

O-63(216)**THE POTENTIAL AND LIMITING ENVIRONMENTAL CONDITIONS ON FRUIT TREES GERMPLASM AND YIELD OF ESTABLISHED ORCHARDS IN IRAN**

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The diversity in climates in Iran creates the possibility for producing a high quality yield of various fruit crops species. The Iranian fruit industry currently consists of more than 2.5 million ha orchards with more than 15 million tones annual fruit production. Iran holds the first position with the exceptional quality in the world for export of some fruit crops such as dates, pistachios and pomegranates, so there is a good potential for increasing good fruit production to provide the world's horticultural markets with a wide diversity of fruit crop species. Although, the general climatic conditions creates a positive potential features for Iranian fruit industry in terms of producing wide range of fruit crops, but some environmental conditions showed a limiting factors in some regions and years. The most important limiting environmental and climatic factors are salinity, drought and spring frost damage to the flowers and fruit. In addition, the impact of global and local climate change and fluctuations during winter as showed in the 30 years long term basis, faced orchardists with disasters such as that happened during early year 2008 and 2013. The severe cold winter, damaged to most of pomegranate and olive orchards in Qum, Saveh and other growing regions in 2008 damaged to more than 95% of trees. In addition, the citrus orchard in the north of Iran in Mazandaran and Gillan provinces severely damaged by winter cold in early 2013. In addition, the late spring frost damage to flowers is another limiting climatic factor to most of Iranian fruit orchards such as almond, apricots, pistachios and other fruit species. The serious spring frost damage caused the loss of more than 95% of Asian pear fruit yield at Tarbiat Modares University (TMU) orchards in 2014 growing season. In addition, reports in 2015 season indicated almost near 100% damage to the apple flowers in the fruit orchards in Khosrov Shirin region, near to Abadeh city in Fars province. In order to overcome the negative impact of climate change on the Iranian fruit germplasm and diversity, research on different aspects of fruit trees is continuing at TMU and other universities and research institutes of Iran. Some of the objectives for research in the breeding as well as production purpose are: Evaluation of Iranian fruit trees gene pool for better fruit set and producing higher crop yield under specific set of environmental conditions; Screening fruit trees germplasm under different climatic conditions with emphasis on chilling requirement; Selection of cold resistant and late flowering cultivars; Selection of suitable rootstocks for the specific soil and climatic conditions with regard to controlling tree vigor and improving resource utilization such as water and fertilizer; Evaluation of vegetative and reproductive characteristics of trees and resistance to the pests and diseases; Study for suitable fruit harvest time and better postharvest fruit attributes and storage; Selection of genotypes resistant to biotic and abiotic stresses in relation to global and local climate change. The rich fruit trees germplasm and gene pools of Iran as a good working materials as well as effective foreign exploration and plant introduction through the regional and international co-operations will warrant achieving the above mentioned goals through the specific fruit trees breeding programs.

Keywords: Climate change, spring frost damage, winter cold damage, cold hardiness, plant diversity, fruit tree breeding. Germplasm evaluation.