

The Sensory and Aromatic Profile of the Koroneiki variety in Messinia, Greece

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- **International Olive Council**
- **Captain Vasilis Foundation**
- **Pharmacognosy and Natural Products Chemistry
Department – National and Kapodistrian University of
Athens**
- **Multichrom Laboratory**
- **Kalamata Olive Oil Taste Laboratory**

aim of the study

measurement and mapping the sensory attributes
of Koroneiki olive oil in Messinia produced:

- under local cultivation conditions
(conventional cultivation, rain-fed fields)
- healthy olive fruit
- different maturity stages
- extracted under typical conditions

study design

- nine mills
- different maturity stages
- two samples of early, middle and late stage of harvest period per mill
- sampling of olive fruit and oil



parameters

- maturity index of olive fruit
- sensory analysis of olive oil
- aromatic profile of olive oil
- basic chemical parameters
- oleocanthal and oleacein

maturity index of olive fruit



stage 0



stage 1



stage 2



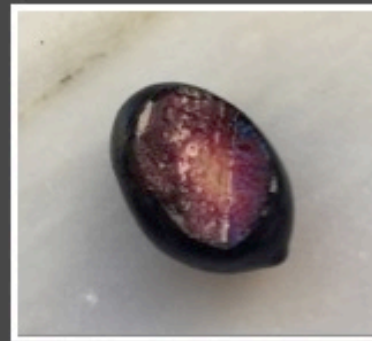
stage 3



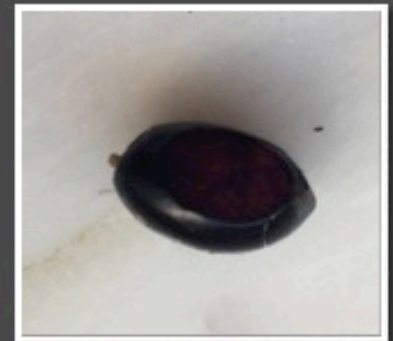
stage 4



stage 5



stage 6



stage 7

maturity index of olive fruit

- from 0.63 to 5.15



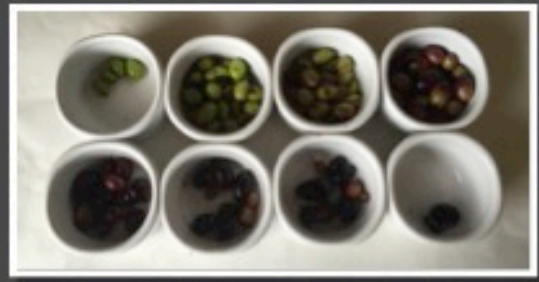
maturity stages



maturity index 1.06



