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Influence of crop rotation factor and fertilizer vsystem upon productivity and quality factors of grain of winter wheat in field rotations of Right-bank Forest-steppe region

Objective. Determine the influence of predecessors, the period of return to the previous place of cultivation and various fertilizer systems on the yield and quality of winter wheat grains in short-rotation crop rotations. Methods. Field, laboratory, comparative calculation. Results The highest yield of winter wheat (4.63 t / ha) was obtained after soybean for organo-mineral fertilizer system in crop rotation. Grain of winter wheat of the highest quality (11.8% - protein and 22.4% - gluten) were obtained for placing it after the clover on 2 slopes for making N70P50K60. Conclusions For the cultivation of winter wheat on chernozem soils in conditions of sufficient moisture of the forest-steppe of the Right Bank precursors, the period of return and fertilization have a significant effect on the moisture content, nitrate nitrogen in the soil and the level of perturbation of crops.

Key words: winter wheat, predecessors, fertilizer system, yield, quality.

Winter wheat is the main food round of sown areas, predecessors, in particular, for the culture in the grain balance of Ukraine. For its wheat winter. Often, the cultivation of grain biological characteristics, it is a culture of crops in such farms, there are great opportunities. To get the maximum with the violation of technology requirements [1, 7, 8]. The low productivity of grain of high quality, the purpose of research - to determine the impact of need to create for her optimal conditions for the growth of predecessors, the period of return on development of pope. The most favorable growing conditions, the earliest growing and fertilizing place in the high-quality wheat of winter wheat, can be compensated for the yield and quality of wheat grain to be ensured by the proper selection of precursors. Winter in short-rotation crop rotations. The most important indicators for assessing the upcoming research methodology. Research conductivity-dnykiv volohozabezpechennya is level ground, to light-Dili in forest-steppe zone of sufficient moisture tions it available mineral elements on the Right-Bank Khmelnytsky DSHDS In¬ho plant nutrition, weed-infested stitute a lack of feed and agriculture Po¬posiviv, pests and pathogens diseases, ie Dill NAAS a long steady factors that ensure full and obtaining experiment in 5 of the fields with different crop rotations nasychen¬druzhnyh stairs, good growth and development of plants tion of grain (40-80% In particular 20-40% - in the autumn period, entering winter in depleted-winter wheat), prassapnyh (20 -40%), normal hibernation and favorable and post-emergence on green fertilizers (0-20%) during spring and summer vegetation [2-6, 9-12]. Organo-mineral and organic systems udo¬ Reform of agriculture, Brenna in the rotation during the 2001-2010 biennium. robnytstva led to the formation of large Repeating the experiment - 3 times a day, in the area of new agricultural enterprises, observed, sivnoyi area - 174 m2, accounting - 100 m2, there are significant changes in their specialization, the structure of placement of sites - systematic. Experiments were grown winter wheat varieties Odessa 267. Farming equipment - common for forest-steppe zone of sufficient moisture Pravobe¬rezhnoho.

The soil of the experimental field is black alder, semi-arid, semi-arid. Before laying the test in the arable layer, the humus content of the turene was 2.8-3%, the pH of the salt - 5.8-6.2, the hydrolytic acidity - 1.9-2.3 mg • ekv / 100 g, the amount of the collected Bases for Kappen - 39.8- 42.0 mg • ekv / 100 g soil, easyhydrolyzed nitrogen for Cornfield - 17.0-19.3 mg / 100 g, mobile phosphorus and exchangeable potassium by Chirikov - respectively 20, 8-22.6 and 8-12 mg / 100 g of soil. In the wheat grain of winter, the content of glue-forging was determined in accordance with standard 10846-91, protein - by Kjeldahl method, a mass of 1000 grains - GOST 10842-82; Total weight of grain - GOST 10840-64; Vitreousness - according to GOST 10987-76. Weather conditions in the years of research were quite different. In 2004, 2008-2010, they were favorable for the formation of high winter wheat yield, in 2001, 2002, 2005 - they had their own peculiarities, when the dry periods were alternating with excessively moist. Sowing in the period of vegetation renewal and a large amount of precipitation during the formation of grain reduced the yield of winter wheat. Weather

