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The Effect of Annual Weather and Sowing Date on Different Genotype of Maize (Zea mays L.) in Germination and Yield

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Abstract : In crop production the most modern hybrids are available for us, therefore the yield and yield stability is determined by the agro-technology. The purpose of the experiment is to adapt the modern agrotechnology to the new type of hybrids. The long-term experiment was set up in 2015-2016 on chernozem soil in the Hajdúság (eastern Hungary). The plots were set up in 75 thousand ha-1 plant density. We examined some mainly use hybrids of Hungary. The conducted studies are: germination dynamic, growing dynamic and the effect of annual weather for the yield. We use three different sowing date as early, average and late, and measure how many plant germinated during the germination process. In the experiment, we observed the germination dynamics in 6 hybrid in 4 replication. In each replication, we counted the germinated plants in 2m long 2 row wide area. Data will be shown in the average of the 6 hybrid and 4 replication. Growing dynamics were measured from the 10cm (4-6 leaf) plant highness. We measured 10 plants' height in two weeks replication. The yield was measured buy a special plot harvester - the Sampo Rosenlew 2010 – what measured the weight of the harvested plot and also took a sample from it. We determined the water content of the samples for the water release dynamics. After it, we calculated the yield (t/ha) of each plot at 14% of moisture content to compare them. We evaluated the data using Microsoft Excel 2015. The annual weather in each crop year define the maize germination dynamics because the amount of heat is determinative for the plants. In cooler crop year the weather is prolonged the germination. At the 2015 crop year the weather was cold in the beginning what prolonged the first sowing germination. But the second and third sowing germinated faster. In the 2016 crop year the weather was much favorable for plants so the first sowing germinated faster than in the previous year. After it the weather cooled down, therefore the second and third sowing germinated slower than the last year. The statistical data analysis program determined that there is a significant difference between the early and late sowing date growing dynamics. In 2015 the first sowing date had the highest amount of yield. The second biggest yield was in the average sowing time. The late sowing date has lowest amount of yield.

Keywords : germination, maize, sowing date, yield
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