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Responses of Bulk Density, Some Agronomic Characteristics and Yield of Rainfed Barley to Different Tillage Methods in Hamedan Region

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Abstract

This experiment was carried out at the Agricultural Research Station of Bu-Ali Sina University to study the effect of different tillage methods on bulk density, yield, and yield components of barley (*Hordeum vulgare*) cultivars under rainfed conditions. Three levels of tillage (CT: conventional tillage, MT: minimum tillage and NT: no tillage) and five barely cultivars (V_1: Local, V_2: Abidar,V_3: Valfagr, V_4: Bahman and V_5: Makouei) were evaluated in a factorial arrangement in a completely randomized block design with three replications in the growing season of 2010-11. Traits of bulk density, plant height, grain yield, yield components, biological yield, and harvest index (HI) were evaluated. The results showed that maximum value of bulk density (1.09, 1.26 and 1.29 g cm^{-3} for 0-10, 10-20 and 20-30 cm of sampling depth, respectively) was observed at MT treatment. But, there was no significant difference between MT and NT treatments for this trait. In comparison of cultivars, maximum bulk density was achieved with Valfagr cultivar. Using chisel plow (MT treatment) produced maximum plant height (70 cm) and yield components (513 numbers of spike m^{-2} and 19.2 grain $spik^{-1}$). Also, among cultivars maximum plant height (72.7 cm) and grain number $spike^{-1}$ (23.2 grain $spike^{-1}$) belonged to Valfagr cultivar. Also, results showed that V_3×MT treatment had the highest grain yield (3100 kg ha^{-1}). Therefore, the findings of the study recommend using chisel plow (MT treatment) and Valfagr cultivar.

Keywords: Tillage, Grain yield, Yield components, Rainfed farming, Barely.

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