fost folosită ca tester matern. Puieţii hibrizi se aflau la sfârşitul anului şase de vegetaţie.

Nu s-au găsit diferenţe semnificative între cele cinci combinaţii hibride în privinţa distribuţiei puieţilor în cele patru ideotipuri acceptate (columnar, spur, standard şi plângător). Variabilitatea ideotipului arhitectural a fost cuprinsă între 18.8% la combinaţia Cluj 72-2-100 x Napoca şi 34.4% la Cluj 72-2-100 x Red Bartlett.

Proporţia de participare a genotipului în manifestarea fenotipică a ideotipului arhitectural a fost foarte scăzuta. Coeficientul de heritabilitate în sens larg a avut valoarea de 0.29 iar cel în sens restrâns de 0.001. Se conchide că pentru obţinerea, prin hibridări artificiale, a unei proporţii ridicate de descendenţi cu ideotipul arhitectural dorit, alegerea corectă a genitorilor constituie un factor esenţial.

LITERATURE CITED

1. GHIDRA, V., M. ARDELEAN, R. SESTRAS, 1994, Phenotypic correlations among fruit yield, tree vigour and type of fruiting formations and their use in pear breeding, Bul. USACN, A-H, 48/2, 33-38.
2. GHIDRA, V., M. ARDELEAN, R. SESTRAS, 1996, Ameliorarea părului în direcţia obţinerii unor soiuri de tip spur, Lucr. celei de a IV-a sesiuni şt. CSIOS, Bucureşti, 225-232.
3. GHIDRA, V., 1996, Cercetări privind ereditatea caracterului spur la păr şi folosirea acestuia în ameliorare, Teză de doctorat, USAMV Cluj-Napoca.
4. LESPINASSE, J.M., 1992, Le pommier. In: Amelioration des especes végétales cultivées, INRA, Paris.

Not.Bot.Hort.Agrobot.Cluj
1998, XXVIII

MATURITY OF F_1 GRAPE HYBRIDS ORIGINATED IN PINK TRAMINER

R. SESTRAŞ[1], M. ARDELEAN[1], S. D. MOLDOVAN[2], ELENA TĂMAŞ[1], EUGENIA MOLDOVAN[3], MIRELA CORDEA[1], LUCIA COSTIN[4], AGNES BORS[1]

Abstract.

R. SESTRAŞ, M. ARDELEAN, S. D. MOLDOVAN, ELENA TĂMAŞ, EUGENIA MOLDOVAN, MIRELA CORDEA, LUCIA COSTIN, AGNES BORS, 1998, Maturity of F_1 grape hybrids originated in Pink Traminer (In English). Not. Bot. Hort. Agrobot. Cluj, XXVIII.

In eight hybrid combinations in which one of the parents (either maternal of paternal) was cv. Pink Traminer, 2.284 F_1 individuals have been analyzed concerning the maturity of grapes. Obvious differences were noted among different combinations and within the same combination, depending on whether Pink Traminer had been used as a maternal or paternal genitor. These data suggest a possible maternal effect on the analyzed characteristic.

Grape maturity seemed to be polygenically inherited, heritability (in broad sense) showing high values while the one in narrow sense small and very small values, suggesting that additivity is not playing the most important role in the inheritance of this character in grapes.

Keywords: grape maturity, F_1 hybrids. cv. Pink Traminer, heritability
Address: University of Agricultural Sciences and Veterinary Medicine, 3400 Cluj-Napoca, Romania

Time of grape maturity is one of the most important goals in the breeding process, especially for desert varieties which have to cover a consumption period as long as possible.

MATERIAL AND METHOD

The moment of grape maturity was registered in 2284 F_1 hybrid individuals belonging to eight combinations, each of them having one of the parents represented by cv. Pink Traminer used either as maternal or paternal genitor, and the other by one of the four interspecific selections (II 125-15; II 125-14; II 157-3; II 154-14) all of them being in the same group of grape maturity. The moment of grape maturity in the F_1 populations was scored from 1 (95 days from sprouting to grape maturity) to 5 (175 days). Analysis of variance was used to differentiate the hybrid combinations concerning the analyzed characteristic.

1. University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca
2. Grape and Wine Research Station, Blaj
3. Agricultural Highschool Blaj
4. University of Baia Mare, Dpt. of Biology

RESULTS AND DISCUSSION

In the eight analyzed hybrid combinations, the mean scores for grape maturity were from 3.09 to 3.64. In four combinations (2;3;4 and 8), grape maturity occurred significantly later than for the mean of experiment while in two combinations (5 and 7) there has been noted a significant tendency toward early grape maturity (Table 1).

