

**PHYSIOLOGICAL SCREENING ANALYSIS OF POTATO VARIETIES IN ISFAHAN  
CONDITIONS**

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**Abstract**

The major potato species grown worldwide is *Solanum tuberosum*, a [tetraploid](#) with 48 [chromosomes](#). There are also four diploid species, 24 chromosomes, two triploid species, 36 chromosomes and also, one pentaploid cultivated species, with 60 chromosomes. There are about 5,000 potato varieties worldwide, out of which, about 200 wild species and subspecies, many of which can be cross-bred with cultivated varieties. The world dedicated 18.6 million hectares for potato cultivation. The average world farm yield for potato was 17.4 tons per hectare. Potato farms in the United States were the most productive, with a nationwide average of 44.3 tons per hectare. United Kingdom was a close second. In this manuscript, the physiology of the main potato cultivars has been analyzed in glass- house and field conditions levels. The phenotypic diversity of potato (*Solanum tuberosum*) was assessed using physiological characteristics, verifying how this diversity is distributed among the main potato cultivars in the growing areas of Iran. A total of eleven cultivars, Ramose, Sante, Shepody, Marfona, Maradona, Milova, Santana, Boren, Cosima, Granola and Agria, that practice traditional agriculture, were evaluated under vivo and situ experimental condition in Isfahan, Iran. Seven physiological, floral and physiological vegetative aerial descriptors such as growth rate, net assimilation rate, leaf area duration, leaf area ratio and specific leaf area were recorded. The descriptors were evaluated using SAS software program and their means compared by DMRT tests. Certain defined groups were observed, including that the diversity of the cultivars are structured with a considerable physiological variation in between the with a very high significant growth indices.

**Keyword:** Potato, physiology, morphology, cultivars, Isfahan