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STUDIES AND RESEARCH ON THE QUALITATIVE CHARACTERISTICS OF THE OLT CORN HYBRID

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Abstract

In this paper it was achieved a study on the continuity of the Olt corn hybrid cultivated in the Caracal Plane, Olt County, hybrid that is extensively grown in this area being adapted to the conditions of that thermal - hydro stress but also with very good results regarding the production sown in irrigation system combined with the unequal administration of nitrogen and phosphorus doses. For this reason, there were performed biometric measurements in two years as a reference, in two systems for irrigated and non-irrigated crop but also with different administration dose of chemical-based fertilizers of Nitrogen and Phosphorus. These biometric measurements have been made in the support of the production of corn grain in the two systems.

Key words**:** *biometrics, thermal - hydro, hybrid, production*

INTRODUCTION

Due to its biological particularities, and especially due to the introduction in the crop of hybrids, the corn has a great production capacity (6,000-9,000 kg grains/ha in the unirrigated system and 9,000-16,000 kg grains/ha in the irrigated way [8].

The period in which the corn consumes large amounts of nutrients overlaps with the period during which consumes large amounts of water and [4].

The estimation of the genetic progress for some morphs-physiological traits over the studied genotypes: the gap on blooming or ASI (An thesis slicking interval), the total Height of the plant and the height of the insertion of the main cob the number of leaves above the main cob leads to find the best corn hybrids that adapt to the new geographical conditions [2].

From the diseases ofthe corn, Fusarium root produces quantitative and qualitative damages. The accumulation of a miceliene mass of fungus like Fusarium on the grains and cobs increases amounts of mycotoxins extremely dangerous for human and animal health [5, 4, 9].

Through the application of different doses of nitrogen and phosphorus based fertilizers in some hybrids that have been indulged to be taken in the crop area for SW Oltenia, and through studies and researches that had been made [6, 7], recounts the importance of the morphological knowledge related aspects of corn plants which by some appropriate stimulation can lead to obtaining the desired crop.

In the year 1991 Novel GV., *et al.*, made a comparative study on the evaluating methods for the thermal requirements of the corn and in his book Axinte M, since 2006, indicated the importance of the knowing of the traits of the corn crop determined [1].

MATERIALS AND METHODS

Studies and researches have been realized two years as reference 2016 and 2017 at agricultural society SC RECORD from Caracal, Olt County, where a device has been established for the study and the research of this hybrid regarding the behavior and adaptability for this area, but also physiological changes occurred due to the application of the technology of irrigation system and interleaved with non-irrigated

under different doses of nitrogen and phosphorus.

That way we will determine qualitative and quantitative the characteristics of the corn plants through biometric measurements that contribute to the increased production, where plant density is 50,000/pl/ha, where plots have been of 20/20 m, and the soil is being an argiloiluvial chernozem [3].

Three factors have been determined:

Factor A: The Olt corn hybrid

Factor B: Irrigated system with two graduations: (i)Irrigated system and (ii) Non-irrigated system.

Factor C: The differential application of the Nitrogen and Phosphorus doses with four graduations, as follows: N_0 P_0, N_{60} P_{80}, N_{80} P_{100}, N_{100} P_{120} and N_{120} P_{140}

Thus, we studied morphological descriptors and granted notes on the basis of the results of the two irrigated and non-irrigated systems [10].

Measurements were made for:

-The number of plants from the studied plot;
-Plant height;
-Blooming date;
-Date of the trimming;
-Uniformity of the trimming;
-Bloomed plants;
-The height of the insertion of the cob;
-The total number of leaves;
-Panniculitis length;
-Length of cob;
-The number of drought-resistant plants;
-Physiological maturation period;
-Number of plants that dried prematurely;
-Note the plant at maturity;
-The number of fallen plants;
-The number of broken plants.

RESULTS AND DISCUSSIONS

As a result of the biometric determinations of the Olt corn hybrid, during the two years of experimentation, there were obtained the results shown in the figures presented below.

