

Avocado maturation in western Crete as an indicator of climate change in cool subtropical areas

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Introduction

Crete is located in the north border of the subtropical zone, where climate changes are intense. Therefore, factors sensitive to climate changes will affect various crop parameters. In avocado crop, dry matter and oil content are the main factors of fruit maturity, harvesting time and flavor quality (Pic.1).

Material & Methods

Harvesting time as indicated by dry matter according to each variety, data of dry matter and oil concentration of the years 1990-1991 and 2016-2019 were compared in western Crete. The area was divided into three regions according to harvesting time; 1: late, 2: early, 3: middle. The analyses were occurred on fresh fruit kept on +5° C in less than 30 hours from harvesting.



Pic.1. Mature Bacon, Fuerte and Zutano avocado fruits.

Results & Discussion

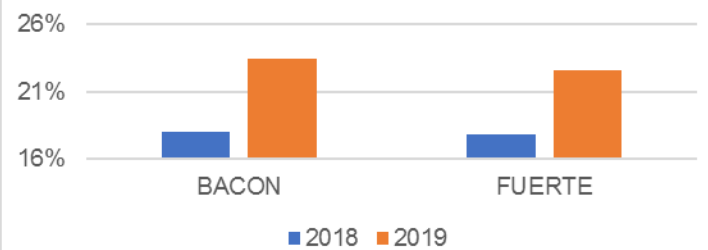
The results revealed that the dry matter on fresh avocado fruit increased during the last three years. Specifically, Fuerte and Zutano in regions 2 and 3, Bacon and Fuerte in region 2 had statistically important increase in 2019 compared to 2017 (Pic.2).

The dry matter of Fuerte variety had the highest rate in 2019 in regions 1 and 2, compared to the years 1990-1991-2017, although, not statistically important. In addition, oil concentration of Fuerte (region 1) in 2019 almost doubled in comparison to 1990 and 1991.

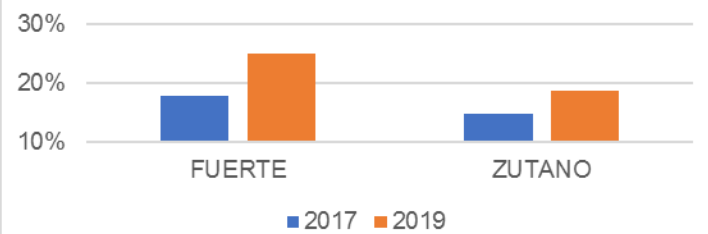
It turns out that the harvesting time in the most common avocado cultivars is getting earlier in some regions and cultivars, compared to previous years. On Zutano variety the time of harvesting on region 2 is dropping from 20-Nov in 1990, to 29-Oct in 1991 and 14-Oct in 2019. Accordingly, on Fuerte variety on region 1 harvesting time was 19-Dec on 1990, 13-Dec on 1991, 27-Oct on 2017 and 12-Sep on 2019.

Although dry matter and oil concentration follow different progressions in avocado maturation, they are representative indicators of the climate effect on avocado crop and the changes that happen in the cool subtropical areas, as Crete. It needs further study to examine whether climate changes will affect other parameters on avocado crop, such as flowering to harvest time and cultivars order of harvest.

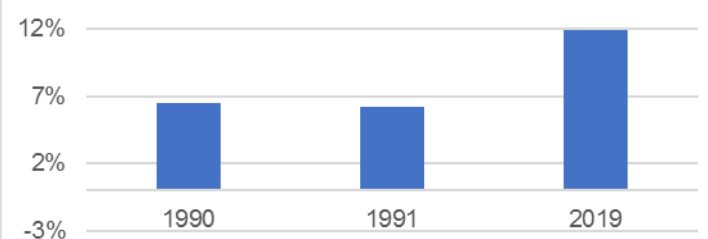
DM on avocado fruit on September (region 2)



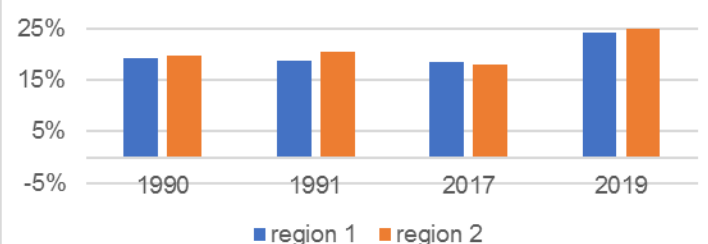
DM on avocado fruit on October (region 3)



Oil concentration on October on FUERTE avocado fruit



DM on October on FUERTE avocado fruit



Pic.2. Comparison of Dry Matter (DM) and Oil Concentration on avocado fruit in western Crete in the last 3 decades.

