

**Abstract:**

Due to the importance of the oil made from industrial plant of *Ricinus Communis* for the industry, and considering the effects of being well-fed and its plant density on gaining expected crops, an experiment was carried out in order to evaluate the best levels of chemical fertilizers and suitable plant density for *Ricinus Communis* to split plant in sort of designing Randomized complete block, so that in the main plat, chemical fertilizer was added in 4 levels: 1- Control (without fertilizers) 2- (50kg Potassium +75kg Phosphor+100kg Nitrogen) per hectare 3- (75kg Potassium+100kg Phosphor+150kg Nitrogen) per hectare 4- (100kg Potassium+150kg Phosphor+200kg Nitrogen) per hectare and within the subplat, a plant density with the row distance of (25, 35 and 45 cm) was applied. The studied features were the followings: plant height-amount of the seeds in each plant, the weight of 1000 seeds, harvest index, biological yield, and yield of the seeds in hectare and the percentage of the oil and such as total chlorophyll content, and phonological features like date of first appearance of bud, number of days from appearance of bud till being fully grown. The results showed that different amounts of fertilizer application caused a meaningful effect on all features of the studied case except the weight of 1000 seeds and oil percentage ($P>0.01$). Weight of 1000 seeds, harvest index, chlorophyll and oil were not affected by the plant density factor but it had a meaningful effect on other features. The best yield of the seeds was recorded in fertilizer level of (100kg Potassium+200kg Nitrogen) and the least one in control level (1st one). Among the different experimented cases, plant density of 66000 plant in a hectare with the fertilizer level of (100kg Potassium+150kg Phosphor+200kg Nitrogen) had the best yield of the seeds.

Key words: percentage of the oil, harvest index, yield of the seed, chlorophyll.
Effect of fertilizers and plant density on quantitative and qualitative traits of castor bean (*Ricinus communis*) in Sistan region

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