Sowing Density Influence on Autumn Wheat Production

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Abstract. This work presents the production results for two autumn wheat aborigine varieties (Glosa and Boema) by using two densities: 600 germinable grains/m² and 300 germinable grains/m². The experiment was placed within Albina locality radius, Brâila county, on a chernozem type of soil, having physical and chemical characteristics which are favourable to plants’ growth and development. The experiment was bi-factorial, set up in subdivided plots, the factor being the variety (a1 Glosa and a2 Boema) and b factor was the density (b1 600 germinable grains/m² and b2 300 germinable grains/m²). The experiment had four variants, each variant having a surface of 1786 m² (470 m length and 3.8 m width) and two repetitions, the surface of one repetition being 7.144 m², and the surface of the entire experiment being 14.288 m² (1.428 ha). During the entire vegetation period, observations have been made, establishing the emerging degree, the status of the plants at the beginning of winter (plants’ height, the number of brothers, the number of adventive roots). Measurements were taken regarding the productivity elements (number of spikelets within one spike, number of kernels within one spike, the weight of the kernels from the spike), regarding the hectolitre mass and finally, regarding the productions obtained for each and every variant and repetition.

At the density of 300 germinable grains /m², it can be observed that the average number of brothers is higher for both varieties (2.96 brothers/plant at Glosa and 3.50/brothers/plant at Boema), thus correlating to a higher number of adventive roots (6.26 roots/plant at Glosa and 5.70 roots/plant at Boema), following to ensuring a larger nutrition space.

The production obtained was 5255 kg/ha at Glosa variety, with the density of 600 germinable grains/m² and 5127 kg/ha at the density of 300 germinable grains/m², and at Boema variety, the production was 5150 kg/ha at the density of 600 germinable grains/m² and 5100 kg/ha at the density of 300 germinable grains/m². It can be said in conclusion that based on the productions obtained, the wheat, through its characteristic of twinning, has the capacity to compensate a smaller density used at sowing which leads to insignificant production differences in case of using these two densities at those two varieties analysed.

Keywords: Boema, Glosa, twinning, density, production

Introduction. The wheat has the capacity to compensate a smaller density used at sowing, through its characteristic of twinning. Accordingly, there are some producers that prefer a smaller density at sowing, taking into consideration the twinning capacity, but there are others which consider that one cannot count on the twinning capacity and that this concept is obsolete for the actual varieties used in production. Adjusting the sowing schemes is one of the applied techniques which influence the production components at cereals. At the genotypes with reduced twinning capacity, large productions were obtained through increasing the density of sowing, but it was observed a decrease in the weight of the kernels in the spike (Valério et al., 2013). Using some densities at sowing that would vary in quite large limits from 350-800 germinable grains/m² has as effect decreasing the weight of the kernels in the spike, decreasing the number of kernels in the spike and decreasing the mass of 1000 grains, and a smaller density of 500-650 germinable grains/m² can be recommended in order to be sowed only in the optimum period (Bavec et al., 2002). In order to increase the
production, the fertilization doses and the sowing density must be based on the characteristics of autumn wheat different varieties (Liu et al., 2009).

In case of “no tillage” conservative crop system, the productions obtained are higher, following to conserving the water in the soil for more time, as compared to the conventional system, this being reflected also on the quality of the production. (Chețan et al., 2012)

**Aims and objectives.** Establish the correlation between the density at sowing and the size of the productions obtained for the two aborigine varieties, Glosa and Boema and the proportion in which the twinning capacity compensates the usage of a smaller density.

**Material and method.** The biologic material was represented by two aborigine varieties, Glosa and Boema, for each variety being used two densities, 600 germinable grains/m² and 300 germinable grains/m². The bifactorial experience was set up in subdivided plots, in two repetitions, the total area being of 1,428 ha.

**Results and Discussion.** The preceding plant for the wheat crop was sunflower. Preparing the field was done through scarification at the depth of 50-60 cm and then through disc harrow work. The sowing was performed on 30.09.2012. At spring start, it was performed a fertilization with 150 kg/ha urea, and on vegetation, it was performed a treatment combined with Alert 0.8 l/ha for the foliar diseases’ complex (mildew, scabs, septoriose), Stabilan 2.0 l/ha and the foliar fertilizer Terra Sorb Foliar (foliar fertiliser based on amino-acids). It must be mentioned the fact that during both autumn and spring, it had been registered an attack of Zabrus tenebrioides (black colored ground beetle), attack that resulted in crop’s density diminishing.

The production differences within the same variety are not significant at the two densities used at sowing, so that at the density of 600 germinable grains/m² it was obtained a crop gain of 128 kg/ha at Glosa variety and of 50 kg/ha at Boema variety, as against the density of 300 germinable grains/m².

**Conclusion.** It can be concluded that using a smaller density at sowing has the advantage that the formed foliar mass is more reduced and there is a smaller risk of foliar diseases occurrence, each plant having a larger nutrition space, and the expenses with the seed and fertilizers are smaller.

**REFERENCES**


