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Zaburyanenosti impact on yield and quality of sunflower seeds

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Actuality. The effect on weed-infested crops yield and quality of sunflower seeds in the right-bank forest-steppe of Ukraine. The maximum yield of oilseeds and quality obtained in areas where entire period of growing crops had no competition for the factors of life by weeds. Critical period of competition between weeds and sunflower depends on the weed-infested, duration of competitive relations and length of the growing season. Sunflower in the initial period of growth and development of a low competitive ability by factors of life compared with weeds.

Analysis of recent researches and publications. Intensification of agricultural production did not lead to a decrease in the disturbance of crops of field crops, and in some cases it increased. The main causes of such a situation are a significant deterioration in the quality of soil cultivation and care of crops, the non-compliance with rational alternation of crops, and in some cases the complete neglect of crop rotations, the excessive areas of some cultivated crops (sunflower, corn), the ineffective use of preventive and eradicating control measures for weeds in agricultural crops cultures.

In the process of evolution, weeds have acquired a number of biological properties that enable them to successfully withstand adverse environmental conditions and grow along with cultivated plants. They have high plasticity of growth and development, high fecundity, long-term preservation of the viability of seeds and vegetative rudiments in the soil.

Consequently, to obtain high and stable yields of sunflower seeds, it is necessary to ensure the cultivation of plants with all the necessary factors of life in optimal proportions. In doing so, it is necessary to eliminate the negative anthropogenic and natural factors that impede the high productivity of sunflower plants. Unlike other field crops, sunflower does not have specialized weeds, except sunflower wolf. The quantitative and species composition of these in crops depends on environmental conditions, biological characteristics, cultivation technology, precursors and a number of other factors. The researches have established that not only within the limits of separate soil-climatic zones, but even in a separate area, in the economy, in a separate field the

species composition of weed vegetation in sunflower crops can be different. The absence of experts from farms, farmers and other land users precise information on the nature and degree of bullying of fields allocated for sunflower seeds leads to miscalculations in the organization of protective measures against weeds, ineffective use of herbicides, low-profitable production of sunflower seeds, etc.

The purpose of the research is to determine the influence of weeds of different biological groups on the growth and development of sunflower plants, its productivity and quality of seeds.

The materials and methods for investigation. The research was conducted in the field of stationary field experiment of the National University of Life and Environmental Science of Ukraine on the basis of the educational-scientific-innovation center (Skvira district, Kyiv region) during 2011-2013. Sunflower hybrid - Torino (Nussade USA), the duration of the growing season is 113-115 days (midnight). The experimental field is represented by black soil with a typical medium-humus content in the treated layer of 4,04%, nitrogen content of lightlyhydrogenated - 21,7 mg / kg, exchangeable potassium by Machigin 193,6 mg / kg and exchangeable phosphorus by Machigin - 32,5 mg / kg soil, the pH of the salt extract is 7.1. Sowing area - 160 m^2, accounting - 50 m^2, four-time repetition.

The results and discussion. It was established that the maximum yield of sunflower seeds was obtained in areas where during the entire period of cultivation, cultivated plants did not compete for the factors of life from the weed. On average, in three years it was 4.3 t / ha. On these sites, the most favorable conditions for the growth and development of cultivated plants were created. They depended on the environment, namely: the content of available moisture in the soil, nutrient, thermal and light regimes. The lowest yield of sunflower seeds was obtained in the variant where the cultivated plants throughout the growing season competed with weeds as factors of life. These plots comprised 97 pcs / m^2 of weed, the crude overweight of which was 2131 g / m^2 and the seed yield was 1.4 t / ha, which is 2.9 t / ha, or 67% lower than in the variant without competition from the weed. This testifies that sunflower plants are weakly competing with weeds as factors of life.

Studies have shown that the most significant effect on sunflower yield is the weeds when they are present for the first 60 days after the emergence of seedlings of the culture. On average, over three years, this decline was from 11% (the presence of weeds

in the crops was 20 days after the seedlings of the culture) to 41% (the presence of weeds in the crops was 60 days after the seedlings of the culture).

This confirms that the culture in the initial period has low growth rates in height, slowly forms a sufficient area of leaves and is not able in this period to compete with weeds as factors of life. It is established that the smaller the period of the presence of weeds in sunflower crops, the quantity and weight of them does not exceed the threshold of harm, and, conversely, the longer the period of competition of cultivated plants with weeds, the quantity and weight of them increases, and yields are reduced.

It has been established that weed vegetation is the most potent factor in reducing yields and quality of crop production, including sunflower. This is due to the fact that the weed vegetation is much more competing with cultivated plants for the factors of life. Studies have shown that the highest oil content (48.6%) and its gross crop (2.09 t / ha), on average, over three years, were in the version when the sunflower growing season was grown without competition from the weed.

In variants, where sunflower grew with weeds during a certain period of vegetation, quality indicators of sunflower seeds depended on the duration of competition. The longer the period of competition for the factors of life, the content of oil in the seed and collecting it per hectare decreased, and vice versa. It should be noted that even 20 days of co-growing sunflower with weeds, from the beginning of the vegetation, leads to a reduction in yield by 11% (0.5 t / ha) and a decrease in the content of oil by 0.9%, or the collection of oil per hectare by 0.25 t. With the growth of sunflower with weeds 60 days, from the beginning of the vegetation, the yield decreased by 41% (1.8 t / ha), and the oil content, its collection per hectare decreased, respectively, by 6.2 5 and 1.03 t / ha.

Conclusions. Correlation analysis between the number of weeds, their mass and the content of oil in sunflower seeds showed that there is a linear correlation dependence between them. The correlation coefficient between the number of weeds and the oil content was 0.41 and the determination coefficient was 0.29 or 29%. The correlation coefficient between the weight of weeds and the oil content was 0.59, and the determination coefficient was 0.36 or 36%. Consequently, the mass of weeds significantly affects the decline in the quality of sunflower seeds compared with their number. It is also established that the longer the competition period of sunflower plants

with weeds is due to the factors of life, the yield loss increases, and the quality of the seeds deteriorates, and vice versa.