In Fig.1, there are shown the physiological properties and biometric measurements of the Olt corn hybrid in non-irrigated and irrigated system in the year 2016.

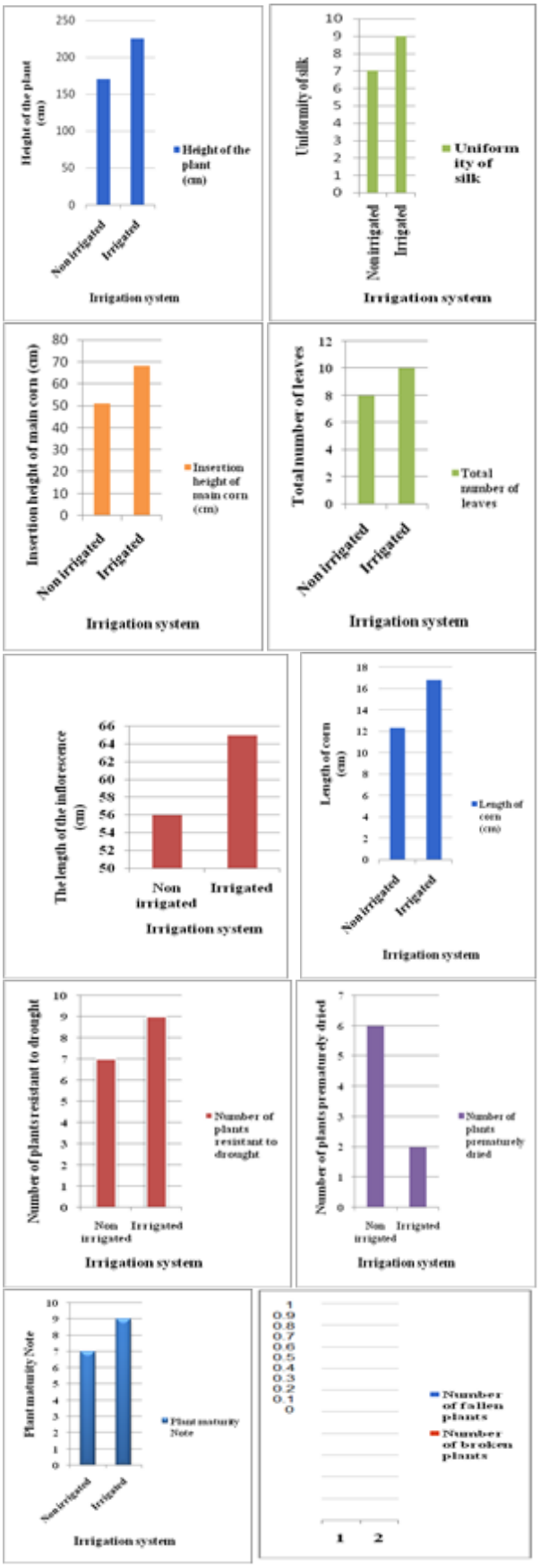


Fig. 1. Physiological properties and biometric measurements in Olt corn hybrid in non-irrigated and irrigated system. Year 2016

