



INCREASING BARLEY (*HORDEUM VULGARE* L.) COMPETITIVE ABILITY TO COLLATERAL WEEDS BY DIFFERENT SEED RATING AND SOME HERBICIDES

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Abstract

A field experiment was carried out in Musaib, Babylon, Iraq in the winter season of 2018 and 2019 to find out the effect of seed rating (100, 150 and 200 Kg/ha), and a combination of Topic and Logran herbicides as follow: 1- Control/spray with distilled water. 2- ½ of the recommended conc. (i.e. 125 gm/ha Topic + 250 gm/ha Logran). 3- The recommended conc. (i.e. 250 gm/ha Topic + 500 gm/ha Logran). As an integrated management for controlling weed populations grown with barley CV.IPA.99, and the effect of these factors on barley yield and yield components and its growth and development, in a split in RCBD with 3 replicates. Results indicated that the higher seeding rate (200 Kg/ha) recorded higher means of plant height, leaf No./stem, tillers No./m², spike No./m², grain No./spike, 1000 grain weight (gm) and grain yield ton/ha (120.53 cm, 7.66 leaf/stem, 514.95 tillers/m², 438.11 spike/m², 49.15 grain/spike, 44.33 gm and 2.26 ton/ha respectively). While the recommended conc. of herbicides recorded the higher means of plant height, leaf No./stem, tillers No./m², spike No./m², grain No./spike, 1000 grain weight (gm), grain yield ton/ha and weeds dry weight gm/m² (116.30 cm, 7.00 leaf/stem, 461.57 tillers/m², 401.39 spike/m², 45.48 grain/spike, 42.83 gm, 2.26 ton/ha and 11.51 gm/m²) respectively. Whereas, the interaction between the factors of the trial (i.e. 200 Kg/ha of seeding rate) and the recommended of the two herbicides gave the highest means of the characters studied. This interaction, therefore, can be recommended in barley farms to achieve reduction in weed growth and harmful effect of them and boosting barley plantations productivity as well.

Keywords : Barley, Collateral weeds, Coldinapof-methyl, Triasulfuron, Terbutryn, Seeding Rates.

Introduction

To counteract the population explosion and the increasing demand for food in the world, it is necessary to pay a great attention and improve the cultivation and productivity of strategic crops using the available scientific methods as cheap as possible. Barley (*Hordeum vulgare* L.) occupies an important position among all crops of greatest importance to mankind. It comes in the 3rd place after wheat and rice worldwide. Barley enters human food in many world countries, in addition to its using in many industries of interest to humans and animals. (Al-Mishhadani *et al.*, 1991). The success of barley cultivation faces many serious problems that reduce productivity of the unit area. Weeds are one of the most serious factors that causes a severe shortage in barley production qualitatively and quantitatively and cause a great losses as a result of the efforts and money used to confront this vital scourge. The importance of the seed rating has been proven by early workers in this field as an important and vital efficient tool in facing and mitigating the risk of weeds. (Kadhim and Shati, 2010; Lark *et al.*, 2008). It has also been proven that by following and tackling seed rating techniques in barley farms had a positive impact on curbing the growth of weed plantation accompanying field crops and thereby, raising the ability of the economic plants to compete with weed populations on different growth factors. (i.e. water, nutrients, sun, aeration, ... etc) and cause a significant increase in barley productivity. (Paynter and Hill, 2009). The use of the traditional mean to combat weed has a positive effect in reducing the damages of weed population and improve agronomic outcome. Although it may cause a slight harm to the nature and plant, but utilizing herbicides led to reduce the harmful effect of the weed plants in the agronomy fields. That seed rating reduces significantly the dry matter of the weed plants growth with barley has been confirmed by (Khan, 1999). (Chaubey *et al.*, 2014) reported also that

elevated seed rating increases barley plant height, flag leaf area, tillering etc. and thereby boosted barley yield. The increase in barley yield and yield components (spike/m², seed No./spike, 1000 grain weight and yield) was reported by (Lousaert and Ellis, 1993). The effect of herbicides in improving barley productivity occupies a good area in the literature. (Chaudhary *et al.*, 2016). (Kaur *et al.*, 2018) show that using (Topic + Logran) in barley fields, reduced dry matter of the collateral weeds in barley farms and causes a significant reduction in weed population ability to compete with barley plants, and ultimately improved barley performance. There are also many works proved that herbicides, were good tool for weed control. (Chaubey *et al.*, 2014) reported a significant increase in growth parameters (plant height, flag leaf area, leaf No./stem, tillers/m²) by increasing concentration of (Topic + Logran) herbicides. Using (Topic + Logran) in barley farms decreases significantly weed plants activities and augmented yield and yield components of barley plants (Kumari *et al.*, 2013). In the light of the above facts, this work was designed to study the effect of seed rating and (Topic + Logran) herbicides and decreasing weed population in barley plants trying to boost barley competition ability for earning divergent growth requisites in order to achieve good level of growth and development.

Material and Methods

A field experiment was conducted in Musaib/ Babylon/Iraq during winter season of 2018/2019 to find out the effect of seeding rate (100, 150 and 200 kg/ha) and a combination of (Logran + Topic) herbicides (control, ½ the recommended concentration of each and the recommended dosage of each) on the populations of weed growing with barley (cv. IPA 99) and the impact of that on some vegetative qualities and yield and yield components. Experiment design