



دانشگاه زابل

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**The effect of climate and tillage Systems on chickpea and wheat
yield under dryland condition in Lorestan**

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Abstract

One of the obstacles to sustainable agricultural development in Iran is low fertility and soil organic matter, compaction, widespread destruction of agricultural soil structures, and lack of water resources, which ultimately leads to reduced yields and wasted resources. Research in this regard is of particular importance in different parts of the country, especially in drylands. In Lorestan province, cereals, especially wheat and cereals (chickpeas) are the main crops of dryland farmers in these areas. For this purpose, three tillage systems including conventional tillage (reversible plow and disc), low tillage (compound tillage), and bio-tillage (direct sowing of seeds without tillage), in three different climates of Lorestan province, including Nurabad city (cold climate), Koohdasht city (warm climate) and Khorramabad city, Kamalvand district (temperate climate), to investigate the effect of climate and tillage systems on wheat and dryland chickpea yield in Lorestan province, separately in each farm, factorial experiment in the form of The basic design of randomized complete blocks was implemented in three replications. The results of testing tillage systems in the studied cities showed that the highest wheat grain yield in Khorramabad city (2496.3 kg/ha) under the conditions of reduced tillage system (2425.2 kg/ha), and the highest chickpea grain yield In Koohdasht city, under the conditions of tillage system, a decrease (1842.5 kg/ha) was obtained. In addition, the highest percentage of debris cover in Nurabad city under the conditions of the no-till system (86.38%), and the highest specific gravity of soil in Nurabad city (1.44 g/cm^3) under the conditions of the no-till system (1.46 g/m^3) was obtained. Also, the highest volume moisture content (22.44 %), the highest percentage of organic carbon (1.99 %), and the lowest soil temperature in Khorramabad city were obtained under the conditions of a no-till system ($22.03 \text{ }^\circ \text{C}$). In general, according to what has been said, it can be concluded that conservation tillage systems showed superiority over conventional tillage systems, which in the case of wheat and chickpeas first reduced tillage system and then non-tillage system, but in terms of environmental and chemical characteristics Soil will only be a suitable tillage system.

Keywords: Rotation, Conservation tillage, Soil temperature, Soil moisture, Rainfed agriculture, Kuhdasht, Noorabad