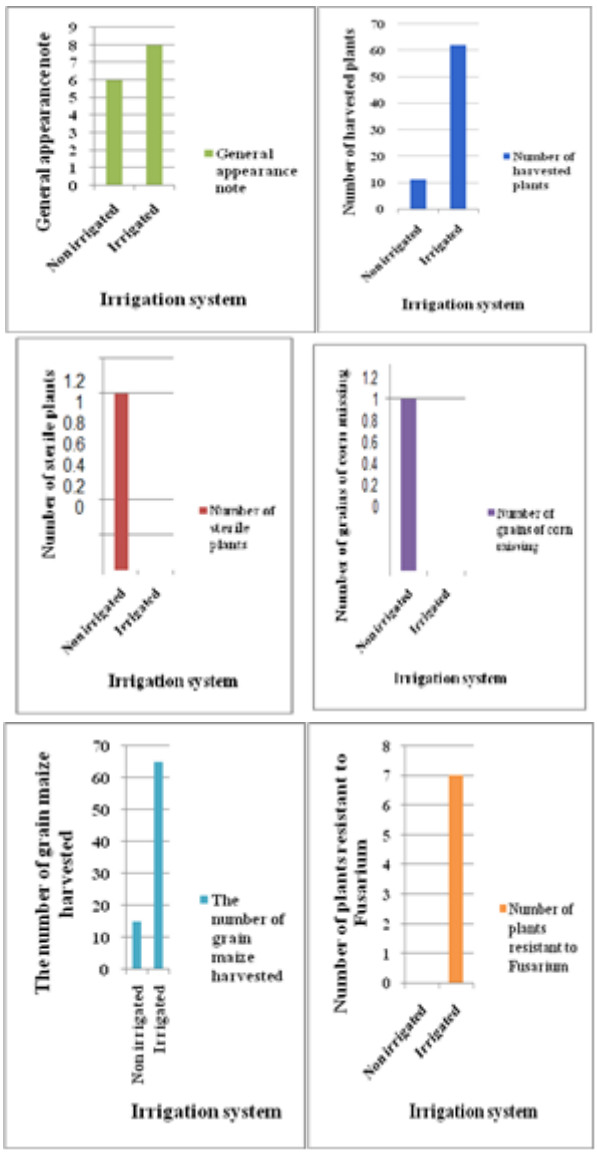
Source: author'd results.

Plant height in non-irrigated system records an average of 170 cm much smaller compared with the irrigated system where corn plants have an average height of 225 cm.

Blooming date for non-irrigated system has a delay of six calendar days compared with the irrigated system. 15.07.2016/09.07.2016.

The same difference can be noticed to the date trimming, the irrigated system influencing with a few days the precocity of the variety. The height of the insertion of the cobs is 51 cm, respectively 68 cm.

The total number of leaves is 8 to 10 leaves and plant drought resistant received note 7 at non-irrigated system and at irrigation system 9. Also the length of the panicle presents an average value of 56 cm 65 cm respectively being lower in non-irrigated system (Fig.2.)



