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THE FINAL EAR PRODUCTIVITY DEPENDING ON THE TRAITS OF GROWTH, ACQUISITION AND CONSERVATION OF RESOURCES INTO THE UPPER LEAVES OF WINTER WHEAT UNDER CONDITIONS OF ECOLOGICALLY SAFE FERTILIZER SYSTEMS

The results of the research revealed that the basic ecologically safe fertilizer system (BESFS; pea straw; variant 2) caused a reliable increase of the winter wheat ear productivity by 15,1% (dry matter content/spike, M_g), relative to the control (variant 1). Ecologically safe fertilizer systems (ESFS; pea straw + $N_{30}P_{45}K_{45}$ + elements of ecologization; variants 3 – 7) lead to a significant gain of M_g by 41,8–65,8%, compared to variant 2.

Formation M_g in variant 2 versus variant 1, in variants 3–7, concerning to variant 2, significantly depends on the absolute, relative growth rate, net assimilation rate, specific area, mass to area ratio into the upper leaves (flag, subflag) of winter wheat during the ontogenesis stages booting – earing, earing – milk ripeness ($AGR_{UL1,2}$, $RGR_{UL1,2}$, $NAR_{UL1,2}$, $SLA_{UL1,2}$, $LMA_{UL1,2}$, respectively; indices 1, 2 – specified accounting periods): $r = 0,57–0,92$, $P < 0,001–0,010$ (variant 2 versus variant 1; $M_g - AGR_{UL1}$, RGR_{UL1} , NAR_{UL1} , $SLA_{UL1,2}$, $LMA_{UL1,2}$); $r = 0,35–0,96$; $p = 0,923–0,927$; $P < 0,001–0,050$ (variants 3–7 versus variant 2; $M_g - AGR_{UL2}$, RGR_{UL2} , NAR_{UL2} , LMA_{UL2}); $r = 0,75–0,95$; $P < 0,001$ (variants 3–6 versus variant 2; $M_g - SLA_{UL2}$). The most significant determinants of M_g for all the comparisons of variants made are the area duration and biomass duration of the upper leaves – $LAD_{UL1,2}$ (photosynthetic potential), $BMD_{UL1,2}$, respectively: $r = 0,84–0,96$; $P < 0,001$.

It has been suggested, that during the stages, booting – earing – milk ripeness takes place a combination of resource-acquisitive (resource acquisition) and resource-conservative (resource deposition) strategies of the development of the winter wheat upper leaves, that due to the ontogenesis-dependent coordination of the sources (upper leaves) and the assimilates sink (ear) for the formation of the final productivity.

The generalization is made, that the improvement of the productivity of the winter wheat ear under conditions of studied BESFS, ESFS, at least

partially, is due to ontogenesis-dependent optimizations of the growth, resource allocation (accumulation, conservation, outflow of assimilates) into the upper source leaves of plants with the aim of increasing the level of self-limiting sink (ear) productivity.