

Abstract:

In order to assess the effects of fertilizer sources (green manure, cow manure, and chemical fertilizer) on maize yield and yield components (KSC 704) under tillage management, a field experiment was carried out at Zahak Agricultural and Natural Resource Research Station in two years (from 2013 to 2014). Before corn planting, barley was planted as green manure in the fall of each year. The experiment was conducted as a split plot arranged in a completely randomized block design with three replications. The main plots were tillage and no tillage, whereas the sub plots were: 1- control (non-fertilizer application). 2-barley green manure (without application of fertilizer), 3-barley green manure with applying 100% chemical fertilizer (NPK) to the barley during cultivation, tillering and stemming stages, 4-green manure with 2/3 of chemical fertilizer to the barley and 1/3 to the maize, 5-green manure with 1/3 of chemical fertilizer to the barley and 2/3 to the maize, 6-barley green manure with 50% animal and chemical manures, 7- barley green manure with 40 t ha⁻¹ of animal manure. Corn was planted on 15 March each year. Phosphorus, potassium fertilizer, and animal manure were added to the soil as the base fertilizers. At full maturity, the plant height, the number of kernels per row, the number of rows per ear, the 1000 seed weight, the harvest index, ear length, were measured, separately. Analysis of variance showed that in the second year than the first year were improved all phonological, morphological, agronomic, quality grain characteristics, and physical and chemical properties of soil. High corn grain yield, Plant height, ear length, number of grains per ear, ear weight, grain weight per ear, thousand grain weight, harvest index, nitrogen, phosphorus, potassium, ash of grain, soil nitrogen, potassium and phosphorus concentration in soil , percentage soil carbon and soil electrical conductivity in conventional tillage more than no tillage. High grain yield were in conventional tillage systems with an average yield of 6057/85 kg per ha. This increase in grain yield was 4494/85 kg per hectare compared to the average no-till systems. Among the different sources of fertilizer for corn grain yield, plant height, ear length, number of grains per ear, cob weight, ear weight, grain weight per ear, thousand grain weight, harvest index, nitrogen, phosphorus, potassium, concentration magnesium, iron, zinc and ash grain , soil nitrogen, potassium and phosphorus concentrations, soil organic carbon, soil moisture

treatment were high in treatment in half mixed green manure, manure and chemical respectively. The highest grain yield were obtained in treatment of green manure mixed with half the manure and chemical treatment with the amount of 7019 kg/ha and the least amount of grain yield were obtained in the control with 2097 kg/ha. Grain yield was increased 65/23 percent with green manure compared to the control. Increased grain yield in green manure with 40 tons of manure treatments compared to control was equivalent to 4368 kg/ha. The interaction of year \times tillage \times fertilizer source showed that the highest maize grain yield was obtained in the second year in conventional tillage and green manure mixed with 50% of chemical and animal manure with average grain yield of 9,400 kg/ha. Based on the results of this experiment, mixed green manure with 50% of animal manure and chemical fertilizers in conventional tillage for maize access to high-grain yield in sustainable agriculture in the region can be Recommend.

key words: Corn, tillage, manure, fertilizers, green manure, elements



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**Effect of different fertilizers resource and tillage systems management on soil
physical and chemical characteristics and qualitative and quantitative yield of
maize (*Zea mays* L.)**

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