The yield of spring barley depending on fertilizers and retardant protection on typical chernozem

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Deals with the results of studies on the effects of mineral nutrition and crop retardant protection on plant productivity of spring barley malting conditions in Right-bank Steppes of Ukraine. It was established that the highest yield of spring barley of studied varieties was obtained at a norm of fertilization $N_{90}P_{90}K_{120}$ through the use of retardants Hlormekvat-chloride 750 and Terpal. For the growing of spring barley without the use of retardants most effective fertilization norm is $N_{60}P_{60}K_{80}$ kg a. s./ha.

Keywords: Malting spring barley, norms of fertilization, retardant protection, productivity.

Our research found that growing the investigated varieties of spring barley in conditions Right-bank Forest-steppe of Ukraine without the use of fertilizers and retardant protection provided them yield at 2,96–3,45 t/ha, while on variants with norm of fertilization $N_{60}P_{60}K_{80}$ it was higher by 33,4–57,4 % (4,14–5,08 t/ha). During fertilization $N_{90}P_{90}K_{120}$ indicators of crop yield surpassed variant without fertilizers on 29,3–43,4 % and amounted to 4,04–4,63 t/ha depending on the variety. Slightly lower performance numbers of crop on the maximum variant of fertilization explained lodging of crops due to high availability nutrients, especially nitrogen.

According to project of growing technology which included handling of crops retardants Hlormekvat-chloride 750, yield on control plots (without fertilizer) was at 3,08–3,39 t/ha, on entering mineral fertilizers in norm $N_{60}P_{60}K_{80}$ it was increased to 55,5–71,1 % to 5,10–5,55 t/ha. The largest yield on this project technology was in variant of fertilization $N_{90}P_{90}K_{120}$ and made 5,45–5,98 t/ha, which exceeded the control variant (without fertilization) to 66,2–84,2 %. Comparing growing technology project that involved handling of crops Hlormekvat-chloride 750 with the project

without the use of retardants, we must say that it yield was higher by 17.1 % on average in varieties and norms fertilization.

Under conditions of handling the crops of spring barley by Terpal, indicators of crop yield a variant without fertilizers were 3,23–3,52 t/ha, while fertilizing in norm $N_{60}P_{60}K_{80}$ increased them in 58,5–74,7 % and amounted to 5,30–5,82 t/ha. On variant $N_{90}P_{90}K_{120}$, yield was highest in the experiment and was 5,82–6,29 t/ha, what exceeded version without fertilizers on 74,4–88,6 %. That is, the processing conditions crop by Terpal, the yield an average of varieties and norms fertilization was higher by 22.7 % compared with the control (without retardants). It should also be said that the highest rates of yield stood out varieties Vodogray and Hladis, and the smallest were Konserto and Kangu.

Based on the research, the following conclusions. The basis of elaboration of basic elements of technology of cultivation of spring barley priority is to establish norms of rational fertilization, which is the basis for the realization of the productive potential of culture. The use of retardant crop protection promotes preservation of more plants per unit area by increasing their resistance to lodging and has a positive effect on yield formation due to biochemical changes in the plant organism. It should also be borne in mind that complex application retardants with fertilization, effectively increasing the quantitative increase in the last. In typical black soil humus Right-bank Forest-steppe of Ukraine to use only fertilizers studied varieties of spring barley yield will receive at 4,14–5,08 t/ha ($N_{60}P_{60}K_{80}$), with increases fertilization rules to $N_{90}P_{90}K_{120}$ reduced yield due to lodging of crops 4,04–4,63 t/ha. Using the drug retardant action Hlormekvat-chloride 750 in combination with the above norms fertilization spring barley grain output provides at 5,45–5,98 t/ha, and the application of Terpal – 5,82–6,29 t/ha.

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