

## Abstract

In order to study productional, bio-environmental and economical aspects of farming systems of corn in Khuzestan yield, a split plot experiment in complete randomized design with three replications, was conducted at agricultural fields in Behbahan condition at 2015 and 2016. The experimental factors included different tillage systems (minimum (MT), reduced (RT) and conventional (CT)) as main plot and fertilizer pattern (biofertilizer (B), manure (E), recommended chemical fertilizer rate (H) and half of recommended chemical fertilizer (L), integrated biofertilizer and chemical fertilizer (BL), integrated manure and chemical (EL), and integrated biofertilizer and manure (BE) as subplot. Interaction effect of different tillage and fertilizer systems was significant for dry matter yield, grain yield, straw yield, harvest index, ear yield, number of row in ear, number of grain in row, total protein and height. The result showed that ELRT and LCT treatments caused the highest and lowest dry matter yield with 21938.3 and 12920.8 kg/ha, respectively. The highest grain (10005Kg/ha) belonged to ELRT treatment. Maximum input energy was 45886.7 MJ/ha in ELCT treatment. ELRT treatment produced the highest output energy with 309459.5 Mg/ha. The BMT provided the highest energy use efficiency (8.59), energy productivity (0.28 Kg/Mg). Interaction effect of different tillage and fertilizer systems was significant for bulk density, pH, Ec, organic matter, total N, available P and available K after harvest of corn. The most organic matter (2.73%) remained from ELCT treatment and least organic matter (1.84%) left in HMT and LMT treatments. ELCT and ECT released the maximum total N (0.136%) and BMT remained the minimum total N (0.073%) in soil. Economic analysis indicated that minimum total cost of production was 32097340 Rials/ha that related to BMT treatment. The maximum (69810430 Rials) net revenue was calculated ELRT. Application of minimum and reduced tillage, bio fertilizer and manure and integration with half of recommended chemical fertilizer, are the effective strategy for improving resource management in agriculture.

**Keyword:** cropping systems, efficiency of energy, input, net revenue, sustainable agriculture



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