

# Off-Season Fruit Production

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**Abstract:** Off-season fruit growing is expressed as to take the harvest time early or late than that of the normal growing season. Off-season production is preferred both to meet the fruit demand of off-season and to sell the products with higher price. In world, people who are good in economic level buy fresh fruit in every season. For example, fruits produced in the world's Southern Hemisphere countries are sold as fresh fruit to Northern Hemisphere countries in the winter months. Besides, some countries of Northern Hemisphere are trying to making the off season production in greenhouses or protected areas to meet fruit demand of off season. In recent years, the cultivation of fruit trees in pots have been started to grow for off season fruit production. The plants, growing for off-season is put into cold storage to meet their cold accumulation. The plants are achieved cold accumulation then transferred to open field or protected areas to produce fruit desired periods. One of the goals of our country in the fruit growing is to be a brand in off season fruit in foreign markets.

## Introduction

Turkey, due to its geographical position in the world has a very favorable climate for fruit species except tropical fruits. In this respect, Turkey is the birth place of the culture of horticulture and origin of the many fruit species growing in the world (Ağaoğlu et al., 1997).

World production and consumption of fruit has rapidly changed since 1950 to today. The effects of these developing are listed as recovery of exotic fruits by people by improving of travel opportunities; delaying of fruit breakdown by developing of cold storage methods and transportation network; shortening of travel time; transforming of fruits to unbreakdown form by developing processing methods; improving of distribution system; accelerating of advertisement and information and improving of research on production methods, mechanization, technological innovation (Storey, 1969; Samson, 1980).

Many people around the world and especially in the Northern Hemisphere with a high economic level want to find quality fruits in the market in every season. This is why fruit growing developed in the some Southern Hemisphere countries such as Chile, South Africa, Australia, New Zealand and they started to sell them during the winter period to the Northern Hemisphere countries. Besides, some countries in the Northern Hemisphere have been tried to fill market demands of certain fruits by off season production by heated or not heated greenhouse cultivation (Kaşka, 2004).

Mean of off-season production is more profit for producers. Production is continued throughout the year not related to climate conditions. Protected areas have been made for this purposes and regularly year-round production has supplied. Production in the protected areas is firstly started as out of production under plastic tunnels in low tunnel system and then it has continued as greenhouse growing. Providing of ecological conditions requested by plants is the main factor in production in the protected areas in other words off-season production. In the protected growing, cooling in the summer months against the high temperature and shading against to high radiation even darkening were made, and moistening and ventilation were controlled (Günay, 2008).

Purposes of protected cultivation of fruits are to provide early harvest, protect the fruits from the late frost, late summer rains, diseases and pests (Fideglli, 1990).

Stone fruit cultivation in protected areas was first searched in Italy, Israel and Australia to dominate the global market by providing earliness and very positive results have been obtained. Some applications such as defoliation, spray of KNO<sub>3</sub>, DNOC and mineral oil and evaporative cooling recommend meeting the need of chilling requirement, breaking dormancy and getting more yields in protected areas and open field growing (Erez et al., 2000). Many experiments for off-season production were done in Turkey and world in protected areas and open fields (Erez et al., 1993, 1995, Erez et al., 1998, Ertoy and Ulger, 2003, Son and Kuden, 2003, Rossetto and Bortoletto, 2004, Manochai et al., 2005, Eltez and Tuzel, 2007).

In recent years, some factors as advances in greenhouse construction materials, the use of dwarf rootstocks and controlling of ecological factors of greenhouse by computers has led to an increase in greenhouse cultivation of fruit. However, there is still many problems in protected area growing such as demand of chilling requirement, productivity, fruit set, fruit quality, training systems and construction problems (Kamota, 1988).

Southern coast of Israel, Turkey, Spain and Italy in the subtropical climate zone are suitable for earliest fruit species. However southern coasts of Turkey are warmer than Spain, and also south part of Spain is warmer than Italy. For this reason, earlier production is obtained in Turkey from these countries. Spain and Italy is in competition with each other for the German market. Because of this competition, growers of Italy have started to grow fruits in protected areas to close day differentiation from Spain (Ertoy, 2003). Growing of stone fruits in greenhouse besides had positive effects earliness; it positively affects productivity and fruit quality characteristics (Kuden et al., 2001).

In recent years, the fruit trees, for the purpose of the off-season production have grown in pots in the open field or protected areas to make production desired time. It is possible to obtain high density planting and dwarf growing by growing of fruits in small pots. For example, fruits of tropical and subtropical climate can be grown in including frost risk areas and temperate zone fruits is also be grown in the hot zone. Additional the fruits are grown purpose of ornamental or to eat fruits from branches of plants (Demiral and Ulger, 2009).

Since fruits contain vitamins, antioxidants, unsaturated fatty acids, enzymes and proteins they have great significance for human nutrition. Therefore, in humans, fruit consumption is gaining importance day by day in terms of health. People want to consume the fruits not only in growing season but also in out of growing season. So, out of season production in fruit has widespread to meet the needs of fruits of people in year-round and since to get a good income to farmers. The very early or late season fruit removal provides better prices to sell. As a result, the growers tend to produce off-season fruits.

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