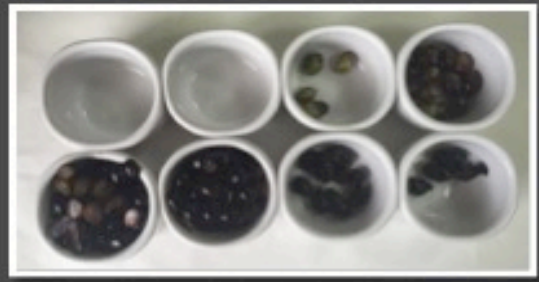
maturity index 1.52



maturity index 2.67



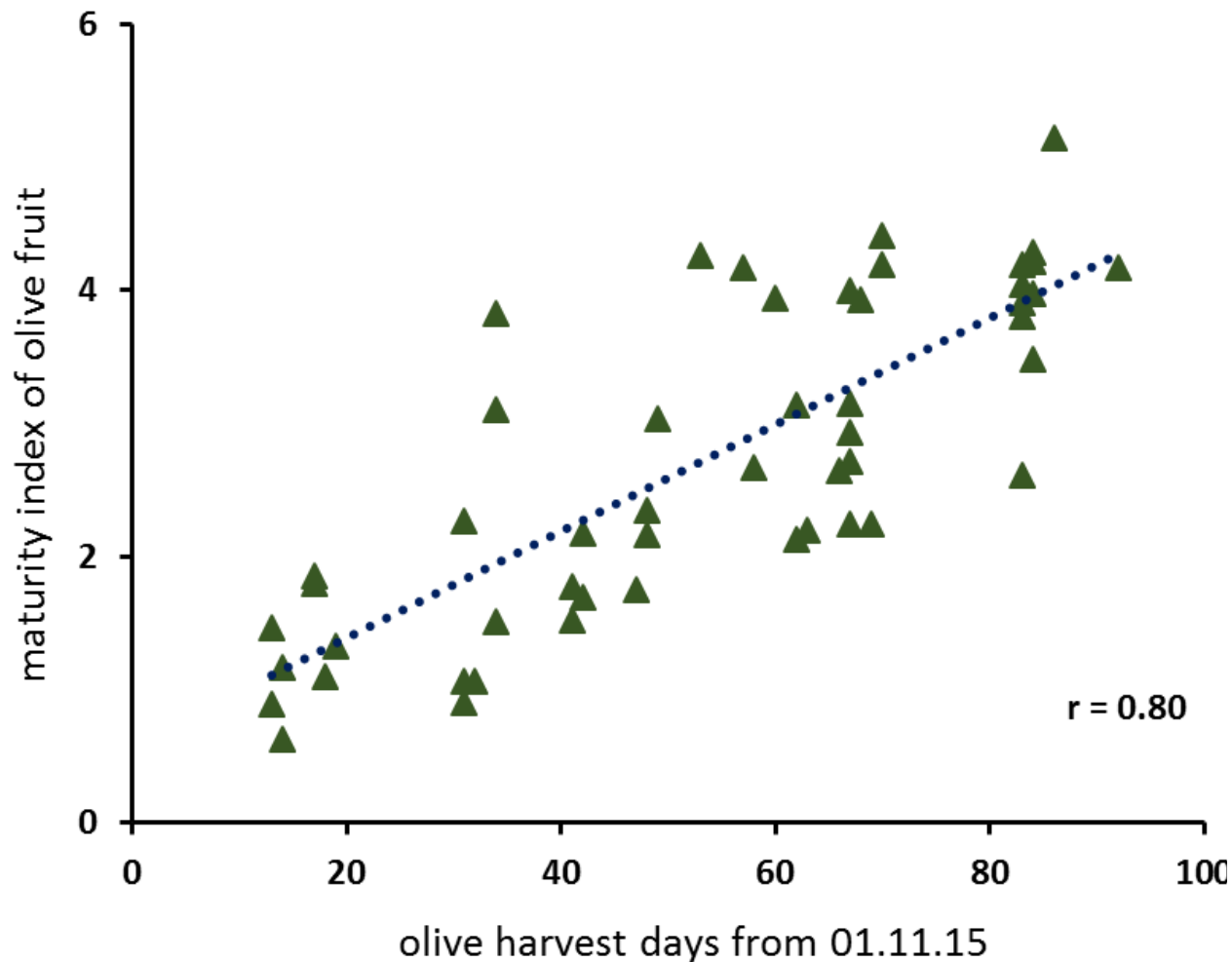
maturity index 3.14



maturity index 4.41

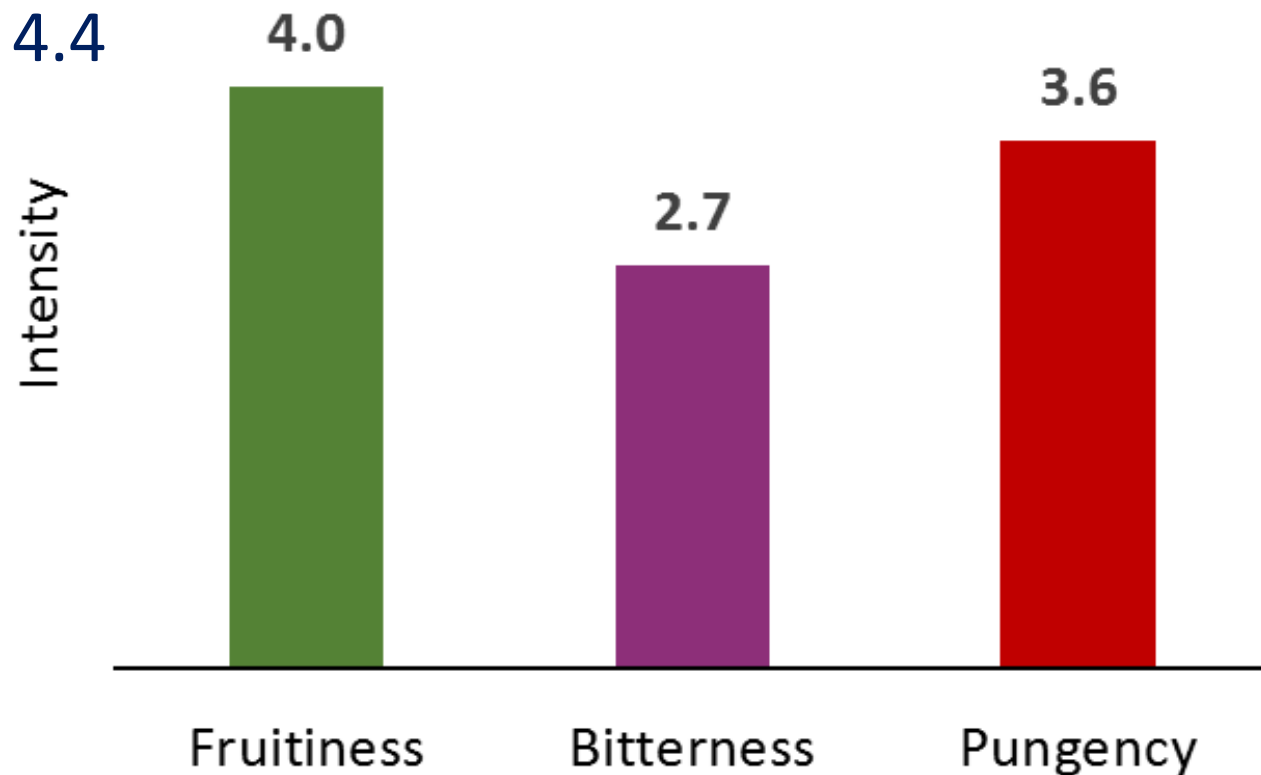
maturity index to harvest period

- strongly correlated

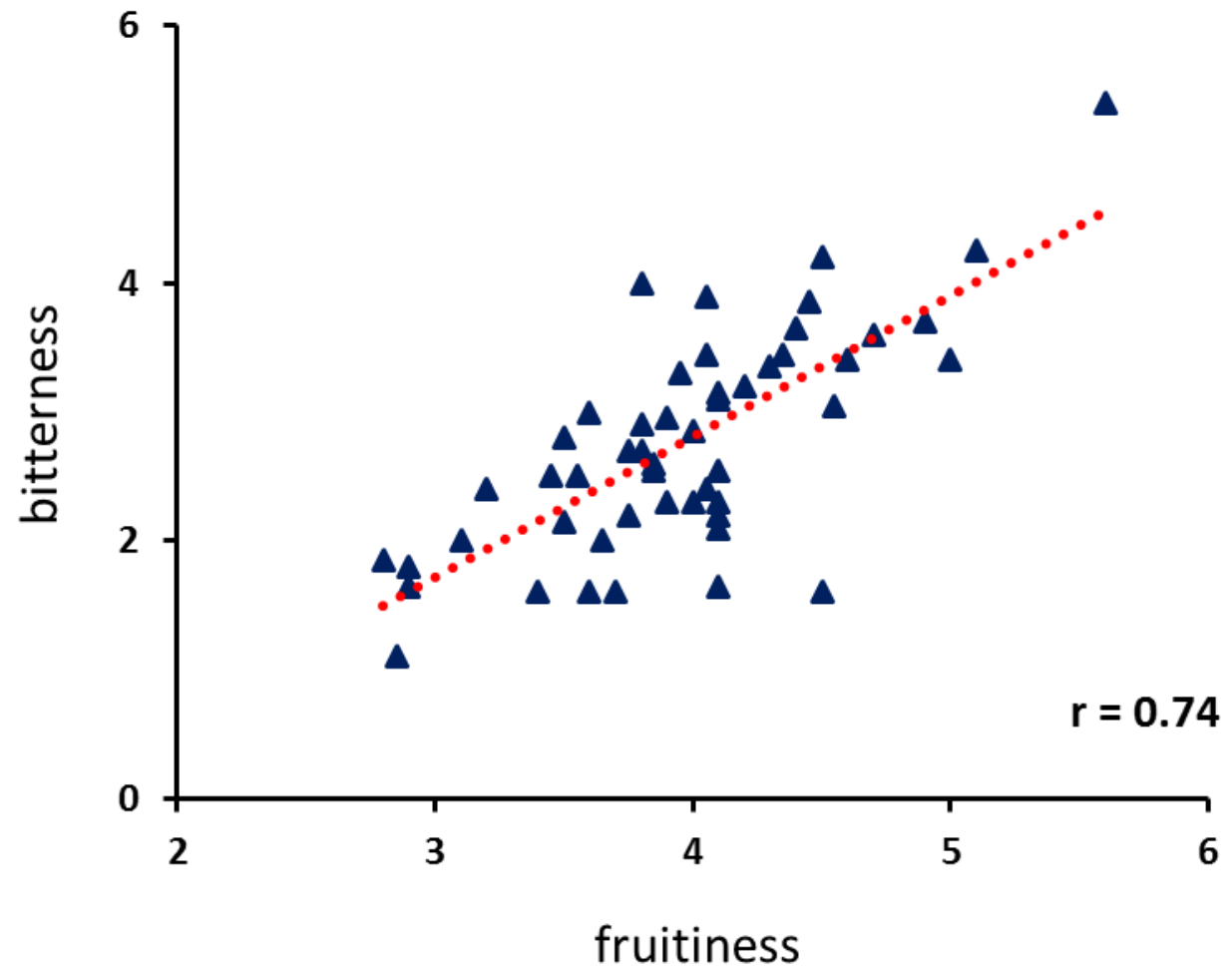


sensory profile of Koroneiki in Messinia

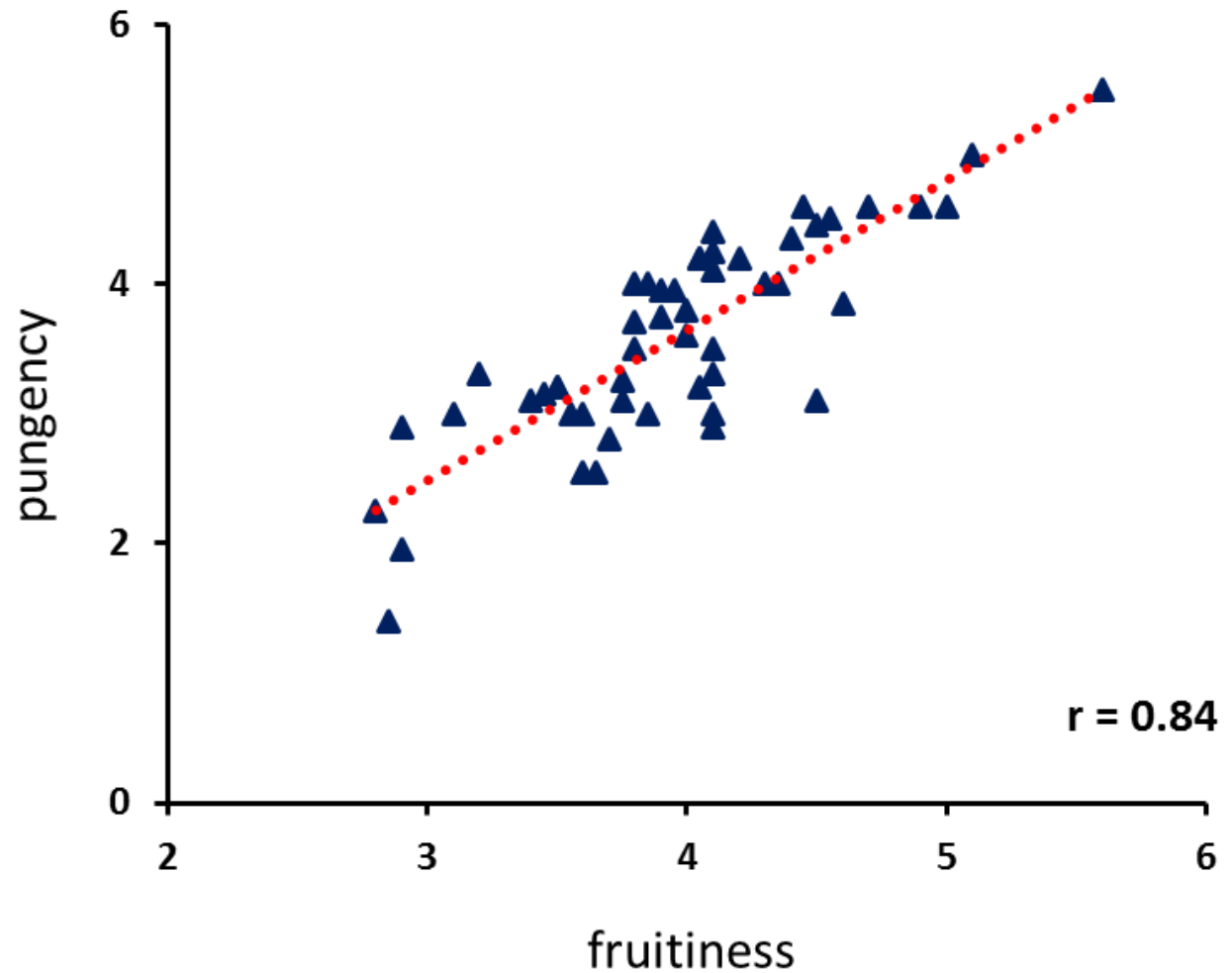
- fruitiness: 3.4 – 4.6
- bitterness: 1.8 – 3.6
- pungency: 2.8 – 4.4



