

REZUMAT

TIPUL DE CREȘTERE ȘI FRUCTIFICARE (IDEOTIPUL) LA HIBRIDII F₁ DE MĂR

În anul 1996, au fost analizați 1656 indivizi F₁ aparținând la 127 combinații hibride de măr, în privința tipului lor de creștere și fructificare, așa cum s-a manifestat el fenotipic. LESPINASSE (1992) reunește aceste două trăsături într-un singur caracter pe care îl denuțește "ideotip". Conform autorului citat, la măr ar exista patru ideotipuri distincte: columnar, spur, standard și plângător.

Hibridările directe și reciproce (standard x spur; spur x standard) au dat proporții diferite de indivizi F₁ care manifestau ideotipurile parentale și pe cele columnare și plângătoare. S-a tras concluzia că, cel puțin în ereditatea caracterului spur, sunt implicate evidente efecte maternale.

Ideotipul columnar apare în proporții foarte scăzute și, aproape în toate tipurile de combinații, aceste proporții se abat de la segregarea monogenică așteptată, conform determinismului genetic sugerat pentru acest caracter de KELSEY și BROWN (1992) și LANE (1992). Pe baza rezultatelor obținute se consideră ca mult mai probabilă determinarea poligenică a ideotipului columnar.

Ideotipul plângător a apărut în descendența F₁ a tuturor tipurilor de combinații, în proporții relativ ridicate (7-13%).

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ARCHITECTURAL IDEOTYPE OF PEAR SEEDLINGS IN FIVE
HYBRID COMBINATIONS

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Abstract.

V. GHIDRA, M. ARDELEAN, R. SESTRĂȘ, ELENA TĂMAȘ, MIRELA CORDEA, MARIANA DEJEU, LUCIA COSTIN, AGNES BORS, 1998, *Architectural ideotype of pear seedlings in five hybrid combinations* (in English). Not. Bot. Agrobot. Cluj, XXVIII.

The architectural ideotype - type of growing - was studied in a topcross experiment with five hybrid combinations in which Cluj 72-2-100 selection, typical spur, was used as a maternal tester. The analyzed seedlings were at the end of their sixth year of vegetation.

There were no significant differences among the five hybrid combinations concerning the distribution of F₁ seedlings in the four accepted ideotypes (columnar, spur, standard, and weeping). A high variability was found for ideotype (between 18.8% in Cluj 72-2-100 x Napoca and 34.4% in Cluj 72-2-100 x Red Bartlett).

The participation rate of genotype in the phenotypic manifestation of this character is relatively low. The coefficient of heritability in broad sense was 0.29 and the coefficient of heritability in narrow sense was very low, 0.001.

Keywords: pear, architectural ideotype, F₁ hybrids

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In pear breeding, the type of growing and fruit setting of trees is considered an essential selection goal since it can seriously affect the level of yields and their economic efficiency.

LESPINASSE (1992) has suggested, for apple, four main growing types which were named as architectural ideotypes: columnar or compact, spur, standard and weeping. The present paper is analyzing the distribution of F₁ pear seedlings belonging to five hybrid combinations into the four architectural ideotypes mentioned above, considered as fit for pear trees, as well.

MATERIAL AND METHOD

282 F₁ pear seedlings, in their sixth year of vegetation, have been analyzed concerning their architectural ideotype. The F₁ individuals originated in five hybrid combinations, all of them having as maternal genitor Cluj 72-2-100 selection which is a typical spur. The paternal genitors have been Conference, Red Bartlett, Countess of Paris and Napoca pear varieties.

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The experimental results have been interpreted by means of analysis of variance and the coefficient of variation (s%) and heritability (in narrow and broad sense) were computed.

RESULTS AND DISCUSSION

The distribution of the F₁ hybrid individuals in the four architectural ideotypes is presented in Fig. 1. It is obvious that, in all hybrid combinations, most of the F₁ individuals fell into ideotype no.2 (spur). Out of the total 282 F₁ individuals, 67.7% were of spur type, 14.9% were of columnar type, 16.7% of standard type and 0.7% of weeping type. Thus, it is noted an obvious tendency of acrotonic growth in all pear hybrid combinations analyzed.

