

## Effects of Drought Stress on Red Bean (*Phaseolus vulgaris* L.) Cultivars during Post-Flowering Growth Stage

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**Abstract :** A pot experiment conducted to evaluate the response of two red bean cultivars, Sayad and Derakhshan, to water deficit stress during post-flowering growth stage and recovery potential of plants after stress. Treatments were included regular irrigation or control, water deficit during flowering stage, water deficit during pod formation and water deficit during pod filling period. Results showed that plant height had positive effects on yield of cultivars so that, the tall cultivar, 'Sayad', had higher yields. Stress application during flowering stage showed the highest negative impact on plant height and subsequently yield. The longest and the higher number of pods as well as the greatest number of seeds in pods were recorded in control treatment in 'Sayad'. Stress application during pod formation resulted in the minimum amount of all studied traits in both cultivars. Stress encountered during seed filling period had the least effect on number and length of pods and seed/pod. However, 100 seeds weight significantly decreased. The highest amount for 100 seeds weight was record in control plants in 'Derakhshan'. Under all treatments, 'Sayad' had higher biologic and seed yield compared to 'Derakhshan'. The least amount of yield was recorded during stress application in pod formation and flowering period for 'Sayad' and 'Derakhshan' respectively. Harvest index of 'Sayad' was more affect by stress application. Data related to photosynthetic rate showed that during stress application, 'Derakhshan' owned rapid decline in photosynthesis. Beyond stress alleviation and onset of irrigation, recovery potential of 'Sayad' was higher than 'Derakhshan' and this cultivar was able to rapidly restore the photosynthesis rate of stress faced plants near control ones. In total, stress had lower impacts on photosynthetic rate of 'Sayad' cultivar.

**Keywords :** common bean, water stress, yield, yield components, photosynthetic rate

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