RESEARCH REGARDING THE CALIBRE INFLUENCE ON THE DEPTH OF THE SEEDING ON THE RAISING RHYTHM AND GROWTH VIGOUR AT THE MAIN HYBRIDS CULTIVATED IN TRANSYLVANIA

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Abstract: *The paper deals with the study of the influence of the seeds calibres, of the sowing depth and of the growth vigour at the main hybrids cultivated in Transylvania. For doing this there were taken 3 depths of sowing 4,6,8 cm from the depth norms, where were sowed the experimental calibres selected from the seeds of the hybrids T-165, T-200 and T-201 in a trifactorial experience placed after the methods of parcels subdivided in three repetitions. The sowing was made after the optimal period to avoid the influence of the thermal stress on seeds germination and to strictly delimit the relation between the sowing depth, the calibre and the hybrid. The correlation between the indexes established through laboratory analyses and the raising in the field are an important part of the control of the seeds vigour. The correlation between the indexes established through laboratory analyses and the raising in the field are an important part of the control of the seeds vigour. The appreciation of the vigour was made after 7 days from the raising (in the phase of 2 leaves) and in the phase of 11 leaves, being appreciated through marks from 1 to 9, mark 9 being the maxim vigour. Research has been conducted in the experimental field of the territory Jucu Station for Research and Development in 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 Cataloque in 2000 and* ***TURDA 165****- triliniary hybrid, early belonging to the group FAO 270. The obtained results show us that among the technological factors involved in the raising and the vigour of the corn seeds , the sowing depth at normal intervals of 4, 8cm has a small influence on the raising vigour, the registered differences remaining at the level of those established for hybrids and calibres.*

Key words: *corrn, calibre, seeding depth, raising, vigour*

INTODUCTION

In our country the big number of corn hybrids that were in culture, the extremely diversified climate and soil conditions, springs that are different from each other are certain premises of the study of vigour and the raising of corn seeds.

The vigour as a complex attribute of the seeds, has the following manifestations: the vigorous seeds are less affected by the unfavourable factors while keeping, they are resistant to the pathogen agents after the sowing in the field, have the capacity to grow normal plants, having sufficient stores that are used in the phase of heterotrophic growth and in transition to autotrophic, develop germs that grow vigorous during the autotrophic phase (CERNEA et colab., 2008).

The most important manifestation of the vigour is the raising difference of some lots to the others although at the determination of the germination these behave the same.

Through sorting and calibration it is assured a more uniform raising, fact that allows an earlier application of the maintaining and protection works. If when they are sorted, the separation of the peeled seeds in groups is made based on one of their characteristics:

thickness, width, specific mass, length and thickness-at calibration, for the division of groups, there are used 2 dimensions: length and thickness, length and width. The corn calibration is made with the help of the machines equipped with plain sites or circular sites.

It can be said that through calibration it is assured a bigger uniformity of the corn seeds, fact that assures a more correctly insemination, an economy of seeds and a uniform raising, with all the favorable consequences which derives from here for the maintenance and the protection of that culture (MOLDOVAN, 2001).

MATERIAL AND METHODS

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

The specific technical norms stipulates that the processing of the corn seeds to be made through calibration on 4-6 calibers: large wide (LL), large round (LR), Medium large (ML), medium round (MR) small large (SL) small round (SR). Because the seeds of the corn hybrids experimented through their genetic determinism produce only large and medium seeds, there have been taken into study only the first four calibers(LL<LR<ML<MR).

In the field experience made in 2008 we tested the influence of the sowing depth in interaction with the seeds calibres on the raising of the corn plants and on the growth vigour at the experimented hybrids. For this the corn seeds from 3 hybrids, calibrated on experimental sizes were sowed at 3 depths: 4, 6, 8.

The appreciation of the vigour was made after 7 days from the raising (in the phase of 2 leaves) and in the phase of 11 leaves, being appreciated through marks from 1 to 9, mark 9 being the maxim vigour.

