RESEARCH REGARDING THE MAIZE SEEDS GERMINATION AT THE MAIN MAIZE HYBRIDS CULTIVATED IN TRANSILVANIA

CERCETĂRI PRIVIND GERMINAȚIA SEMINȚELOR DE PORUMB LA PRINCIPALII HIBRIZI CULTIVAȚI IN TRANSILVANIA

CAMELIA FIRUTA TODORAN*, G., MORAR*, CRISTINA MARIA NEAG, CONSTANTINA CHIPER****

**University of Agricultural Sciences and Veterinary Medicine, Faculty of Agriculture, Cluj-Napoca, **ICCDP Magurele, Braşov (CRED)*

Abstract:. *This paper studies the uniformity of the main hybrids springing which are cultivated in Transilvania from seeds with different production years and with different calibres. The calibrated seeds plots assure sowing in the best conditions of mechanization, an equidistant spreading of seeds and determine the achievement of a uniform plants springing.*

Rezumat: *Lucrarea se ocupă cu studiul uniformității de răsărire la principalii hibrizi cultivați în Transilvania, din semințe de calibre diverse, provenite din ani diferiți de producție. Rezultatele experimentale obținute reliefează faptul că materialul calibrat asigură semănatul optim în ceea ce priveşte condițiile de mecanizare şi repartizarea echidistantă a boabelor, determinând realizarea unui răsărit şi creşteri uniforme a plantelor.*

***Key words*:** *maize, calibre, germination*
Cuvinte cheie: *porumb, calibru, germinație*

INTRODUCTION

Germination is defined as the totality of physiological and biochemical processes which take place in seeds while the embryo passes from the latent to active life (MOGÂRZAN et col.2004).

Germination is the process through the seeds passes through latent stage to the active one. During latent stage the seed contains a reduce quantity of water and due to that all biological processes are inhibited. In the second stage (active life), because of several favourable conditions (humidity, warm, oxygen) the physiological activity is fully taken place.

Germination determination is made with the scope to establish the number of seeds, expressed in percentage from pure seeds, capable to germinate normally in conditions of laboratory (DUDA et col.2004).

In field conditions, good maize seed germination is achieved when the temperature in soil at the depth of sowing is superior over 10ºC. At inferior temperatures (below 10 ºC) , even at 6 C , the biochemical processes in seeds may start, but they take place very slowly, so that the seeds may die before springing (CRISTEA et col. 2004).

Maize production cannot be separated by the biological material used in crop. Cultivating maize hybrids with germination and low vigour, leads to defective crops and low productions in the end (DINCU et al. 2002).

MATERIALS AND METHOD

Choosing the biological material, respectively of the hybrid, represents the base element in order to achieve the experiences in conditions of fields and laboratory.

The biological material taken into study was obtained at SCDA Turda, among the hybrids from the production site and in perspective, the hybrids TURDA 201, TURDA 200 and TURDA 165.

The calibres used within the present study are those used in selection and sorting stations for maize in Romania.

LL- large wide
LR – large round
ML – average wide
MR – average round

Table 1

Springing rate for maize hybrids resulted from seeds in different years (Year x hybrid interaction)

year	Hybrid	% springed plants								
		07.06.06	dif	significance	08.06.06	dif.	significance	09.06.06	dif	significance
2004	T-201	40.8	0	mt	65.63	0	mt	88.53	0	mt
	T-200	58.73	17.93	*	90.83	25.2	*	100	14.47	***
	T-165	50.4	9.6	-	77.06	11.43	-	100	14.47	***
2005	T-201	62.7	0	mt	86.86	0	mt	100	0	mt
	T-200	61.23	1.47	-	90.33	3.47	-	100	0	-
	T-165	36.86	-25.84	0	65.83	-21.03	0	95	-5	-
DL 5% 1% 0.1%		18 30.66 60.6			17.66 30.26 60.7			12.63 19.5 33.26		

Table 2

The influence of maize seeds calibration in 2005 and 2006 upon the % of plants springing in the experimental year 2006

Calibre	07.06.06			08.06.06			09.06.06		
	%	dif	signifi cance	%	dif	signifi cance	%	dif	signifi cance
LL	65.4	0	mt	91.8	0	mt	100	0	mt
LR	48.9	-16.5	000	73.06	-18.74	000	95.93	-4.07	-
ML	48.9	-16.5	000	77.36	-14.44	000	95.93	-4.07	-
MR	44.03	-21.37	000	75.4	-16.4	000	91.4	-8.6	00

DL 5% 1% 0.1%	6.43 8.6 11.2	7.26 9.66 12.66	5.66 7.53 9.66

RESULTS AND DISCUSSION

Within the interaction of the provenance year of the hybrid X seed, experimented on the maize plant growing percentage appearance, we discover an evident difference between the seeds from years 2004 and 2005.

Comparative with T-201 hybrid considered control, the T-200 hybrid recorded the significant coming up differences during three successive estimations dates of the growing values, been gradually bigger with appreciation duration interval.

The plants from the 2004 seeds from T-165 hybrid are equal or superior compared to T-201 hybrid after each interval of estimation.

Concerning the values of germination percentage, the seeds from 2005 do not differ between T-2001 and T-200 hybrids, both hybrids showing similar values of the growing plants. The T-165 hybrid presented significant differences concerning the coming up plants at the first two determinations compared to T-201 hybrid, and a small not significant difference, when the third coming up evaluation was performed.

Analysing the influence of the seeds calibres upon the percentage of springing plants, we notice the fact that on average on the two years taken into study the highest values of the total springing at all the appreciation dates are registered at LL calibre, and in the end at the last appreciation date of the percent for the springing plants, the differences between the calibres disappear remaining insignificant compared to LL calibre, and the only differences of springing appreciated with negative significant values maintain for the MR calibre (average round) for this date too.

LL calibre (large width) presented the highest values for germination in laboratory conditions too for all the experimented hybrids, fact which determines us to consider the fact that in the conditions of sufficient quantities of maize hybrid seed the use of LL calibre can lead to completely and fast springing maize fields.

CONCLUSIONS

Seed separation on calibre determine significant percentage for the maize plants vigour, the seeds with a larger calibre bring forth to more robust plants than the ones with smaller calibre.

The percent of springing plants depend on the maturation condition of the seeds in the filed in the year of their production.

The calibre of seeds determines the percentage of the springing plants. The biggest seeds (LL – large width) had an early springing, while the seeds with MR calibre (average round) spring lately and in a lower percentage.

In the condition of sufficient quantities of hybrid maize seeds, the main usage of the LL calibre would lead to a fast and complete crop springing.

LITERATURE

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