Abstract

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An innovative strategy of allelopathy in biological control of weeds with enhanced wheat production.

Abstract

Weeds represent the most serious threat to the sustainability and profitability of crop production around the world. Weeds problem and their management vary widely throughout the world, based on economic resources. The use of allelopathy for controlling weeds could be either through directly utilizing natural allelopathic plants interaction, practically of crop plants or by using allelochamicals as natural herbicides. A field experiment was carried out at the students' farm, department of agronomy, Faculty of Agriculture, Gomal University, D.I. Khan (KP) Pakistan. To study the response of two weeds water extract to allelopathic weeds in wheat field. RCBD design with factorial arrangement was applied. The treatments included T1= (control), T2= Avena fatua (wild oat) 2.5%, T3= Avena fatua (5%) T4= Avena fatua (10%) T5= Avena fatua (20%) T6= convolvulus arvensis (2.5%) T7= convolvulus arvensis (5%) T8= convolvulus arvensis (10%) T9= convolvulus arvensis (20%). Two foliar sprays of said treatments were applied at 45 and 90 days after sowing of wheat. The results depicted that the allelopathic impact of convolvulus arvensis (20%) resulted best in suppressing weeds in wheat field than remaining treatments. It also influences on wheat germination (80.7%) comparative less than control (90.5%), however plant height (90. 8cm), spike length (17cm), grains ear-1 (48.5), thousand grains weight (48.3 g) and grain yield (4.72 t ha-1) significantly higher than other tested treatment by applying 20% convolvulus arvensis aqueous extract. Number of tillers m-2 remained non-significant in all treatments except in control, which recorded minimum tillers (190.2 m-2). 20% W/V aqueous solution of convolvulus arvensis significantly reduced the weeds population in wheat field. It was summarized that for achieving best grain yield production and weeds management in wheat, the water extract of convolvulus arvensis may be applied at 20% W/V concentration.

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Biography

Dr.lqtidar Hussain is serving as an Assistant Professor in the department of Agronomy at the Faculty of Agriculture Gomal University since 2014.He achieved distinction by

becoming member of the Soil Science of Pakistan. - Weed science society of Pakistan Botany Society and Pakistan Alleopathty Society.

Dr. Iqtidar Hussain

Gomal University, Pakistan

iqtidarhussain453@yahoo.com