THE DROUGHT STRESS EFFECTS IN DIFFERENT CORN HYBRIDS PHOTOSYNTHETIC ACTIVITY AND PHENOLOGICAL PHARAMETERS

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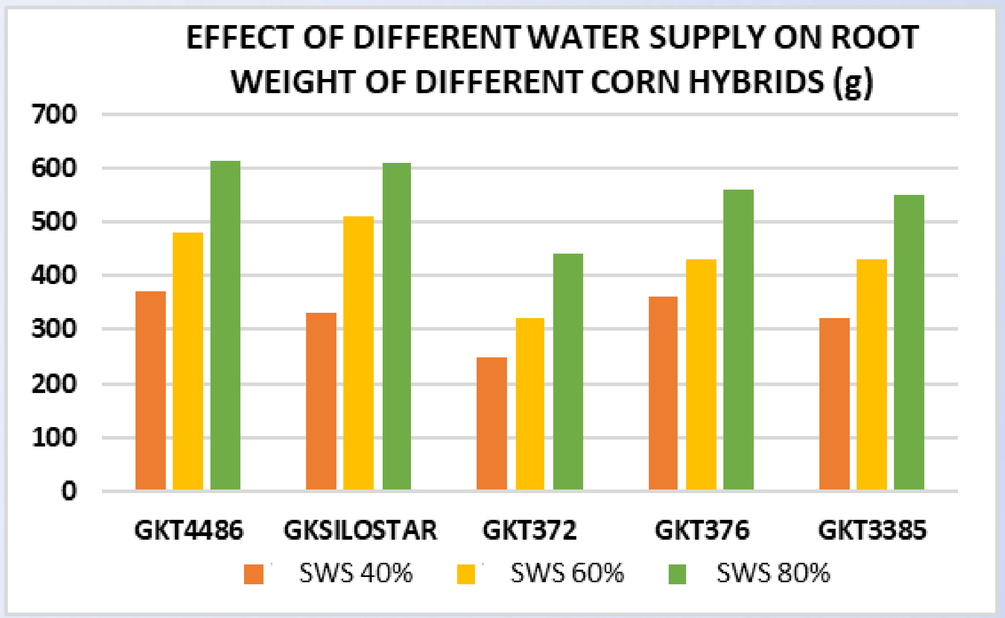
This research will examine the drought stress reactions and water use reactions in five different corn hybrids. If we choose a good hybrids, we can make strong crop quantity and crop safety and its will be an important quality in this full of climatic change years. We tested five different corn hibryds reactions for the drought and salt stress in a culture vessel research, under a foil tent and without the natural rainfall. At the time of setting up the experiment, 11 kg of arable land was weighed into the culture vessels and the main soil chemical and physical properties of the arable soil were determined.

In the research were set 3 water supply levels. We first determined the natural water storage capacity (SWS) of the soil, which was the amount of water that the soil could retain against gravity. We adjust three soil water storage level in the research: -SWS 40%, -SWS 60%, -SWS 80%. The salt tolerance research were also based on the setting of different water supply level treatments (SWS 40%, SWS 60% and SWS 80%). The salt tolerance of the different corn hybrids was monitored by the application of Na salts added with irrigation water.

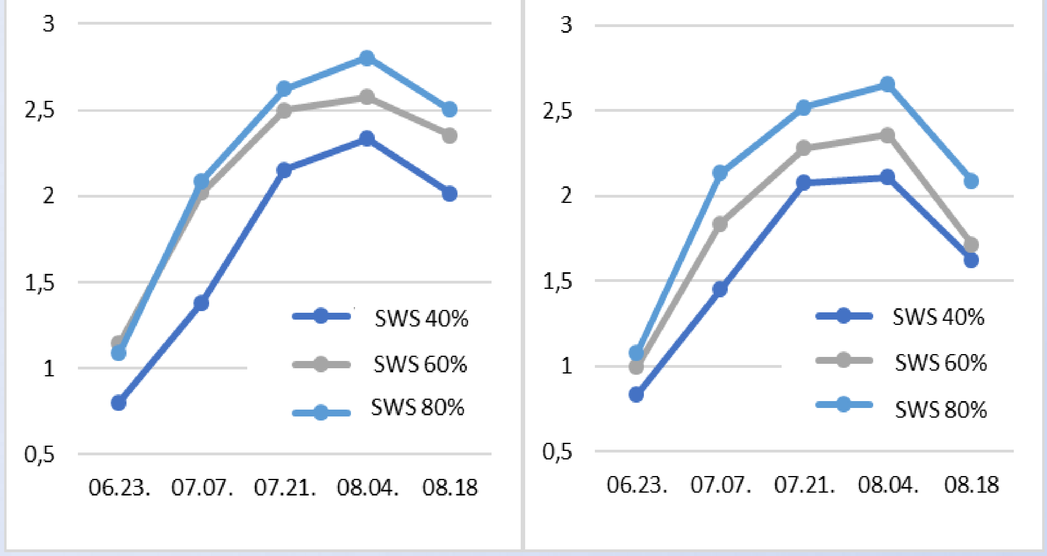
Hibryd name	Typical drought tolerance based on the breeder's information
GKT 4486	Drought sensitive
GK SILOSTAR	Drought sensitive
GKT 372	Drought tolerant
GKT 376	Drought tolerant
GKT 3385	Drought tolerant