Table 1

Mean scores of grape maturity and coefficients of variability in eight hybrid combinations with Pink Traminer variety as a common parent
SCVV Blaj, 1996

No. of entry	Female parent	Male parent	F_1 analyzed	Mean and mean error $\bar{x} \pm s_{\bar{x}}$	± d	t	Significance of difference	Variability s%
1.	Pink Traminer	II 125 - 15	136	3.35 ± 0.08	+ 0.03	0.36	-	27.8
2.	II 125 - 15	Pink Traminer	240	3.53 ± 0.06	+ 0.21	3.12	* *	28.3
3.	Pink Traminer	II 125 - 14	208	3.52 ± 0.07	+ 0.20	2.82	* *	27.8
4.	II 125 - 14	Pink Traminer	240	3.64 ± 0.06	+ 0.32	4.81	* * *	27.0
5.	Pink Traminer	II 157 - 3	489	3.09 ± 0.04	- 0.23	5.26	o o o	27.9
6.	II 157 - 3	Pink Traminer	233	3.24 ± 0.06	- 0.08	1.26	-	28.4
7.	Pink Traminer	II 154 - 14	483	3.12 ± 0.04	- 0.20	4.38	o o o	29.0
8.	II 154 - 14	Pink Traminer	255	3.52 ± 0.05	+ 0.20	3.44	* * *	24.8
Total/mean of experience			2284	3.32 ± 0.02	-	-	-	28.4

There were significant differences between the scores for grape maturity within the same combinations, depending on whether Pink Traminer had been used as a maternal or paternal genitor. These results suggest possible maternal effects in the inheritance of grape maturity, at least for the analyzed combinations.

Variability indices were high and very high in all combinations (s% = 24.8 - 29.0) offering a good background for an efficient selection based on grape maturity (Table 1).

The distribution of F_1 individuals, belonging to the eight hybrid combinations, in different grape maturity classes is shown in Fig. 1. It should be emphasized the fact that both in direct and reciprocal crosses in which selections II 125-15 and II 125-14 were used as parents an abundance of late and very late grape maturing F_1 individuals has been noted while the offspring of selections II 157-3 and II 154-14 showed an obvious tendency toward early grape maturity.