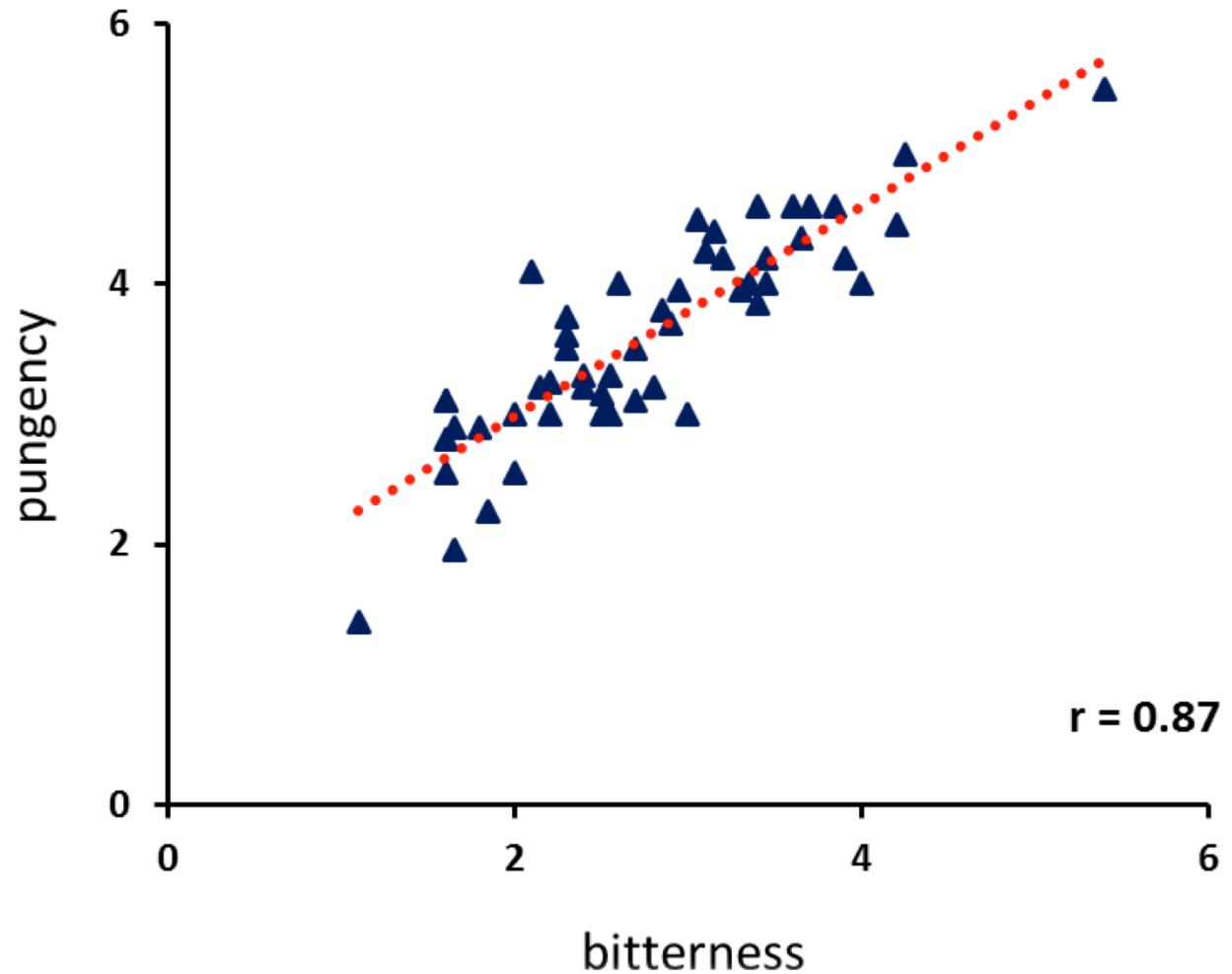
- fruitiness and bitterness are strongly correlated