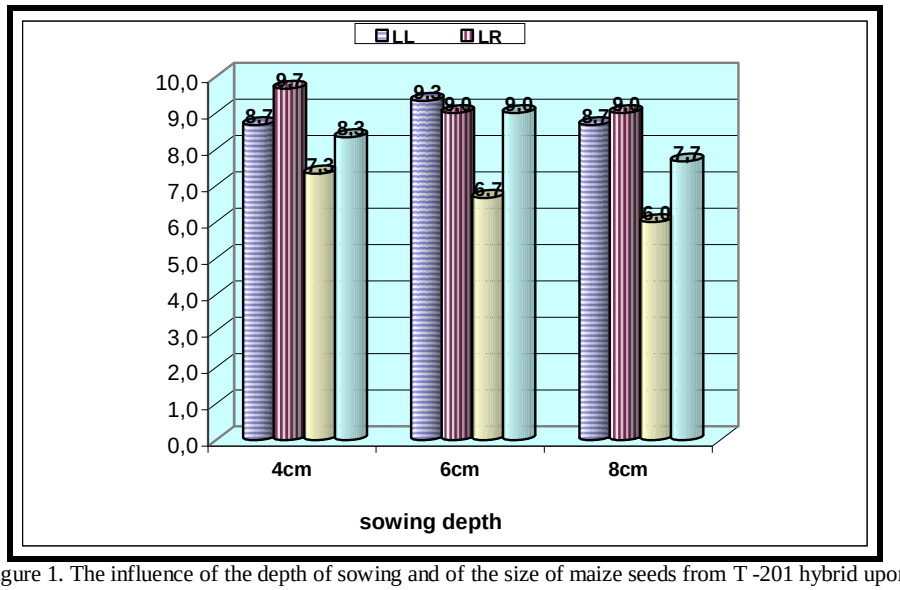

Figure 1. The influence of the depth of sowing and of the size of maize seeds from T -201 hybrid upon the emergence rhythm

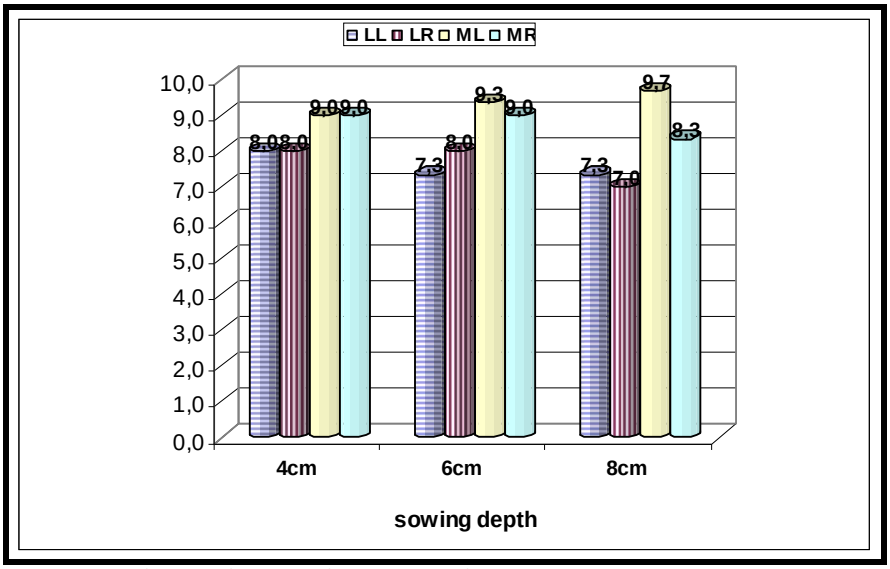

Figure 2 The influence of the size of maize seeds from T-200 hybrid upon the emergence rhythm

