Effect of inter-row spacing on competition between dry land wheat cultivars and their natural weed populations

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Abstract Integrated weed management can lead to sustainable food production, minimize labor, and reduce the cost of weeds control. An experiment was conducted in Khalkhal, Ardebil province, as factorial arrangement based on randomized complete block design with three replicates, to evaluate the effect of inter-row spacing on competition between wheat cultivars and their natural weed populations under dryland condition. Factors included wheat cultivars (Rasad, Azar2, Cross-Azar2, and Baran), inter-row spacing (10, 15, and 20 cm) and weed control (weed-free and weedy conditions, weeded and not weeded throughout the growing season, respectively). Traits such as grain yield, yield components (tiller number per m2, grain number per tiller, and 1000-grain weight), biological yield, and weed dry weight were measured in this experiment. Moreover, harvest index was calculated. Results showed that the highest tiller number per m2 was recorded for Baran, inter-row spacing of 10 cm and weed free plots. The highest and the lowest grain number per tiller were recorded for Baran and Azar2, respectively. Thousand-grain weight was significantly affected only by cultivar; the highest 1000-grain weight was observed in Rasad followed by Baran. In contrast, the lowest 1000-grain weight was observed in Azar2 followed by Cross-Azar2. Moreover, grain yield was significantly reduced 2326 to 1206 kg ha-1 as inter-row spacing increased 10 to 20 cm. grain yield was significantly increased by 18% as weeds were controlled. Weed dry weight was reduced when inter-row spacing increased 10 to 20 cm. In conclusion, the result of this experiment indicated that there was significant diversity among tested wheat cultivars in regards to competitive ability against weeds.

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