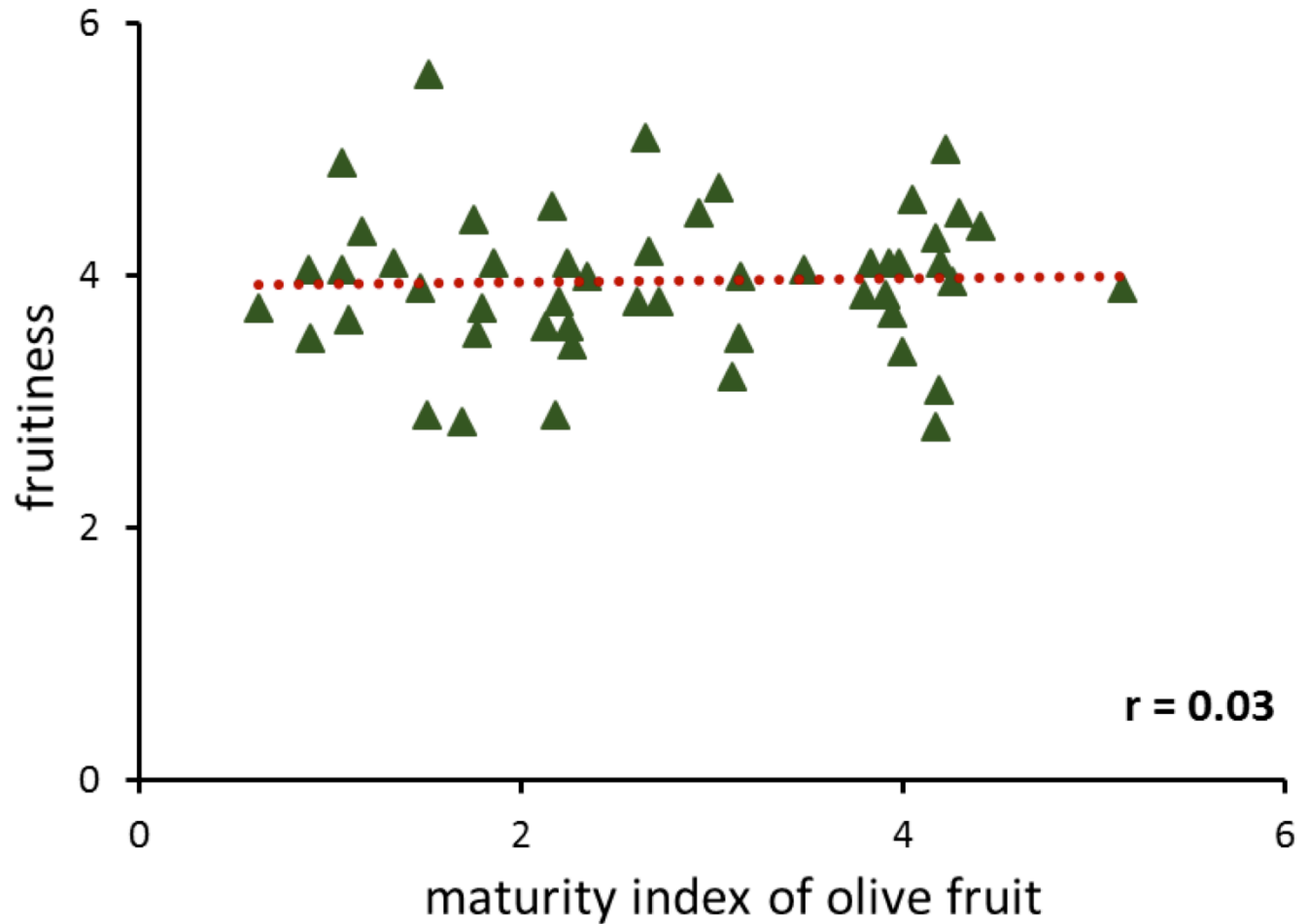
- fruitiness and pungency are strongly correlated