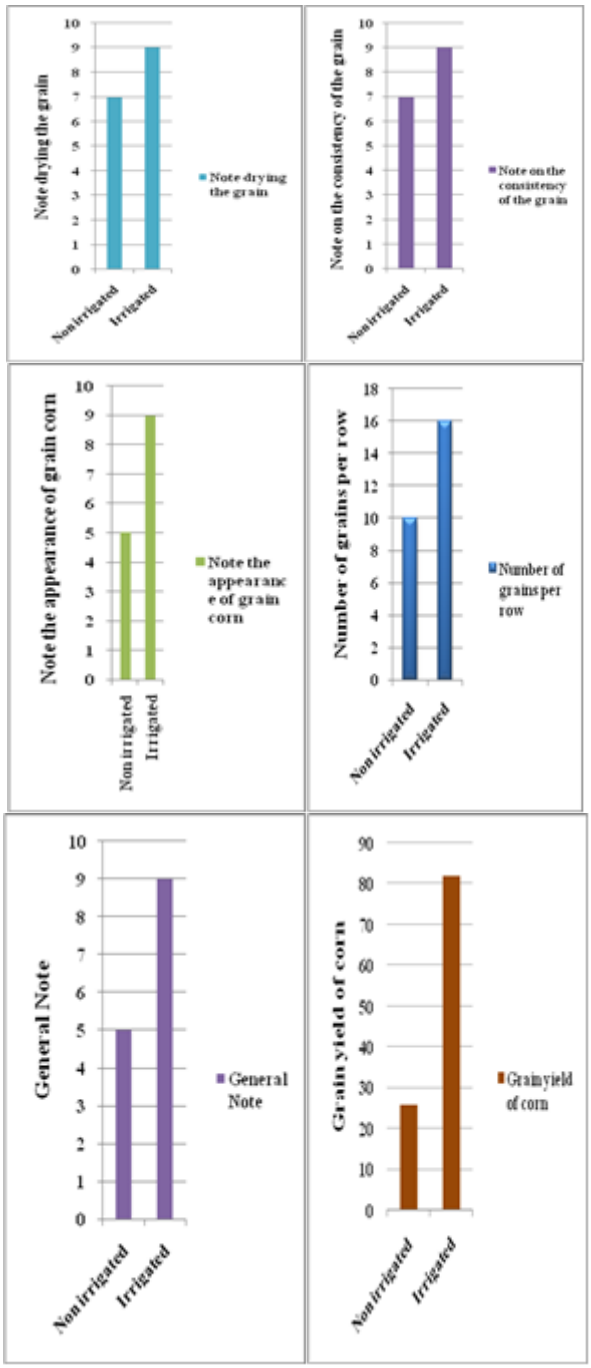


Fig. 2. The physiological characteristics of corn plants and the marks given for the two systems. Year 2016
Source: author's results.

The length of the cob has an appreciable size 12.3 in non-irrigated system and 16 cm, 8 cm in irrigated system. The number of plants dried out prematurely in non-irrigated system is 6, and in the irrigating system is of two plants.

Regarding the general appearance note in non-irrigated system was evaluated at note 5, and watering system 9.

By the number of plants which have been harvested, are 11 plants, for the non-irrigated system and the irrigation system at 62, with a number of cobs of respectively 15.65.
Yield in grains was 26% and 85% respectively, and their humidity, respectively 22.4 % and 24.2%. Data and notes are included in Fig. 1 and Fig. 2.
Also by biometric measurements and ratings had been analyzed the year 2017 too.
The year 2017 has been characterized as a year with higher humidity and which related to the application of chemical fertilizers in variable doses that also led to more vigorous plants resistant to drought and to fall with large cobs and the possibility of harvesting at adequate moisture.
Plant height in non-irrigated system recorded an average of 182 cm much smaller compared to the irrigated system where the corn plants have an average height of 235 cm.
Blooming date for non-irrigated system is 13.07.2017 comparing to the 07.07.2017 irrigation system.

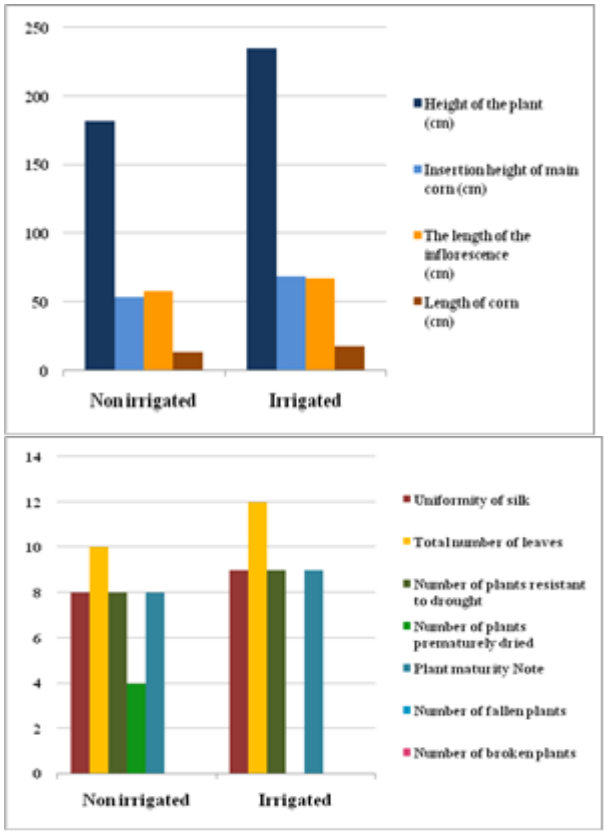


Fig.3.Physiological properties and biometric measurements in Olt corn hybrid in non-irrigated and irrigated system. Year 2016
Source: author's results.

