

Effect of Tillage Systems and Fungicide (Trichozone) on Wheat (*Triticum aestivum* L.) Associated Weeds Growth Parameters

Hussain Safi¹, Ahmad Al-Mothefer², Hader Shanan³ and Asmaa Al-Edan⁴

¹⁻⁴Department of Machines and Equipment, College of Agriculture University of Basrah, Basrah, Iraq.

¹E-mail: hussain.safi@uobasrah.edu.iq

Abstract. The investigation was conducted in the 2019–2020 agricultural season in the Al-Thaghr area, north of Basrah Governorate, Iraq (latitude 31.145288N and longitude 47.431334E), in clay soil. Two factors were used in the investigation. The first factor was the three tillage systems (heavy tillage by the mouldboard plow, low tillage by the chisel plow, and the no-till system). The second factor was three concentrations of the biocide Trichozone (4 g m⁻², 2 g m⁻², and without adding pesticide). The experiment was laid out in randomized complete block design (RCBD) with three replications. The results showed that the chisel plow recorded the lowest number and dry weight of weeds per square meter (16 plants m⁻² and 0.24 g m⁻² respectively). In contrast, the moldboard plow recorded the highest number and dry weight of weeds per square meter (79.6 plant m⁻² and 14.17 g m⁻², respectively).

Keywords. Tillage systems; fungicide; wheat; weeds; growth parameters

1. Introduction

The present global population of 7.69 billion is expected to become greater than 9 billion by 2050. To feed these people, global food production must expand by 70 to 100 percent. In addition to socioeconomic and agricultural management difficulties, there are a number of biotic and abiotic limitations on crop yield [1]. Weeds are the most important biotic restrictions on agricultural output in both developing and industrialized nations. Pathogens (fungi, bacteria, etc.) and animal pests (insects, rodents, nematodes, mites, birds, etc.) provide a lesser threat to crop yields than weeds [2].

Weeds compete with crops for sunlight, water, nutrients, and space. In addition, they harbour insects and pathogens, which attack crop plants. The weed control reflects the effect of the tillage system used; therefore, the weeds in a conventional tillage system will be very different from those in a no-till system.

Tillage operations are a critical component of conventional agricultural strategies. Tillage operation is the mechanical manipulation of the soil to prepare appropriate soil for seeding. The benefits of tillage operations are many: it fragmentation of soil, enables to spread of roots, and absorbs important nutrients and moisture, which are essential for crop growth, destroys weeds, and regulates the movement of water and air in the soil body [3].

Tillage practices are one of the critical agricultural weed control techniques due to decreasing pollution of air, water, and soil. Tillage influences weeds by uprooting, disassembling, and burying

