

Abstract

In order to study the effects of drought stress and biofertilizers (compost and vermicompost) on quantity and quality characteristics of borage (*Borago officinalis*) a field experimental was conducted in split plot based on a randomized complete block design with three replications in 2011 at University of Zabol research farm. Treatments included drought stress tree: S₁: control (100% FC), S₂: moderate stress (80%FC) and S₃: severe stress (60% FC) as the main plot and application of biofertilizer; N₁:control, N₂: 40 ton compost ha⁻¹, N₃: 4 ton vermicompost ha⁻¹ as sub plot. Results indicated that the drought stress had significant impact on dry weight of borage and decreased it compared with the control. But the use of organic fertilizers, composting, especially in stress levels could reduce the severity of the effects of drought stress. The highest biological yield (1342 Kg/ha) obtained from the control irrigation (100% FC), had not significant difference with S₂ (80% FC). The greatest yield and other morphologic characteristics (plant height, inflorescence height, leaf number, number flower, number of lateral branch) were obtained in no-stress along with application of 40 ton compost ha⁻¹. Mucilage content increased with increasing drought stress (80% FC) severity. The highest yield with 100% Field capacity (S₁)use dried flowers in compost production and performance goals with the increased stress levels declined. Most morphological traits of plant such as height, leaf number and height of inflorescences per plant was not in drought conditions were obtained using 40 tons of compost. Generally mild drought stress (80% field capacity) were added to the percentage of mucilage. Most soluble carbohydrates and proline in high stress levels (60% of crop capacity) and lowest in the full irrigation (control), respectively. From the results it can be concluded that for more dry yield production from borage and having more muscilage, irrigation up to 80% FC (S₂) is needed but if the mean of borage cultivation be production of more flower, compost application is suitable.

Keywords: Medicinal plants, Drought, Compost, Vermicompost, Mucilage



University of Zabol
Graduate school
Faculty of Agriculture

**The Thesis Submitted for the Degree of M.Sc
Horticultural Science-Medicinal Plant**

Title:

**Effects of drought stress, compost and
vermicompost fertilizers on qualitative and
quantitative characteristics borago
(*Borago officinalis*)**

Supervisors:

Dr. A. R. Sirousmehr
Dr. B. Siahsar

Advisor:

Dr. M. Gholinezhad

By:

R. Gholinezhad

June 2012