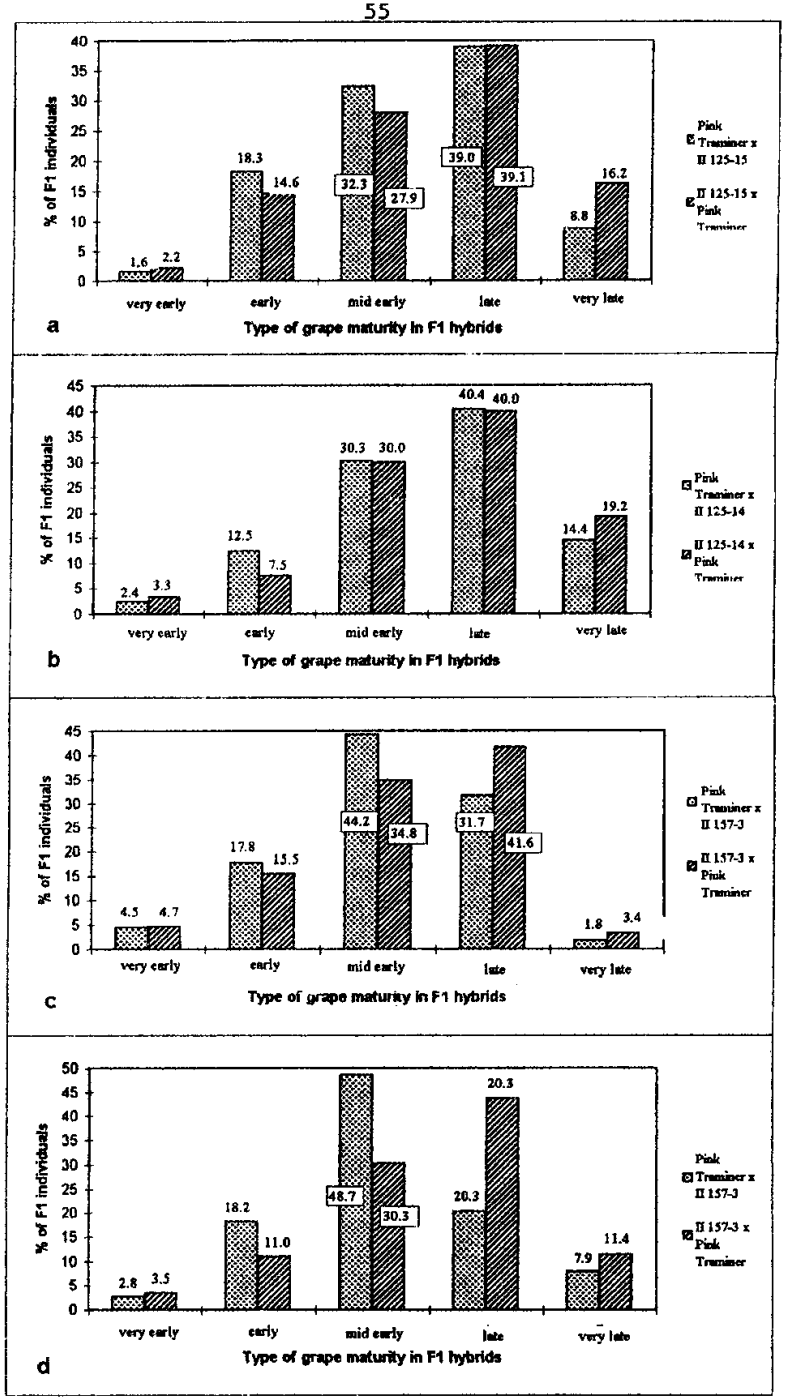

Figure 1. Grape maturity in F1 hybrids in direct and reciprocal combinations

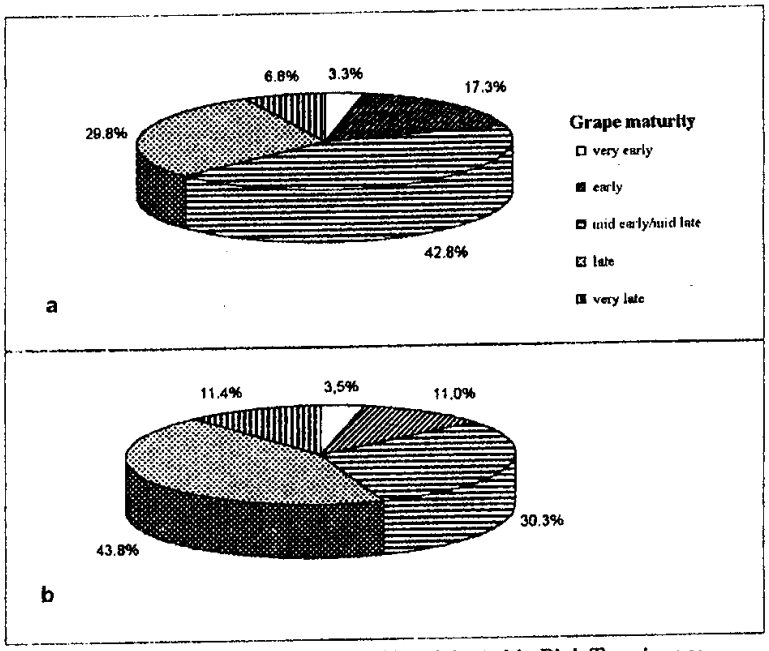

Fig.2. Grape maturity in F1 hybrids originated in Pink Traminer as a paternal (a) and maternal (b) genitor

Figure 2 shows the distribution of grape maturity in all F_1 individuals, when Pink Traminer was used as a maternal (a) or parental (b) genitor. It is rather interesting to note that, when used as a parental genitor, Pink Traminer induced a higher proportion of late and very late F_1 individuals (55.2%) than when used as a maternal genitor (36.6%).

Table 2

Heritability of grape maturity in F_1 interspecific hybrids in which one of the parents was cv. Pink Traminer, SCVV Blaj, 1996

Pink Traminer used as genitor	Heritability	
	in broad sense (H^2)	in narrow sense (h^2)
Female	0.93	0.16
Male	0.89	0.11

Heritability indices, shown in table 2, were high and very high when they had been computed in broad sense, which proves a strong genetic determination of grape maturity. The very small and small values computed for heritability in narrow sense suggest that additive effects are probably not the most important ones in the phenotypic expression of grape maturity.

REZUMAT

EPOCA DE COACERE A STRUGURILOR LA HIBRIZII F_1 PROVENITI DIN SOIUL TRAMINER ROZ

Epoca de coacere a strugurilor a fost analizată la 2.284 descendenţi F_1 din opt combinaţii hibride care au avut ca genitor comun, matern sau patern, soiul Traminer roz. Au fost înregistrate diferenţe evidente în privinţa modului de distribuţie a epocii de coacere a strugurilor la hibrizii F_1, în funcţie de combinaţia hibridă din experienţă iar la perechi de genitori comuni în funcţie de tipul hibridării (directă sau reciprocă), ceea ce sugerează existenţa unor efecte maternale. Maturarea strugurilor pare un caracter poligenic dar, cu toate că heritabilitatea în sens larg are valori ridicate, ilustrând cota ridicată a genotipului în manifestarea fenotipică a caracterului, valorile mici ale coeficientului de heritabilitate în sens restrâns demonstrează că nu aditivitatea joacă rolul cel mai important în determinismul genetic al epocii de coacere a strugurilor ci efectele de dominanţă şi epistazie.

LITERATURE CITED

1. ARDELEAN, M., 1986, Ameliorarea plantelor horticole şi tehnică experimentală, Tipo Agronomia, Cluj-Napoca.
2. EINSET, J. and CHARLOTTE PRATT, 1975, Grapes. In: Advances in fruit breeding. Purdue Univ. Press, West Lafayette, USA.
3. NEAGU, M., 1975, Ameliorarea plantelor horticole, Ed. Ceres, Bucureşti.