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AGRICULTURAL SCIENCES

CURRENT STATE AND PROSPECTS OF SUNFLOWER IN THE NORTH-EASTERN FOREST STEPPE AND POLISSIA OF UKRAINE

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The beginning of sunflower cultivation as a decorative plant and for obtaining seeds for delicacies in Ukraine dates back to the first half of the 17th century. As an oil crop, it began its development at the beginning of the 19th century. With the appearance of the first oil press, the acreage under this culture began to grow rapidly, and for the period of those years, the cultivated area was 143,000 acres, which corresponds to 156,200 hectares. The vast majority of sunflowers in Ukraine were grown in Ekaterinoslav, Kharkov, and Kherson provinces. For a long time, culture was focused only on growing in the steppe and southern forest-steppe zone.

The period of the middle of the 20th century was characterized by a planned approach to farming. Indicators of sown areas in the range of 1.51 million hectares, and a clear structure of crop rotation made it possible to obtain an average yield of 1.0-1.2 t/ha. The stabilization of cultivated areas is monitored at the end of the 20th century and amounts to 1.64-1.71 million hectares, with an average yield of 1.25-1.58 t/ha. The development of the economic crisis at the beginning of the 21st century, and in the conditions of social formation, contributed to a sharp increase in the cultivated area under sunflower from 2.9 million hectares in 2000 to 6.4 million hectares in 2021. The gross collection of seeds increased from 3.46 million tons to 16.1 million tons, due to shifting the vegetation line of crop cultivation to the north in the zone of the northern Forest Steppe, and later Polissia.

In a short period of time, sunflower has become one of the main oil crops in the world, primarily in countries with a temperate climate. Today, the main producers and exporters of sunflower oil is Ukraine, EU countries and Russia. Ukraine's leading positions are based on favorable fundamentals-climatic conditions, organizational complex-economic factors, as well as the presence of sunflower cultivation and consumption traditions. The widespread spread of sunflower in the Northern regions of Ukraine was determined by the introduction of high-yielding early maturing varieties and hybrids into production, the improvement of cultivation technology and the existing trend towards climate warming.

Considering the annual increase in the cultivated area under sunflower in the Sumy and Chernihiv regions, the share of the culture in the structure of crops until 2010 was within 5-7%, which is the recommended ratio in the crop rotation system. Starting from 2011, the cultivated area of sunflower in Sumy region exceeds 100 thousand hectares, and since 2020 more than 250 thousand hectares, which is 10 and 25% of the area of arable land.

The main factor behind the rapid growth of crops was the leveling off in 2010, and later the exceeding of average crop yield indicators compared to the average for Ukraine. Due to the significant increase in the cultivated area and productivity over the last 10 years, a 195% increase in the gross harvest of sunflower was noted, which turned it into the main technical crop in this part of Ukraine and a significant factor in the formation of crop rotations. A detailed analysis of sunflower production in a number of farms in the central and northern regions of Sumy Oblast made it possible to identify the main factors of productivity formation and to assess the possibility of stabilization or growth of the crop's gross production in the coming years.

It was established that the main factor in the increase of average yield indicators in the region was the decrease in the share of farms (cropped areas) with a yield of less than 1.5 t/ha. At the same time, the share of farms with a yield of more than 3.0 t/ha remained stable. The increase in productivity in the first part of farms was largely due to the introduction of Clearfield Plus and ExpressSun technologies, the transition to which required the use of high-quality seed material, effective plant

protection products and intensive cultivation technology.

Some increase in productivity indicators among farms with indicators 2.3-2.7t/ha occurred mainly due to their reorientation to later-ripening hybrids with higher biological potential. The factors of the change in the range of hybrids were the increase in the availability of crop desiccation services (with the use of specialized sprayers), the decrease in the share of winter crops in crop rotations, as well as the active marketing activity of seed sellers. The change in the traditional for the zone ratio between the areas of hybrids with different duration of vegetation in the direction of late ripening led to the deterioration of the phytosanitary condition, which occurred as a result of an increase in the share of areas with an incomplete technological process without crushing the stems and wrapping them in the soil. In the spring (under the conditions of a long period of high soil moisture), such fields are an active source of dispersal of disease-causing spores.

As a separate element of changes in approaches to sunflower cultivation in the region, there is an increase in the share of crops occupied by high-oleic hybrids. Currently, the main limiting factor of this process is the focus on large farms capable of forming a cluster of high-oleic sunflower separated from traditional crops.

The generalizations made indicate a low level of manageability of the process of expanding the zone of industrial sunflower cultivation in the northern zone-Eastern Forest Steppe and Polissia.

Considering the specific soil and climatic conditions of the region and the spread of a poorly adapted assortment of hybrids, a decrease in the rate of growth of the average yield of the crop is expected with an increase in the costs of 'associated with the use of plant protection products.