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INFLUENCE OF CULTIVATION TECHNOLOGY ELEMENTS ON ECONOMIC EFFICIENCY OF CORN GRAIN PRODUCTION IN THE STEPPE ZONE OF THE CRIMEA

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The article provides the reader with some data on the results of studying the economic efficiency of the production of grain obtained from corn hybrids of different maturity groups depending on different planting dates (April 5, 15, 25) and plant densities (40, 50, 60, 70 thousand plants per ha). The studies were carried out at the experimental fields of the FSBSI "Research Institute of Agriculture of Crimea" under rain-fed conditions from 2016 to 2019 (village of Klepinino, Krasnogvardeysky district, Republic of Crimea). Soil – chernozems southern low-humus. In 2017, weather conditions were characterized as severe drought (Selyaninov Hydrothermal Coefficient (HTC) = 0.34); average long-term value of HTC for the period April-September is 0.73 (weak drought). In 2016, increased moisture availability was observed (HTC = 1.46), in 2018-2019 – insufficient (HTC = 0.79 and 0.78, respectively). During the years of observations, soil warmed up quickly. At a depth of 10 cm, the average temperature in the first decade of April exceeded 10 degrees C.The reserves of productive moisture in the sowing period at all planting dates during all years of research were sufficient to obtain seedlings. Mid-ripening hybrid Mashuk 355 MV in the context of corn grain production was the most profitable (52.97%, with a minimum grain cost of 6,340.91 roubles per ton) when sown on April 15 at a plant density of 40 thousand plants per ha. The profitability of grain production of an early-ripening corn hybrid Nur was the highest when sown on April 15 at a plant density of 60 thousand plants per ha and amounted up to 19.23%. The cost of grain, in this case, was 8,135.26 roubles per ton. Mid-early hybrid Mashuk 220 MV at the earliest sowing date (April 5) and plant density of 50, 60, 70 thousand plants per ha provided profitability of 8.27; 9.22; 10.51%, with the cost of grain at the level of 8,958.99; 8,880.99; 8,777.30 roubles per ton, respectively.

Keywords: corn, planting dates, plant density, grain yield, profitability.

REFERENCES

1. Gorpinchenko K.N. *Ekonomycheskaya effektyvnost' proyzvodstva i kachestva zerna v zavysymosti ot pryemov vyrashchyvaniya i tekhnologii* [Economic efficiency of production and quality of grain depending on methods of cultivation and technologies] // *Trudy Kubanskogo GAU* [Proceedings of the Kuban State Agrarian University]. 2008. # 10. Pp. 52–57.

2. Dzyubetsky B.V., Rybka V.S., Cherchel V.Y., Lyashenko N.O. *Skorostyhli hibrydy yak faktor enerho- i resursozberezhennya u vyrobnytstvi zerna kukurudzy* [Early ripening hybrids as a factor of energy and resource economy in the production of corn grain] // *Tavriyskyy naukovyy visnyk: Zb. Nauk. Prats' KHDAU* [Tavricheskiy scientific bulletin: Collection of Science Works of KSAU]. Kherson: Aylant. 2007. Issue. 53. Pp. 27–40. (In Ukrainian).

3. Ivanov V.M., Kubareva A.V. *Produktivnost' i ekonomicheskaya effektivnost' kukuruzy na zerno, vozdelyvayemoy po sisteme Strip-till, na chernozomnykh pochvakh Volgogradskoy oblasti* [Productivity and economic efficiency of corn cultivated for grain by the Strip-till system on chernozem soils of the Volgograd region] // *Izvestiya NV AUK* [Proceedings of the Lower Volga AUC]. 2019. № 3 (55). Pp. 73–79.

4. Kogan E.R. *Yekonomíka virobnitstva kukurudzi* [Economics of corn production] / K.: Urozhay, 1974. 224 p. (In Ukrainian).

5. Popov A.S. *Tekhnologicheskiye elementy intensifikatsii vozdelyvaniya tvordoy ozimoy pshenitsy v stepnoy zone Severnogo Kavkaza* [Technological elements of intensification of

cultivation of durum winter wheat in the steppe zone of the North Caucasus]: dissertation for the degree of Doctor of Agricultural Sciences. Zernograd, 2020. 356 p.

6. *Metodicheskiye rekomendatsii po provedeniyu polevykh opytov s kukuruzoy* [Methodical recommendations for conducting field experiments with corn] / D.S. Filev, V.S. Tsikov, V.I. Zolotov [et al.]. Dnepropetrovsk: City Printing House № 3, 1980. 54 p.

7. Chistyakov S.N. *Povysheniye rentabel'nosti proizvodstva kukuruzy na zerno, za schet vozdelyvaniya novykh rannespelykh gibridov kukuruzy s ponizhennoy uborochnoy vlazhnost'yu zerna, v usloviyakh Voronezhskoy oblasti* [Increasing the profitability of corn production for grain due to the cultivation of new early-maturing hybrids of corn with reduced harvesting moisture of grain in the Voronezh region] // *Nauka. Tekhnika. Tekhnologii (Politekhnicheskiy vestnik)* [Science. Technique. Technologies (Polytechnic Bulletin)]. 2013. № 1-2. Pp. 78-80. Access mode: http://id-yug.com/index.php/ru/ntt/archiv/2013/1-2-2013?id=55.

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