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AREA OF ASSIMILATION SURFACE AND YIELD OF MAIZE HYBRIDS OF DIFFERENT FAO GROUPS DEPENDING ON IRRIGATION METHODS IN THE CONDITIONS OF THE SOUTHERN STEPPE OF UKRAINE

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Improving technological measures for growing corn in order to reveal the genetic potential is especially relevant in today's climate change in the direction of aridity and unpredictability of weather conditions. Therefore, conducting research to improve technologies that allow full use of the genetic potential of modern varieties and hybrids in specific agro-ecological zones is a topical issue in agricultural science.

Today in the south of Ukraine, in addition to traditional sprinklers, new methods of irrigation are introduced in production - drip irrigation and ground irrigation. These irrigation methods have a high efficiency in adjusting the irrigation and feeding regimes, require less material costs (drip irrigation) and more reliable and long-lasting (ground irrigation). However, not all crops can be grown under such irrigation methods and no varietal (hybrid) response to such elements of technology has been established.

The article presents the influence of irrigation methods on the assimilation surface area and yield of maize hybrids of different FAO groups in the conditions of the Southern Steppe of Ukraine. The research was conducted by conducting a two-factor field experiment on the territory of the agribusiness "Agribusiness" Kakhovka district of Kherson region. The following factors and their variants were studied in field experiments: factor A - hybrids of common corn: early-ripening group - DN Palanok (FAO 180), DB Lada (FAO 190); middle-early group - DN Halateia (FAO 250), DN Svitiaz (FAO 290); medium-ripe - Askaniia (FAO 320), DN Bulat (FAO 350); middle-late group - DN Rava (FAO 430), Prymor'skyi (FAO 430); factor B - method of watering: control, without watering, drip irrigation, sprinkling, ground irrigation. Studies have shown that the maximum leaf area had hybrids of medium-ripe and medium-late group FAO 300-430 under irrigation conditions (44.1-45.7 thousand m^2/ha). The largest area of leaves was formed by drip irrigation (44.0 thousand m^2/ha), slightly smaller by subsoil irrigation (43.1 thousand m^2/ha) and even smaller by sprinkling (42.1 thousand m^2/ha). Determining the best method of watering is a necessary condition for creating optimal conditions for growth and development of corn plants. The most high-quality, efficient and timely in severe drought conditions was drip irrigation. The highest grain yield was formed by drip irrigation - on average

by a factor of 13.55 t/ha, on subsoil irrigation grain yield decreased to 12.95 t/ha and was even lower on irrigation by sprinkling - 12.42 t/ha. Grain yields of maize hybrids without irrigation had a clear downward trend with increasing FAO group of hybrids. The highest grain yield in the control variant, without irrigation, was formed by hybrids of the early DN Palanok and DB Lada groups. The highest yield of corn grain (within 15–17 t/ha) under irrigation conditions was provided by domestic hybrids of intensive type Prymors'kyi, DN Rava, DN Bulat, Askaniia, which confirms the need to select hybrids of different FAO groups for specific management conditions, which will further lead to high yields grains.

The leaf surface area of maize hybrids is a major factor in the accumulation of biomass by plants and grain particles under irrigation. This is confirmed by the calculations of the correlation and polynomial trend line of the grain yield of hybrids of corn and the area of the assimilation surface of plants in the crop. Grain yield and leaf surface area have an almost functional dependence under irrigation conditions ($r = 0.932$). This indicates that obtaining a grain yield of corn in the range of 15–17 t / ha is possible only with the development of the assimilation surface of hybrids over 50 thousand m^2 / ha.