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INFLUENCE BIOAGROTECHNOLOGY CULTIVATION OF WINTER TRITICALE WHEN CONSIDERING THE ELEMENTS OF THE STRUCTURE OF GRAIN YIELD

Reviewer – Doctor of Agricultural Science V. Lavrov

Conducted a study on the sensitivity of winter triticale on the action of microbiological preparations albobakterin and diazobakterin when considering the elements of the structure of grain yield. It is established that the use of microbial preparations in on winter triticale allowed to differentiate varietal composition of the this culture in terms of sensitivity to the action of microorganisms: sensitive (on diazobakterin: «Amphidiploids 256», «Slavetne»; on albobakterin: «Vivate Nosivsky», «Jaguar», «Augusto», «Slavetne»), moderately sensitive (on diazobakterin: «Augusto») and insensitive (on diazobakterin: «Vivate Nosivsky», «Jaguar», «DAU 5»; on albobakterin: «Amphidiploids 256», «DAU 5»), depending on the actions of certain biological preparations for a specific grade. Proved that triticale varieties «AD 256», «Slavetne» and «Vivate Nosivsky» under the influence of microbial agents to provide high grain yield 7–8t/ha by increasing the number of flowers from the main ears of corn, of grains from the main ear of corn and weight of grains from the main spike and plant weight of 1000 gm.

Keywords: *winter triticale, variety, microbial preparations elements of structure grain yield.*

Statement of the problem. Triticale (× Triticosecale) is a hybrid of wheat (Triticum) and rye (Secale) first bred in laboratories during the late 19th century. The grain was originally bred in Scotland and Sweden. Commercially available triticale is almost always a second generation hybrid, i.e., a cross between two kinds of primary (first cross) triticales. As a rule, triticale combines the yield potential and grain quality of wheat with the disease and environmental tolerance (including soil conditions) of rye. Only recently has it been developed into a commercially viable crop. Depending on the cultivar, triticale can more or less resemble either of its parents. It is grown mostly for forage or fodder, although some triticale-based foods can be purchased at health food stores or are to be found in some breakfast cereals.When crossing wheat and rye, wheat is used as the female parent and rye as the male parent (pollen donor). The resulting hybrid is sterile, and must be treated with colchicine to induce polyploidy and thus the ability to reproduce itself.The primary producers of triticale are Poland, Germany, France, Belarus and Australia. In 2009, according to the Food and Agriculture Organization (FAO), 15.0 million tons were harvested in 29 countries across the world.The triticale hybrids are all amphidiploid, which

means the plant is diploid for two genomes derived from different species. In other words, triticale is an allotetraploid. In earlier years, most work was done on octoploid triticale. Different ploidy levels have been created and evaluated over time. The tetraploids showed little promise, but hexaploid triticale was successful enough to find commercial application.The CIMMYT triticale improvement program wanted to improve food production and nutrition in developing countries. Triticale has potential in the production of bread and other food products, such as cookies, pasta, pizza dough and breakfast cereals. The protein content is higher than that of wheat, although the glutenin fraction is less. The grain has also been stated to have higher levels of lysine than wheat. Assuming increased acceptance, the milling industry will have to adapt to triticale, as the milling techniques employed for wheat are unsuited to triticale. Sell et al. found triticale could be used as a feed grain, and later research found its starch was particularly readily digested. As a feed grain, triticale is already well established and of high economic importance. It has received attention as a potential energy crop, and research is currently being conducted on the use of the crop's biomass in bioethanol production.

Among the varietal set of triticale need to select such that are endowed with additive "working" polihenamy. To do this for long time to explore collectible samples on indicators adaptability, productivity, resistance to pests and diseases into the dynamics and an integral part which is conducting structural analysis. Which basis is productivity - main indicators of agrophytocenoses reactions crops of to environmental factors during the growing season. Core Perfomances of grain crop yield structure elements defines a number of environmental factors, including Agrotechnology cultivation quality and timeliness of its implementation [1].Therefore the problem of regulation of elements of the structure crop yield during the growing season remains open. Now the priority is to use measures of bioelements cultivation of agricultural crops. In connection with which activated functional activity of soil microorganisms, improves of agroecosystems in general [2, 12].

Analysis of recent research. According to literary sources grain yield reflects the number of productive stems, grain weight colossus [14], grain size [13]. However, the yield figures do not always coincide with those plant productivity [19]. For triticale of productivity based on agroecological factors ranged 82–521 g/м^2 [3].In particular, under conditions of water deficiency in crops of that culture is formed much the number of sterile flowers, shrunken grain between indicators of productive tillering, performance colossus and 1000 grain weight observed strong variation [9]. But performance of colossus determined the number of grains varies between 41-56 pieces. [18]. Therefore of the variability in number of grains in colossus of winter triticale is much higher than for winter wheat and winter rye and depends on the characteristics of the variety, weather and climatic conditions etc.. [7].