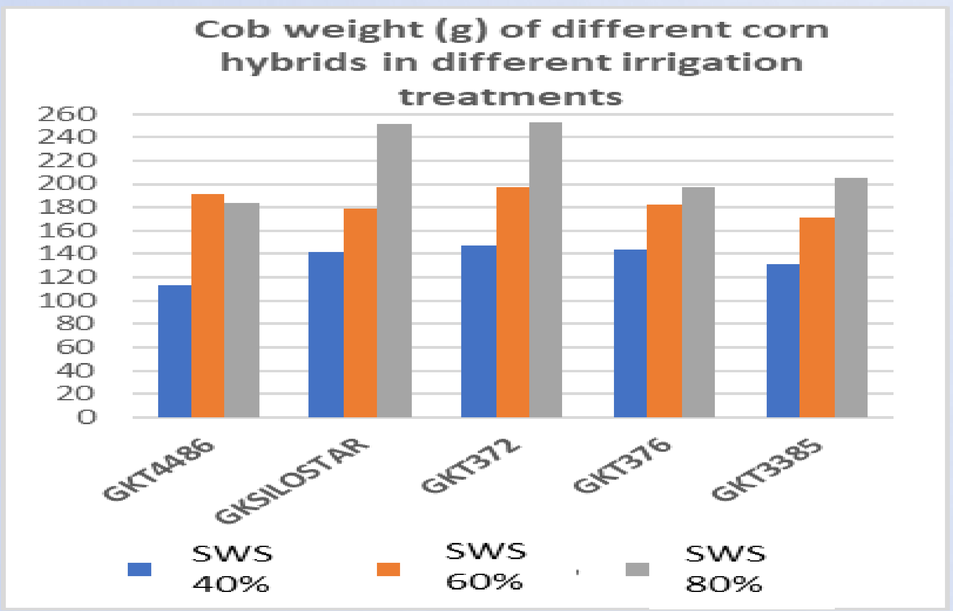
Root mass of different maize hybrids at different water supply levels.

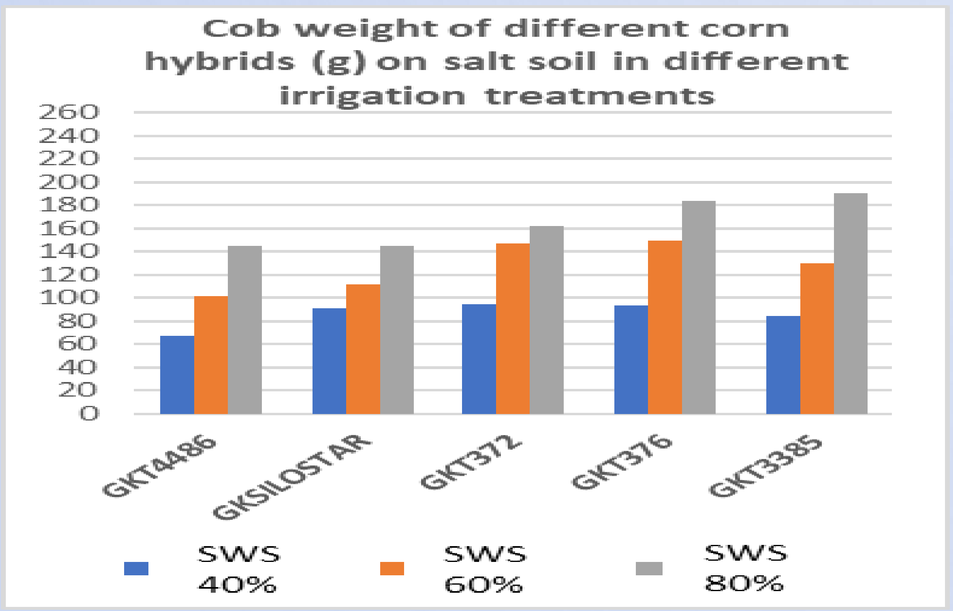
It can be clearly seen in Root Weight Figure that the GK 4486 hybrid had the highest root weight (370g) at SWS 40% water dose in dry conditions, which may be an advantageous property in adrier vintage over other hybrids. Under poor water supply conditions (SWS 40%), the GKT376 hybrid also achieved high root mass, despite its poor irrigation reaction.

The results of GK SILOSTAR measured at SWS 60% water dose also showed that the hybrid already achieved a very good root weight at medium water supply. In this water supply treatment, GK SILOSTAR achieved the highest root mass. There may be similar measurement results in the initial phases between the two treatments, but the larger the plants, the better they can exert their effects on salt stress and cause drastic leaf area index declines at the end (between 14.9% and 26.8%), leading to a faster leaf drying results. Under these conditions, plants can photosynthesize for a shorter time and with a smaller leaf area, which reduces plant organic matter production. Salt stress on saline soils resulted in faster aging, faster water release and drying of maize plants during the research.



Development of leaf area index (LAI) values on simple soils and saline soils in different water supply treatments.





Cob weight of corn hybrids at different water supply levels and this in the saline soil

Drought-sensitive hybrids were not able to tolerate salt stress, and the yield loss of the plants was very significant due to the saline soil. Drought-tolerant hybrids, on the other hand, show little reduction compared to themselves and have achieved excellent results despite salt stress. The hybrid GKT 372 was able to achieve the highest cob weight in non-saline treatments (253 g) and did not perform poorly in saline treatments (162 g), suggesting that this hybrid is well tolerated by drought and salt stress yield effects. In the saline treatments, GKT 3385 hybrid achieved the highest results (190 g), which shows us that this hybrid can also well minimize yield loss due to salt and drought stress (only -15 g).

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