

Response of Wheat and Lentil to Herbicides Applied in the Preceding Non-Puddled Transplanted Rainy Season Rice

Authors : Taslima Zahan

Abstract : A field study was done in 2013-14 and 2014-15 by following bio-assay technique to determine the carryover effect of herbicides applied in rainy season rice on growth and yield of two probable succeeding crops of rice viz., wheat and lentil. Rice seedlings were transplanted on strip-tilled non-puddled field, and five herbicides named pyrazosufuron-ethyl, butachlor, orthosulfamuron, butachlor + propanil and 2,4-D amine were applied in rice at their recommended rate and time as eight treatment combinations and compared with one untreated control. Residual effects of those rice herbicides on the succeeding wheat and lentil were examined by following micro-plot bioassay technique. The study revealed that germination of wheat and lentil seeds were not affected by the residue of herbicides applied in the preceding rainy season rice. Shoot length of wheat and lentil seedlings of herbicide treated plots were also non-significantly varied with untreated control plots. Herbicide treated plots of wheat had higher leaf chlorophyll contents over the control plots by 1.8-14.0% on an average while in case of lentil herbicide treated plots had negligible amount of reduction in leaf chlorophyll contents than control plots. Grain yields of wheat and lentil in herbicide treated plots were higher than control plots by 2.8-6.6% and 0.2-10.9%, respectively. Therefore, two-year bioassay study claimed that tested herbicides applied in rainy season rice under strip-tilled non-puddled field had no adverse residual effect on growth and yield of the succeeding wheat and lentil.

Keywords : crop sensitivity, herbicide persistence, minimum tillage rice, yield improvement

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