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Effect of organic and chemical fertilization on growth, yield, seed oil content and oil profile of garden cress (Lepidium sativum L.)

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Lepidium sativum plant and seeds are considered as one of the popular medicinal herbs used in the community of Sudan, Saudi Arabia and other Arabic countries as a good mediator for arthritis and bone fracture healing in the human skeleton. The objective of the study was to determine the effect of organic and chemical fertilization on plant growth, seed yield, seed oil content and oil profile of garden cress under the environmental conditions of Khartoum state (Shambat). The design of the experiment was a randomized complete block design with four replicates. Treatments were namely, organic fertilizer (chicken manure) at the rate of 11.9 t/ha, the chemical fertilizer (NPK 15:15:15) at two rates, 476 kg/ha (NPK1) and 952 kg/ha (NPK2) and the control with no fertilization. The results indicated that the number of leaves per plant, number of branches, plant fresh and dry weight, showed significant (p 0.05%) differences among different treatments. Organic fertilizer resulted in the highest values, followed by chemical fertilizer and then the control. At harvest, NPK2 gave the highest values of total number of capsules per plant, seed yield (t/ha), seed oil content and oil yield (t/ha). It was followed by NPK1, organic fertilizer and the control. Plant height and weight of 1000 seeds were not significantly (p=0.05%) affected by different treatments, but the control recorded the lowest values. There were no variations among the organic fertilizer, chemical fertilizer and the control in oil chemical profile regarding the main component (Cis-10-heptadecenoic acid). Cis-13,16-docosadienoic acid was present in NPK1 treatment only. Stearic acid was detected in plants treated with organic and chemical fertilizers but was not present in the control. Generally, garden cress seems to respond positively to fertilization, regardless of the type of fertilizer (organic or chemical) used. More scientific research is required to improve the agricultural practices of garden cress under Sudan conditions.

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