

Abstract

One of the factors limiting the yield of plants, especially oily seeds, is the occurrence of drought stress. Therefore, efficient soil moisture management and study of metabolic changes in response to drought stress are of great importance. and Plant nutrition is one of the important factors for controlling drought limitation and yield. This research was carried out in order to study the effect of organic growth stimulus and calcium on vegetative and reproductive characteristics of rapeseed cultivar Dalgan in drought stress conditions in research farm university of zabol in 2017-2018 split plot design based on RCBD with three replications. The treatments consisted of irrigation cut off levels based on the Phenological growth stages (Sylvester-Bradley encoding system) at three levels: I_1 = control (complete irrigation), I_2 = irrigation up to stage The growth rate code is 2.20 (twenty internally identified) and I_3 = irrigation up to stage The growth rate code is 5.9 (all pods are more than 2 cm long) and subsidiary factor consists of four levels of fertilizer treatment: F_1 = control (pure water solution), F_2 = Hamoon Green 1 liter at 10 liter + calcium, F_3 = Hamoon Green 1 L at 20 liter + calcium, F_4 = Hamoon Green 1 liter at 30 liter + Calcium. The traits examined are: plant heigh, stem diameter, number of pods, number of seeds per pod, 1000 seed weight, grain yield, biological yield, harvest index, oil percent, chlorophyll a, b, total and carotenoid content, proline, selenium and calcium content of grain and catalase enzyme. The results of simple effects showed that irrigation up to stage the growth rate code is 2.20 was significantly reduced plant heigh, stem diameter, number of pods, number of seeds per pod, biological yield, harvest index and oil percent. On the other hand, spraying of hamoon green 1 liter at 10 liter + calcium treatment increased these traits except oil percentage and harvest index. Also, the results of interaction effects showed that the highest amount of 1000 seed weight, grain yield, chlorophyll a, b, total, carotenoid, selenium and calcium content of seed from full irrigation treatment with spraying of hamoon green 1 liter at 10 liter + calcium and the highest amount of proline and catalase enzyme was observed in irrigation up to stage the growth rate code is 2.20 with spraying of hamoon green 1 liter at 10 liter + calcium. The highest of these traits was obtained from spraying of hamoon green 1 liter at 10 liter + calcium treatment Generally, spraying of the organic growth stimulator can be moderates the harmful effects of drought stress in rapeseed.

Key words: Calcium, Grain yield, Hamoon green, Oil percentage, Proline, Selenium



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**Effect of Growth stimulator and calcium on
vegetative and reproductive properties of rapeseed
under drought stress**

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