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Document Title : *Effect of Drought and salinity on the Germination and growth of sweet basil*
تأثير الجفاف والملوحة على انبات ونمو نبات الريحان أو سيمم لاسيليكوم

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Abstract : The present study was to investigate the effect of drought and salinity on germination, growth and some physiological processes of *Ocimum basilicum* L. The adopted levels of soil moisture were 100%, 75%, 65%, 50% and 35% field capacity (f.c.) while the salinity treatments were (0, 10, 25, 50, 75, 100, 150, 200 mM NaCl). The following parameters were studied: germination, photosynthetic pigments, plant height, root length, leaf area, fresh and dry weight, water content, growth rate, minerals (Calcium, Potassium, Magnesium, Sodium and Phosphorus) and other metabolic products such as nitrogen, proline and proteins. The results are as follows: Soil water deficit caused a reduction in the daily and final germination rate, decreased the content of Photosynthetic pigments, the plant height, leaf area, fresh and dry weight but, however, there was an increase in the length of root system. A significant increase in the relative water content of shoot and root was noticed in plants grown under 35% f.c., but there was a reduction in the growth rate under the same treatment, that were noted between the first and second harvests. The increase of water stress caused an increase of Mg^{+2} , Na^{+} ; Ca^{+2} and Na^{+} in the shoot, specially in the second and last harvests where by the K^{+} content was increased. In the root, there were an increase in Ca^{+2} , K^{+} but the decrease in Mg^{+2} and Na^{+} has no clear trend. Nitrogen, Proteins and Phosphorus were reduced with the increased in the water stress, specially in plants grown under (65%, 50%, and 35% f.c.) a remarkable increase in the proline content was noticed with the increase in the water stress. The increase in Salinity has induced a reduction in both the daily and final germination rate, but however, the germination rate was higher in the light than in the dark, in all treatments. The photosynthetic pigments, plant height, root length, leaf area, fresh and dry weight were all significantly decreased with increasing salinity, specially in plants grown under 100, 150 and 200 mM NaCl. The plants have died at these treatments before the last harvest. The relative water content of the shoot and root and the growth rate were significantly reduced with increasing salinity. There was a high accumulation of Na in the shoot of *O. basilicum* L. the shoot content of other cations (K^{+} , Ca^{+2} , Mg^{+2}), N. and Proteins also increased while the proline content showed a remarkable increase.

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