UDC: 633.11”324”:632.954 DOI: https://doi.org/10.53040/ppap2026.139

# COMBINED APPLICATION OF PHOTOSYNTHETIC HERBICIDES WITH DIFFERENT MODES OF ACTION FOR WINTER WHEAT CROP PROTECTION

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The most effective class of modern herbicides for weed control in winter wheat crops is the acetolactate synthase (ALS) inhibitors. At the same time, an active search is underway for effective herbicide compositions to implement alternative options for protecting this crop from weeds due to the growing spread of cases of weed resistance to ALS inhibitors.

The aim of the work was to check the selectivity of a mixture of the herbicides tolpyralate (HPPD inhibitor) and bentazon (inhibitor of electron transport in PS II) on winter wheat crops in order to determine the nature of the interaction of the components of this mixture.

Herbicide treatments of the crops were carried out at the tillering stage on the area of the experimental plot of 15 m² (3 × 5 m) in four replications. The selectivity of the herbicides with respect to winter wheat was checked by means of phenological observations and biometric measurements under field experiment conditions. The action of the herbicides under field conditions was determined by the efficacy of control of individual weed species according to the reduction in the number of a given weed species compared with the control, as well as taking into account its visual assessment.

The results obtained in the field experiments demonstrated that the herbicide tolpyralate, when applied alone and its mixtures with bentazon, are selective with respect to winter wheat when the adjuvant Trend 90 is added. When tolpyralate was applied alone or in a mixture with bentazon, their interaction was predominantly additive, but in some cases, synergism could be determined on individual species.

The predominant absence of synergism reduces the potential efficacy of using a mixture of tolpyralate with bentazon for controlling weed resistance to herbi-

cides. However, it should be emphasized that the additive nature of the interaction makes it possible to obtain high efficacy of control by the mixture of tolpyralate with bentazon of annual dicotyledonous weeds. This mixture is not inferior in efficacy to modern herbicidal preparations of the class of ALS inhibitors.

Thus, due to the fact that the mixture of tolpyralate with bentazon is selective with respect to winter wheat and provides high efficacy of weed control, it can be used for alternation with ALS-inhibitor herbicides on winter wheat crops to overcome weed resistance to ALS inhibitors.

**Keywords:** tolpyralate, bentazon, ALS inhibitors, weeds, winter wheat.