

**RESEARCH REGARDING THE INFLUENCE OF THE CALIBRES AND
THE SEEDS TREATMENT ON THE SEEDS GERMINATION IN
INTERACTION WITH THE GENOTYPE**

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Abstract

This paper deals with the study of the calibration influence and the treatment of the Topsin 70 product on seeds germination at the main hybrids cultivated in Transylvania.

The determination of the germination that aim to the establishment of the seeds number , expressed in percents of pure seed, capable to produce some normal germs in lab condition , was appreciated through 2 indices: the germinative capacity and the germinative energy..

The determination of the germinative faculty and energy was made in 4 repetitions of 100 seeds and germination layer was the paper of industrial filter, made from cellulose 100%.

The determinations were made twice, after 4 days for the determination of germinative energy and after 7 days for the one of germinative capacity..

In order for the germination to derive normally it was followed the fact that the humidity of the germination layer should be sufficient in every moment without being in excess.

*The research was made within the field crops productin laboratory of the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca in 2007 and 2008 and the biological material taken for study was created at SCDA Turda from hybrids that were in production and in perspective, namely: **TURDA 201** - triliniary hybrid, semiearly created at SCDA Turda, group FAO 340, **TURDA 200** - hybrid double early, registered in 1976,rewritten in the Official Catalogue in 2000 and **TURDA 165** - triliniary hybrid, early belonging to the group FAO 270.*

The obtained results show us that for the same calibre of the seed the germinative energy presents significant differences during the years with favourable conditions of plants maturation and values significantly higher at the seed treated with the fungicid Topsin

INTRODUCTION

Germination is a succession of phenomena and morphological, physiological and biochemical processes that have as a result the transformation of the embryo in germs. The formation of the organs of the future plants like leaves, stem and root takes place as a consequence of the division and the growth of the embryo cells and it is based on series of chemical and physical transformations of a superior

level of organization and integration. The germination process is characterized as being „genetically programmed and modulated by the environment” [2].

The seed size is a syntetic indicator depending on the genotype, on the conditions of vegetation where it was formed and on the position of the beans on the cob..

The value of the corn seeds obtained in seeds lots don't allow us to give up to the big grains or those that were on different position on the cob, that's why for a better uniformity of the seeds used for cultivation,it was made their calibration.

The seeds size has a significant importance for the agricultural practice because, compared to the middle seeds and especially to those big ones, having a higher content of nutritive substances and embryos better developed, they succeed to produce plantules with a better start, with a superior power of crossing, better growing and development, and through this, a faster development of the vegetative apparatus, what finally results in a better production (Bucurescu et colab., 1992).

The treatment of the corn seeds is one of the prophylactic and curative measures important for the prevention and control of the diseases caused by pathogens agents that were in seeds in the soil. Through this measure it is assured the protection of the seeds that are going to rise and also the reduction of the infectious potential for some pathogens that affect the plants during the period of vegetation [1].

MATERIAL AND METHODS

The biological material studied was created at SDCA Turda from the hybrids that were in production and on perspective,namely: Turda 201 - trilinear hybrid, semi early, created at SCDA Turda, group FAO 340, Turda 200 double hybrid, early, registered in 1976, put back in The Official Catalogue in 2000 and Turda 165-trilinear hybrid, early, belonging to group FAO 270.

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

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

Determination of capacity of energy and germination was performed in four repetitions of 100 seeds and germination layer of filter paper industry was white, made from 100% cellulose.

Measurements were perfomed twice in four days to determine the capacity and energy of germination in seven days.

From germination to flow normally to follow the germination moisture layer is sufficient at any time, without excess.

RESULTS AND DISCUSSION

The energy and the germinative capacity of the hybrids studied in interaction with the treatment with Topsin at seed in those two experimental years emphasis the fact

that in lab conditions, the differences between the values of the hybrids are significant (figures 1 and 2).

In the case of experimental year 2006 the appreciation of the differences of the germinative energy and capacity according to Duncan test show us significant differences between hybrids, the highest values being met at hybrid Turda-200, followed by hybrids Turda-201 and Turda -165 and in the case of the experimental year 2007 the highest values are met at the hybrid Turda -201 followed by Turda -165 and Turda -200 both at treated and untreated seeds.

At all the determinations, both at germinative energy and faculty, the values of hybrid Turda -165 are significantly lower compared to those determined at hybrids Turda -201 and Turda -200. This repetitive evidence could have only genotype causes, fact that makes us propose recommendations full of attention at the seeding period but also at the depth and the density of cultivation.

The germinative capacity appreciated after a supplementary time of 3 days from the date when the germinative energy was written ,modifies the germination values for hybrids in both experimental years in condition of constant temperature in fitotron.