conditions in autumn of 2002 and vegetation period of 2003 differed from the average values. The rains during the 2 decades of September prevented the wintering of crops in optimal terms. In the beginning of December, non-garde winter winters suffered severe frosts, as the average daily air temperature in December was -8oC, which is 2oS below the medium-long-term. On separate days the temperature dropped below -26oC. A significant decrease in temperature in January and February, ice crust, which lasted for up to 40 days, also had a negative effect on winter hibernation. Restoration of winter vegetation took place quite late - in the middle of the 2nd decade of April. The dry and cool weather of this period negatively affected the survival of plants. At the end of the vegetation in the ear of affected plants, the grain was very dense. The weather conditions of 2006 were quite unfavorable. Recovery of the winter wheat vegetation took place quite late. The rains during April-June and the raised air temperature caused the formation of crust on the surface of the soil, which worsened its air-conditioning and led to the spread of fungal diseases. The unusual agrometeorological conditions of December 2006 and January 2007, the period of unstable weathering in April-June with a significant number of temporary storm rains, as well as an increase in the average monthly temperature indices (in May at 5,2oC, in June - 3,6oC) Caused liquefaction of almost 55% of crops, reduced crop yield and quality of winter wheat grain. Research results. The yield of winter wheat during the years of research significantly depended on the weather conditions of the winter and spring-summer periods. The difference between yields in unfavorable and favorable years in the experiment was 36-51% depending on the predecessor and fertilizer (Table 1). Favorable conditions of cultivation ensured a sufficient density of productive stalk and high yields of winter wheat. In unfavorable years, due to less survival of plants and the formation of non-greyish stalwist yields decreased by 1.6-2 times. Taking into account the peculiarities of the development of winter wheat, it should be noted that its productivity depended on weather conditions, the impact of which should be considered in combination with the reserves of productive moisture and nitrate nitrogen in the soil in the main phases of growth and development, which varied depending From predecessor and fertilizer. In the period of release into the tube and earing the greatest content of available moisture and nitrate nitrogen was in the version with soybean, which positively influenced the formation of yield. One of the factors that inhibited the production of a large and stable collection of wheat grain of winter wheat was the high level of inoculation of crops. The largest number of weeds in winter crops was observed after the peas precursor (84.5 pct / m 2 of weeds in the phase of stairs, 178.4 pc / m2 - at the time of vegetation renewal). After soybeans, winter wheat crops were less perturbed: in the phase of stairs - by 39%, during the recovery of the vegetation - by 20%. Depending on the predecessor, yields changed by 2-7% for the return of winter wheat after 4 years to the previous growing place. For winter wheat cultivation in 1 year, its yield decreased by 9% due to the high deficiency of plant diseases during vegetation.

In crop rotation for the organic fertilizer system, where winter wheat was used only after the 80-tonne manure for manure on the 5th year and predecessors were clover for 2 slopes and alfalfa in the 2nd year of use, yields decreased by 3 and 9%. Worse provision of plant nutrition elements and infestation of crops by perennial weeds (67%), which is 12-16% more compared with control, reduced the yield of winter wheat in these variants. The quality of the grain and the level of yield are closely related and determined by a complex of natural resources, that is, the organic clay and soil conditions that are interconnected. The quality of wheat grain is a complex of chemical, physico-chemical, biochemical and technological properties determined by the grain size of the grain, its nature, its vitality, the content of protein and gluten, and their biological value. One of the main physical indicators that characterize the quality of wheat grain is the total weight and weight of 1000 grains [3]. The natural mass gives a complete picture of the gravity of the grain and is a sign of its flourish properties. The small, but filled grain has the same stacking density as a large, or even larger, which, in equal proportions, causes an even or larger amount of nature. In studies, the smallest natural mass was little grain grown after peas for organomineral fertilizer system in crop rotation. According to VG Mineyev, the ratio between the nature of the grain and the weight of 1000 grains may be different. In the range of 1000 grain wheat from 15 to 40 g there is a close relationship between these two indicators. The increase in the mass of 1000 grains from 40 to 60 g practically does not affect the nature of [7]. This is what was observed in the studies. In favorable years for winter wheat growing, 1000 grains were in the range of 41.8-47.4 g, the actual mass was 732-758 g / l. Under unfavorable conditions, the weight of 1000 grains decreased to 40.7-43.7 g, the natural mass increased and amounted to 763-782 g / l. The content of raw gluten varied depending on its predecessor for 2 - 11 relative percentages in favorable years and 2 relative percentages in adverse years. Use of winter wheat only after 80 tons / ha of manure on the 5th year reduced the content of raw gluten by 19 relative percentages in favorable and by 15 relative percentages - in adverse years. The lower dependence of winter wheat grain quality on weather conditions was noted in the wheat shift, where the forerunner was peas. Return of winter wheat to the previous growing place in 1 year reduced the content of raw gluten by 2

relative percentages in favorable and by 5 relative percentages in adverse years. On average, over the years of research, wheat grains of winter quality (11.8% - protein and 22.4% gluten) have been received for placing it after the clover on 2 slopes for making N50P50K80. Slightly inferior variants of peas, soybeans and corn on silage. Grains of lower quality were obtained in crop rotation, where winter wheat used only after the effect of pus. The baking-technological characteristic of flour and the test batch confirm that the high quality grain was obtained after the groove for 2 slopes for making N50P50K80 (Table 2). The smallest baking grade - 3.8 points was the grain of winter wheat, sown after 2 cubes and alfalfa in the 2nd year using an organic fertilizer system in the crop rotation.

1. Effect of precursors, fertilization and weather conditions on yield of winter wheat (2001-2010)
2. Impact of predecessors on bread quality indicators of wheat flour of winter wheat

Conclusions

For the cultivation of winter wheat on a black-9%. The difference in crop yields in adverse and subtropical soils, under sufficient conditions, in the experiment, amounted to 36-51% of the forest-steppe of the Pravoberezhnyy Pre-Przy, depending on its predecessor. The winter wheat crop, the return period and fertilizer of a significantly better quality (11.8% - protein and 22.4% - affect the moisture content, nitrate azo-gluten) were obtained after placement of the crop in the ground and the level of perturbing crops, Clover on 2 slopes for making N70P50K60. Which determines the yield and quality of the grain. Use of winter wheat only after. Depending on the predecessor, the productivity of the change-action of manure leads to a decrease in yields and a 2-7% increase, from the return period - to deterioration of the quality of the grain.

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