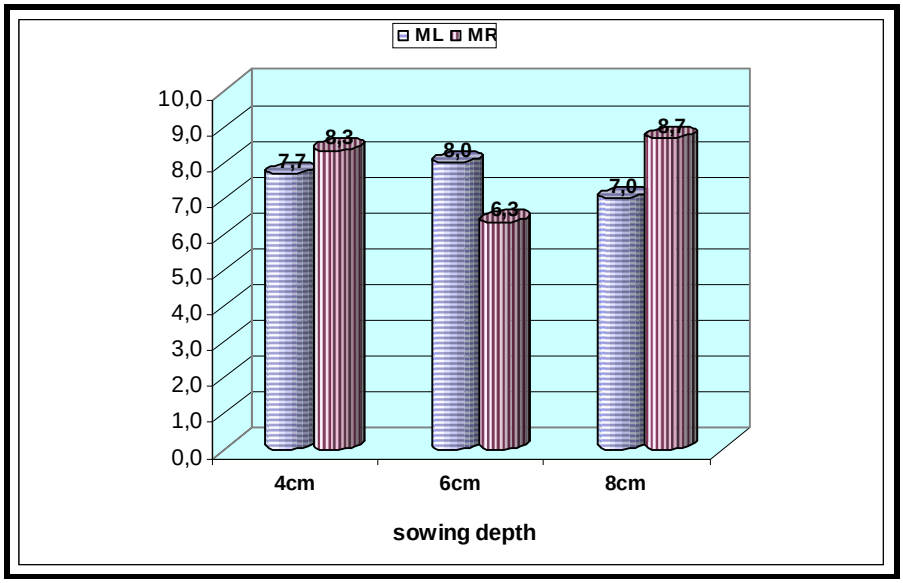

Figure 3. The influence of the depth of sowing and of the size of maize seeds from T -165 hybrid upon the emergence rhythm

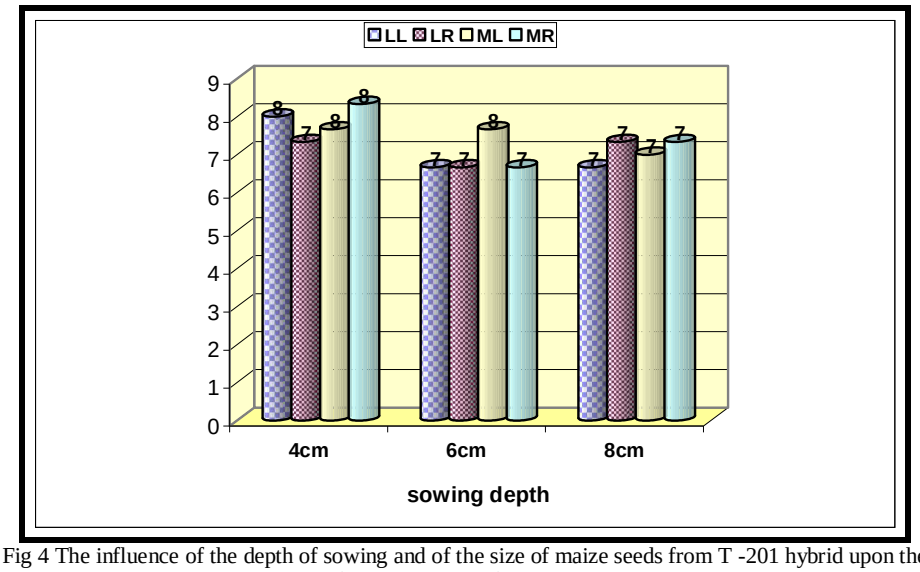

Fig 4 The influence of the depth of sowing and of the size of maize seeds from T -201 hybrid upon the vigor of growth 7 days after the emergence

