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Thesis Submitted in Partial Fulfillment of the Requirement for the degree of Master
of Science (M. Sc) in Agroecology

Title

**Effect of animal, chemical fertilizer and sewage
sludge on quality, yield and ecophysiological
characteristic of safflower (*Carthamus tinctorius* L.)**

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2012

Abstract

Animal manures and sewage sludge production from urban waste as an alternative source of chemical fertilizers to increase soil fertility and crop production are known. In order to sewage sludge, manure and chemical fertilizers on quality crop yield and quality of safflower (*Carthamus tinctorius*) L. and also some chemical properties of soil test crop in years 90-89 as a randomized complete block design with four replications in the Zabol University research field conducted. The design with 7 treatments include: 100% sludge, 75% sludge + 25% manure, 50% sludge + 50% manure, 25% sludge + 75% manure, 100% manure (based on 40 tons per hectare) , chemical fertilizer (NPK), control (without any chemical fertilizer and organic) was performed. Quantitative traits, including traits (plant height, leaf number, branch number, count the number of grains per head, kernel weight, grain yield, biological yield, harvest index), quality characteristics (percent of the protein, percent of the oil, oil yield, carbohydrate) and the soil pH and EC. Results showed that manure was slightly increased in the all traits. So that the highest yield and yield components were related to 100% manure application. Sewage sludge also showed a significant increased in the all traits. The manure was increased compared to the control protein and carbohydrates, but this increase was not significant. It should be noted that there was no significant difference between treatments in terms of seed oil, but due to their difference in seed yield, oil yield showed significant differences. also results showed that the addition of fertilizers to increase soil pH, and EC of soil was significantly reduced, so 100% sludge lowest pH, and most EC, were related to 100% manure application.

Key words: Safflower, sewage sludge, manure, fertilizer, seed yield, oil yield.