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Effect of soil incorporating wheat residues on agronomic and physiological traits of red common bean

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Abstract

Crop residues are useful substances that can have important changes in soil biologic, chemical and physical properties and also can increase or stabilize crops yield. In order to save crop residues, incorporate them into the soil and their effects on agronomic, physiologic, yield and yield components of two red bean cultivars (*Phaseolus vulgaris* L.), an experiment was conducted as split plot arranged in randomized complete block design with three replications during summer 2008 and 2009 in the Research Station of College of Agriculture, Shiraz University, Shiraz, Iran (Bajgah). The main factor was red bean cultivars (Sayyad and D81083) and the sub factor was wheat residues rates (0, 25, 50 and 75%). Both cultivars showed some differences in plant height, the distance of the lowest node from the soil, 100-seed weight and number of seed per pod and seed yield. Crop residue caused changes in biomass duration (a physiological index). Application of crop residues decreased a significant difference in biomass duration and seed yield, which can be attributed to the inhibitory effects of heavy residues. The highest seed yield (2370.4 kg ha^{-1}) was obtained from 25% crop residue incorporation, with no significant difference with 50% crop residues (2313.9 kg ha^{-1}) and without crop residues incorporation (2234 kg ha^{-1}). Therefore, planting Sayyad cultivar and maintenance of at least 25% wheat crop residues are required to improve seed yield of red common bean.

Keywords: Common beanl, Wheat residues, Yield and yield components, Physiological indices