Indicators colossus length and number of spikelets in the ear triticale considered stable, which primarily determined by genotypic factors and depend on the properties of a particular genotype and, less significantly, from weather and climatic factors, the [10, 16].Unlike indicators of productive tillering, number of grains in the ear and weight of 1000 grains and others., The level of which depends on

environmental and geographical factors, weather and climatic factors growing season, the quality and timeliness of Agrotechnical measures [15]. In particular, indicators of productive tillering and grain mass of the spike, which is formed under conditions of balanced interdependent parameters 1000 grain weight and number of grains in colossus, in the range 24,6-59,9 % and 1,2-2,5 g, respectively [4, 6, 8]. However, triticale grain by grain particle size exceeds winter rye and winter wheat [10]. But under conditions of sufficient moisture, the grain size of the mass of 1000 grains is 29% higher [17].

Thus, need research on the formation and variation major components of winter triticale yield for improvement of the management processes of formation of high yields and obtaining environmentally safe crop production.

The purpose of research – status agrophytocenoses winter triticale in connection with the biologization technology of cultivation on elements grain yield structure.

Materials and methods research. Field and laboratory studies were performed according to conventional methods [5, 11]. Research conducted during 2008-2012 on scientific research center Bila Tserkva National Agrarian University in the Kiev region. Experiment in was two-factor (Factor A - control of, Factor B - biologics) and included 4 options: 1 - control, 2 - Diazobakteryn 3 - Albobakteryn 4 - Diazobakteryn + Albobakteryn.

Variant of of experiment square was 35, the total area of of the experiment - 500 square meters. Predecessors for winter triticale were peas-oat mixture on green mass. During the lay the of the experiment Was used the generally accepted technology cultivation. Name of winter triticale varieties that were involved of experiments: AD 256, Slavetne, Vivate Nosovskii, Jaguar, Augusto, DAU 5. Mathematical-statistical data processing was performed by Dospyehov [5] and using the computer program Excel-2003.

Research results. The analysis of of data from definition of of structural elements crop yield revealed that varieties of winter triticale in different ways reacted to the action of specific microbial preparation under similar agro-climatic, soil and Land Treatment conditions. It is proved that early ripening varieties of winter triticale Vivate Nosovskii more sensitive to the action of Albobakteryn, acting bio-agents which are fosfatmobiliznig bacteria Achromobacter album in 1122, given the parameters of grains of the main colossus, weight 1000 grain and number of productive stems.

The amount of productive stems per variant application fosfatmobilizing microorganisms exceeding those the control in 1.2-1.3 times ($p \geq 0,05$), respectively.

Varietal specificity of to the action specific microbial preparation manifested regardless of years of research. Winter triticale variety AD 256 was a sensitive to the action of nitrogen-fixing bacteria diazobakteryn preparation, in particular in increase in the number of flowers in the main colossus, number of grains from the colossus and plant weight of grains from the main spike, grain weight of plant, length a colossus and number of productive stems of plants. A significant manifestation this varietes of sensitivity to the action of Albobakteryn observed only on indicators the length of the colossus, which was 1.1 times

higher compared with the control.A variety Slavetne turned out to be more sensitive to the action of the complex preparation diazobakteryn and albobakteryn that significantly affected the significant increase (p = 0.05) indicators of plant height, number of grains from the main plant and colossus, grain weight of main colossus and plants compared with control.

Crops of varieties DAU 5 did not reacted to the action diazobakteryn and albobakteryn. Previous studies conducted during the 2007-2009, showed that this variety substantially responds to the action fosfatmobilizing microorganisms *Bacillus polimyxa* M Polimiksobakteryn.

Varieties of Augusto and Jaguar significantly reacted to the action albobakteryn. In particular, crops of Augusto to action albobakteryn has led to substantial ($p \geq 0,05$) increasing quantities of productive stems - 41.7%, plant height - 11.3%, colossus length - 7.1% flowers with colossus - 2.5% of grains with the colossus and plants - 17%, with the main mass of grains colossus and plants - 39.7 and 79.6%, weight of 1000 grains - 5.7% compared with the control. So, winter triticale varieties on indicators yield structure elements react differently to the action a specific biological preparation.

Conclusions. According to the research of winter triticale varieties are differentiated by sensitivity to the action of specific biologics.Conducted a study on the sensitivity of winter triticale on the action of microbiological preparations albobakterin and diazobakterin when considering the elements of the structure of grain yield. It is established that the use of microbial preparations in on winter triticale allowed to differentiate varietal composition of the this culture in terms of sensitivity to the action of microorganisms: sensitive (on diazobakterin: «Amphidiploids 256», «Slavetne»; on albobakterin: «Vivate Nosivsky», «Jaguar», «Augusto», «Slavetne»), moderately sensitive (on diazobakterin: «Augusto») and insensitive (on diazobakterin: «Vivate Nosivsky», «Jaguar», «DAU 5»; on albobakterin: «Amphidiploids 256», «DAU 5»), depending on the actions of certain biological preparations for a specific grade.

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