The values of germinative faculty of over 90% near the germination at the untreated seed to that treated in both experimental years , the exception being the hybrid T-165 at which the values of the germinative faculty get down under 90% in both experimental years for all the proveniences from 2005, 2006, 2007 (figures 1 and 2).

Both the year of seed production and the interaction of the experienced hybrid with the seed calibre may significantly influence the germinative faculty (figures 3 and 4)

In the interaction between the treatment factors , the corn hybrid and the seed calibre we notice the superiority of the germinative capacity of hybrid Turda -201 both at treated and untreated seeds from both years of production , followed by the hybrids Turda -200 and Turda -165 , the values of this last hybrid being under 90% in average for all calibres both at treated and untreated seed.

We can notice at Turda -200 at the seeds from both years of production in the case of the seeds treatment with Topsin, as a rule, a raising of the values of the germinative faculty at all calibres.

An interesting conclusion may be drawn from this chart, that the values of the germinative capacity at almost all the calibres in both experimental years are higher at the seeds treated with Topsin than at those untreated.

We can conclude that Topsin can have a slight stimulative effect on the seeds germination (figures 1 and 2).

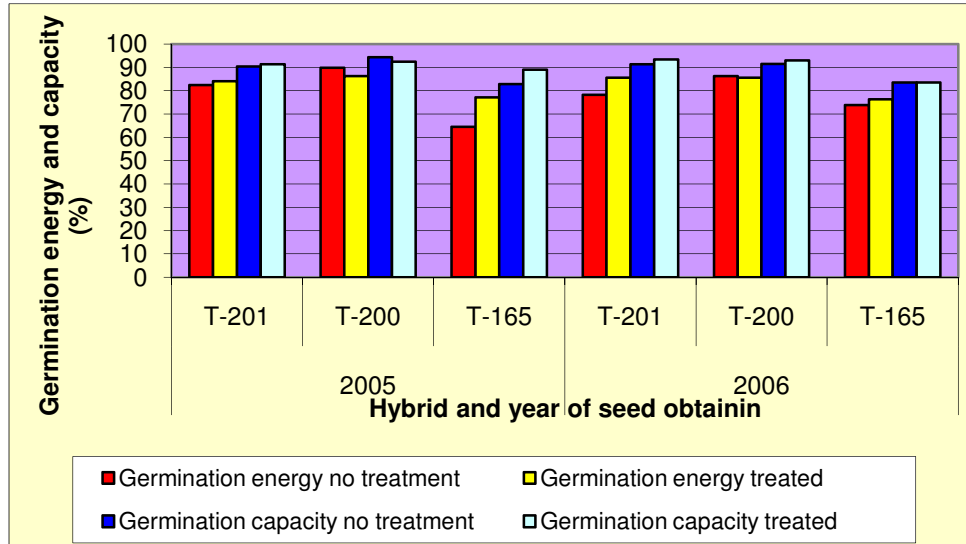


Fig. 1. Influence of treatment at seeds from different years of production in interaction with the genotype upon the germination energy and capacity

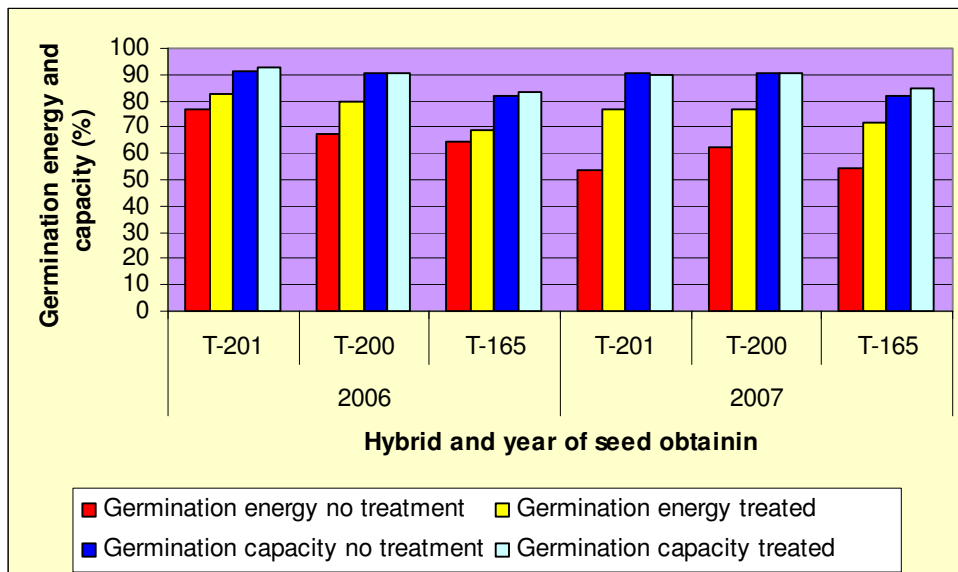


Fig. 2. Influence of treatment at seeds from different years of production in interaction with the genotype upon the germination energy and capacity