Mean values of architectural ideotype, in each hybrid combination, are presented in Table 1. It is evident that in most combinations the average score for ideotype was very close to 2.0 (spur). This is quite understandable taking into account the fact that Cluj 72-2-100 selection is a typical spur one. The coefficients of variability were comprised between 18.8% (Cluj 72-2-100 x Napoca) and 34.4% (Cluj 72-2-100 x Conference). This means that selection for a certain architectural ideotype can be efficient in the analyzed hybrid combinations. It is also worth emphasizing the absence of differences concerning the score of ideotype between the four true hybrid combinations and Cluj 72-2-100 selfpollinated.

Table 1

Architectural ideotype of F₁ pear seedlings at the end of the sixth vegetation period
Cluj, 1996

Variant	$\bar{x} \pm s_x$	s %	$\pm d$	t	Significance of difference
1. 72-2-100 selfpollination	2.00±0.12	28.9	-	-	-
2. 72-2-100 x Conference	1.92±0.13	33.4	0.08	0.47	-
3. 72-2-100 x Red Bartlett	2.02±0.10	34.3	0.02	0.13	-
4. 72-2-100 x Countess of Paris	2.05±0.04	28.2	0.05	0.41	-
5. 72-2-100 x Napoca	1.88±0.13	18.8	-0.12	-0.17	-

Heritability in broad (H²) and narrow (h²) sense, for the architectural ideotype, is presented in Table 2.

Table 2

Heritability in broad sense (H²) and narrow sense (h²) for the architectural ideotype of F₁ pear seedlings

Trait	Heritability	
	H ²	h ²
Architectural ideotype	0.290	0.001

Figure 1. Frequency of architectural ideotypes in five F₁ pear combinations
Cluj - Napoca, 1996

Ideotype	Combination	Ideotype 1 "columnar"		Ideotype 2 "spur"		Ideotype 3 "standard"		Ideotype 4 "weeping"		Total hybrids
		No.	%	No.	%	No.	%	No.	%	
	1. 72-2-100 selfpollination	4	16.0	17	68.0	4	16.0	-	-	25
	2. 72-2-100 x Conference	6	24.0	15	60.0	4	16.0	-	-	25
	3. 72-2-100 x Red Bartlett	11	22.4	26	53.1	12	24.5	-	-	49
	4. 72-2-100 x Countess of Paris	20	11.4	126	72.0	27	15.4	2	1.2	175
	5. 72-2-100 x Napoca	1	12.5	7	87.5	-	-	-	-	8
	TOTAL	42	14.9	191	67.7	47	16.7	2	0.7	282

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 experiență de tip topcross au fost analizați puietii hibridi F_1 proveniți din cinci combinații hibride în care selecția Cluj 72-2-100 (spur tipic) a fost folosită ca tester matern. Puietii hibridi se aflau la sfârșitul anului șase de vegetație.

Nu s-au găsit diferențe semnificative între cele cinci combinații hibride în privința distribuției puietilor în cele patru ideotipuri acceptate (columnar, spur, standard și plângător). Variabilitatea ideotipului architectural a fost cuprinsă între 18.8% la combinația Cluj 72-2-100 x Napoca și 34.4% la Cluj 72-2-100 x Red Bartlett.

Proporția de participare a genotipului în manifestarea fenotipică a ideotipului architectural a fost foarte scăzută. Coeficientul de heritabilitate în sens larg a avut valoarea de 0.29 iar cel în sens restrâns de 0.001. Se conchide că pentru obținerea, prin hibridări artificiale, a unei proporții ridicate de descendenți cu ideotipul architectural dorit, alegerea corectă a genitorilor constituie un factor esențial.

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MATURITY OF F_1 GRAPE HYBRIDS ORIGINATED IN PINK TRAMINER

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Abstract.

R. SESTRAS, M. ARDELEAN, S. D. MOLDOVAN, ELENA TĂMAȘ, 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 or 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

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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.

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