The same difference is apparent and to date trimming, the irrigated system is influencing with few days the precocity. The height of the insertion of the cobs is 54 cm, respectively 69 cm. total numbers of leaves is 8 and 9 leaves and plant drought resistant number received note 8 and note 9 in non-irrigated system in irrigation system.
Also the length of an average value presents panicles of 67 cm 58 cm respectively, being lower in non-irrigated system.
The length of the comb has appreciable sizes 13.8 cm at non-irrigated system and 18.2 cm at irrigated system. The number of plants dried out prematurely in non-irrigated system is 4, and in the irrigated system is 0.

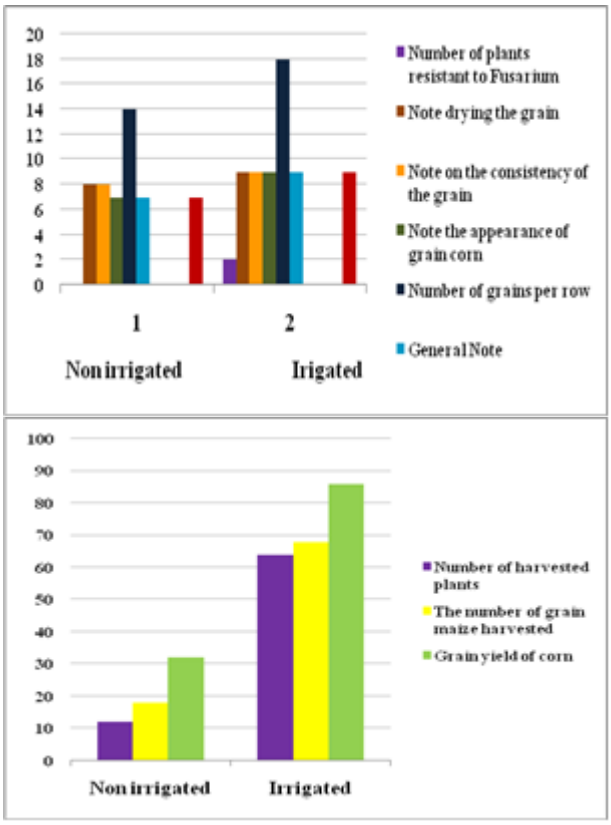


Fig. 4. The physiological characteristics of corn plants and the marks given for the two systems. Year 2017
Source: author's results.

Regarding the general appearance in non-irrigated system was rated note 7, and in irrigated system note 9. By the number of the plants which have come to be harvested, there are 12 at non-irrigated system plants and irrigation system to 64, with a number of 12, cobs 64 respectively. Yield in grains was 32%

and respectively 86%, and their humidity 20.4 18.6% respectively. Data and notes are included and in (Fig. 3 and 4).

CONCLUSIONS

The morphological characterization of the plant and corn cobs from the Olt hybrid led to the conclusion that it is recommended to cultivate this crop on those soils where the experiments have been made.

The irrigation system has a positive impact from all points of view on the studied morphological features, but keeping in mind that in this area there are a few places which could be irrigated, and the results of Olt hybrid in non-irrigated system were good.

The area is a poor location both from a thermal and hydric point of view in relation to the qualitative traits of this hybrid and the strength of the Fusarium attack as well as the breaking and falling. For this reason, this aspect should be taken into consideration in cropping. Due to the warm summers, physiological maturity of this hybrid is reached by the end of August making it possible an earlier harvesting, thus freeing up agricultural land as soon as possible in order to carry out the forthcoming agricultural works.

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