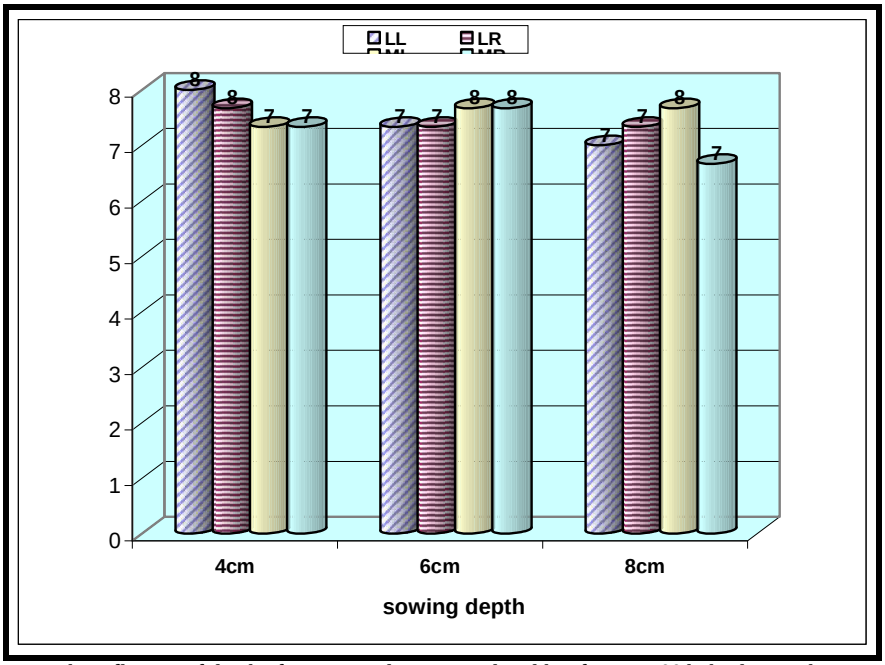

Figure 5 The influence of depth of sowing and maize seeds calibre from T 200 hybrid upon the growing vigor at 7 days from springing

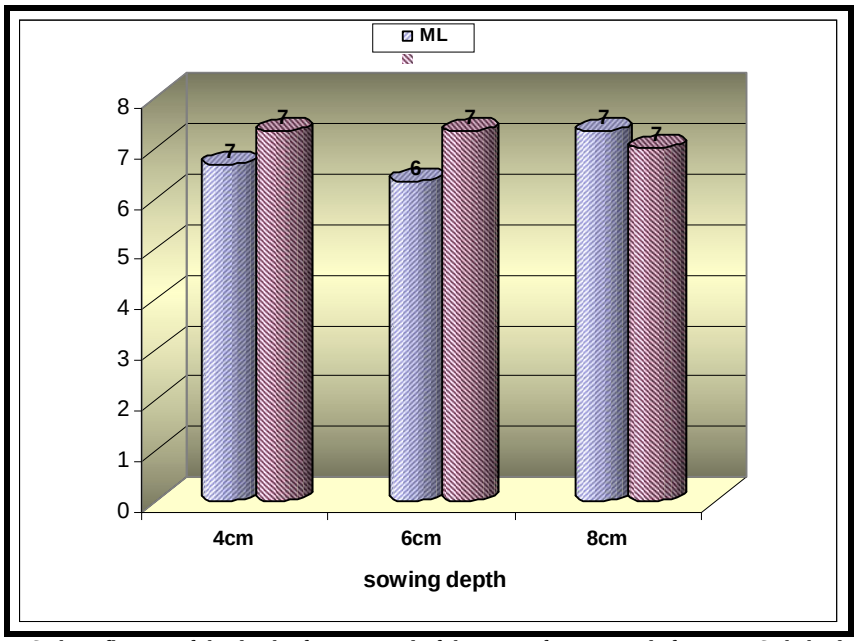

Figure 6 The influence of the depth of sowing and of the sizes of maize seeds from T -165 hybrid upon the vigor of growth 7 days after the emergence