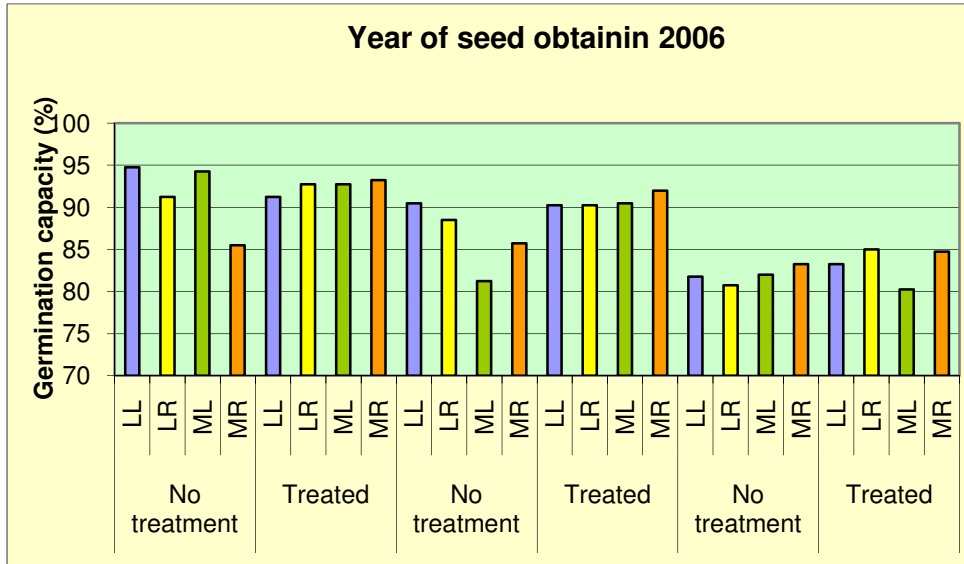


Fig. 3. The influence of seed age upon the germination capacity in the interaction between these factors: treatment x maize hybrid x seed size

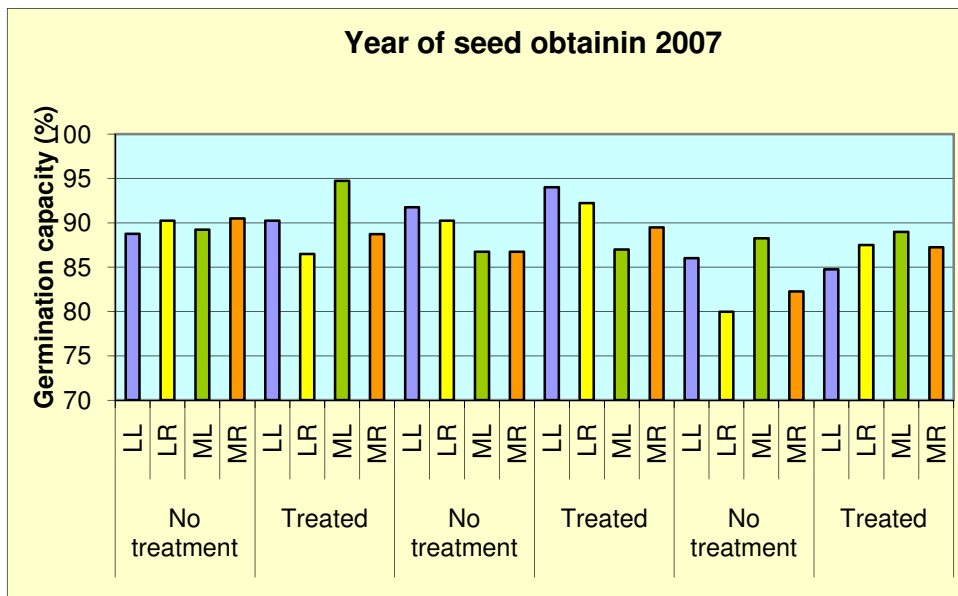


Fig. 4. The influence of seed age upon the germination capacity in the interaction between these factors: treatment x maize hybrid x seed size

CONCLUSIONS

1. The bigger calibres and the fitosanitary treatments at the seed are stimulative elements for the germinative energy and faculty at the hybrids and for the seeds kept 1 or 2 years.
2. For the same calibre of the seed , the germinative energy as the first indicator of the vigour of the seeds shows significant differences in the years with favourable conditions of maturation of the plants and and values significantly higher at the seeds treated with Topsin.
3. Treatment of seeds with increased Topsin noteworthy differences into account energy values and experimental germination in most sizes.

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