

Annotation

Kluchevich M.M., Plaksa V.M.

Development of mycoses of spring triticale depending on fertilization in the Western Polissia region

Among grain crops that can realize the natural potential of productivity in Polissia the leading role belongs to triticale. Specific recent weather conditions during last periods of vegetation contribute to the development and spreading pathogens of fungal diseases in the agroecosystem.

To increase plant resistance to the pathogens and adverse impact of growing conditions it is necessary to develop an effective system of fertilization and protection measures that would ensure the availability of necessary nutrition elements during critical periods of growth and development of crops.

The research was aimed at determining the effect of mineral nutrition of spring triticale varieties on the development of major fungal diseases, studying photosynthetic activity of plants and formation of crop yielding capacity at Volyn State Agricultural Research Station of the Institute of Agriculture of Western Polissia, Ukraine, the National Academy of Agrarian Sciences of Ukraine during 2012–2015.

The experimental design included the following varieties of spring triticale: Korovai kharkivskiyi, Legin kharkivskiyi, Solovei kharkivskiyi and Khibodar kharkivskiyi. Each variety was the subject of investigation on fertilizing according to the following variants: control (without fertilizers), $N_{30}P_{30}K_{30} + N_{30}$ kg of the fertilizer / ha (stage 29), $N_{30}P_{30}K_{30} + N_{30}$ and Nutrivant Plus, 3.0 kg / ha (stage 29) + N_{30} kg of the fertilizer / ha (stage 37).

Recording triticale diseases was carried out using conventional methods (Omeliuta V.P. and others, 1986; Retman S.V., 2001). The intensity of photosynthesis was determined with N-tester.

In western Polissia, Ukraine there are the following main mycoses of spring triticale: powdery mildew (agent – *Blumeria graminis* (DC.) f.sp. *tritici* Speer.), brown leaf rust (*Puccinia recondita* Dietel & Holw.), septoria spots on leaves (*Mycosphaerella graminicola* (Fuckel) Schroeter, *Phaeosphaeria nodorum* (Mull.) Hedjar.), root rot (*Bipolaris sorokiniana* (Sacc.) Shoem., *Rhizoctonia* spp., *Fusarium* spp.). Minor development of *Alternaria* blight (*Alternaria* spp.), black stem (*Ascochyta graminicola* Sacc.) and spot disease (*Bipolaris sorokiniana* (Sacc.) Shoem.) is determined.

It is found that the triticale variety Legin kharkivskiyi has the immunity against mycoses as powdery mildew affected 1.2–2.6 % of the yield, wheat leaf rust – 1.7–4.2 %, leaf blotch – 1.6–4.8 % and root rot – 0.3–0.9 % and its development changed depending on the type of fertilization. Against the background of mineral nutrition – $N_{30}P_{30}K_{30} + N_{30}$ and Nutrivant Plus, 3.0 kg/ha (stage 29) + N_{30} (stage 37) this variety is the least affected by pathogens of leaf blotch and root rot and creates higher level of crop productivity – 4.42 t/ha.

Applying mineral fertilizers $N_{30}P_{30}K_{30}$ with one-time (stage 29) and two-time dosing of N_{30} (during stages 29 and 37) and water-soluble fertilizer Nutrivant Plus influenced the reinforcement of developing pathogens of leaf diseases (*Blumeria graminis* i *Puccinia recondita*). After applying $N_{30}P_{30}K_{30} + N_{30}$ and Nutrivant Plus, 3.0 kg/ha (stage 29) + N_{30} (stage 37) increasing in number of photosynthesis units took place and it boosted the crop yield from 1.85–2.24 to 3.88–4.42 t/ha.

The variety of spring triticale Legin kharkivskiyi was characterized by the highest crop yield during the years of research.

Key words: spring triticale, varieties, mineral fertilizers, mycoses, photosynthesis, yield capacity.