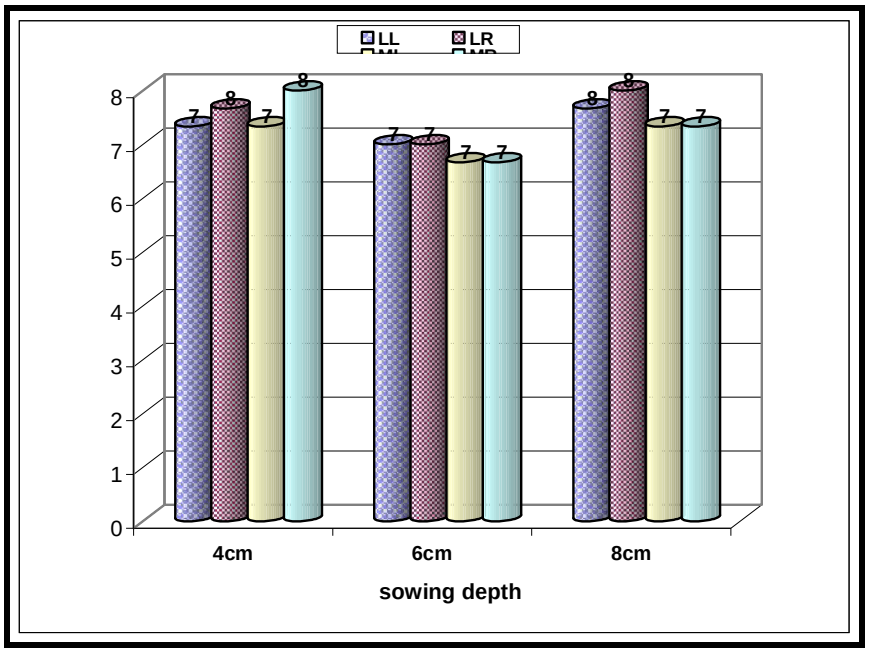

Figure 7 The influence of the depth of sowing and of the sizes of maize seeds from T -201 hybrid upon the vigor of growth in the phase of 11 leaves

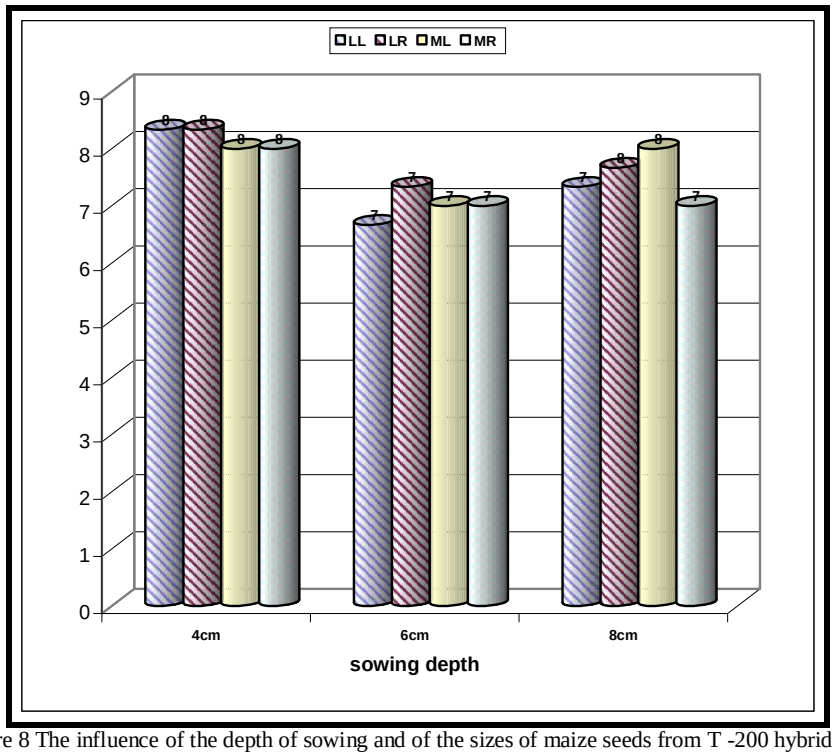

Figure 8 The influence of the depth of sowing and of the sizes of maize seeds from T -200 hybrid upon the vigor of growth in the phase of 11 leaves

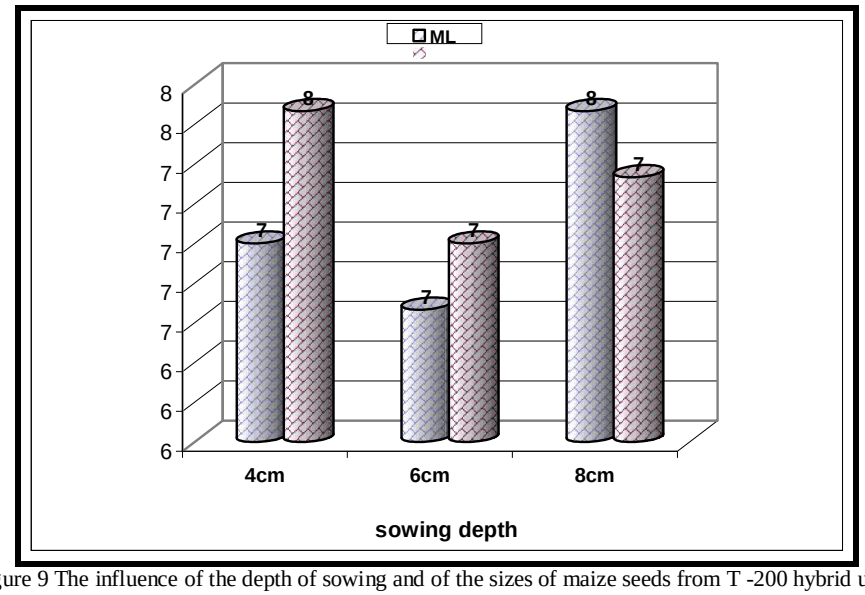

Figure 9 The influence of the depth of sowing and of the sizes of maize seeds from T -200 hybrid upon the vigor of growth in the phase of 11 leaves

RESULTS AND DISCUSSIONS

In the interaction between the sowing depth, the seeds calibre and the corn hybrid it can be noticed at hybrid T-201 that the sowing depth is bigger with 6 cm than the biggest values of the raising rhythm, especially at the wide big calibre (LL), round big (LR) and round medium (MR). We can also find the values significantly negative of the raising rhythm at the wide medium calibre (ML) at any of the sowing choices (fig. 1).

In the conditions of a wet and warm period like that from 06.05.2008 when the corn seeds raised at different depths, it seems that the sowing depth (in the interval 4-8 cm) has a smaller importance even at the seeds from different calibres. The raising rhythm was risen, the appreciation marks being between 8 and 9 at wide big calibre (LL) and round big (LR) and smaller at wide medium calibre (ML) and round medium (MR).

In the case of hybrid T-200 in the interaction between the sowing depth, the seeds calibre and the corn hybrids, we can notice the variant with the sowing depth of 4 cm with the biggest values of the raising rhythm, and we can also notice the values of the raising rhythm of the plants obtained from the seeds of wide big calibre (ML) and round medium (MR) at all those three variants of seeding (fig. 2).

The obtained results, although a little bit contradictory can be explained by the humidity sufficient in the soil in the surface layer(4cm) fact that allowed a quick and uniform raising , and for the seeds with smaller dimensions from the wide medium calibre (ML) and round medium (MR) (fig. 2) .

At the hybrid T-165, hybrid at which there couldn't be identified big seeds in the productions from 2007 there were experimented medium calibres, wide medium (ML) and round medium (MR), sowed at different depths in order to identify some influences on the raising rhythm. Through their construction at smaller dimensions these seeds produce plants in a lower raising rhythm and can't be established a tight correlation between the calibre of these seeds and their sowing depth regarding the raising rhythm (fig. 3)

From the study of the sowing depth and the seeds calibres on the growth vigour at 7 days after the raising(in the phase of 2 leaves) at hybrid T-201, we notice that the variant with the sowing depth of 4 cm has a raising vigour slightly bigger, probably as a following of an earlier raising (fig. 4), and in the case of hybrid T-200 the sowing depth didn't lead to significant differences of vigour between calibres, their values being approximately equal (fig. 5).

Neither in the case of hybrid T-165 the sowing depth doesn't produce significant differences of vigour between calibres their values being appropriate, but with smaller values than at the other hybrids, as a following of his genetic particularities (fig.6).

The raising vigour in the phase of 11 leaves, appreciated in the interaction between the sowing depth , the sowing calibre and the corn hybrid show us a relative equality of the plants (marks of 7-8) at all those three sowing depths at hybrid T-201 (fig. 7), but also at T-200 (fig. 8) and T-165 (fig.9).

CONCLUSIONS

The vigour of the seeds defined as the sum of the quality attributes that determines a better behaviour of these in suboptimal field conditions is determined by genetic factors, of environment and technological and by storing conditions.

From the technological factors involved in the raising and the vigour of the corn seeds, the sowing depth at a normal interval of 4-8cm has a small influence on the raising vigour, the registered differences remaining at the level of those established for hybrids and calibres.

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