- bitterness and pungency are strongly correlated

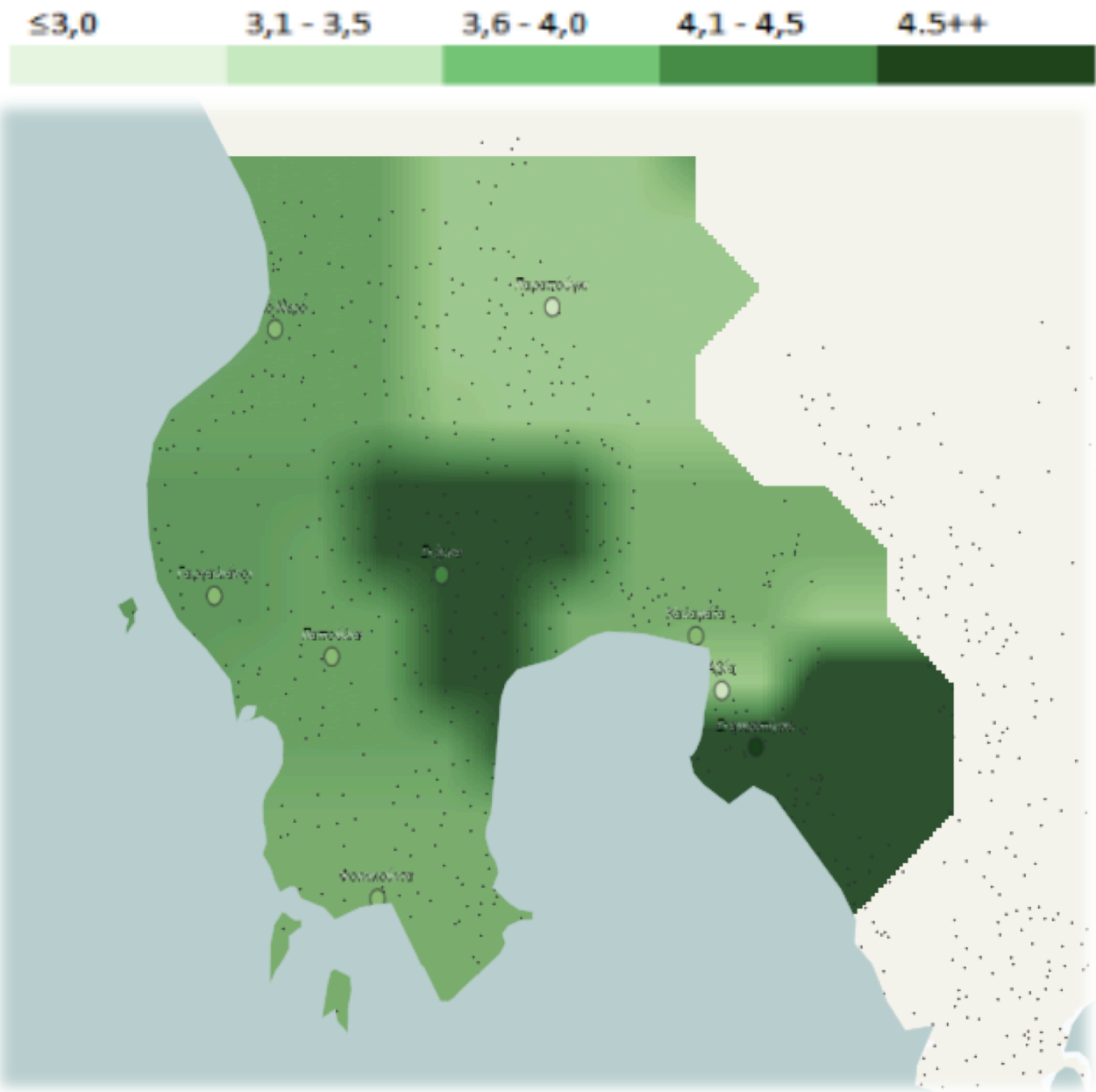


- fruitiness was not affected by maturity stage



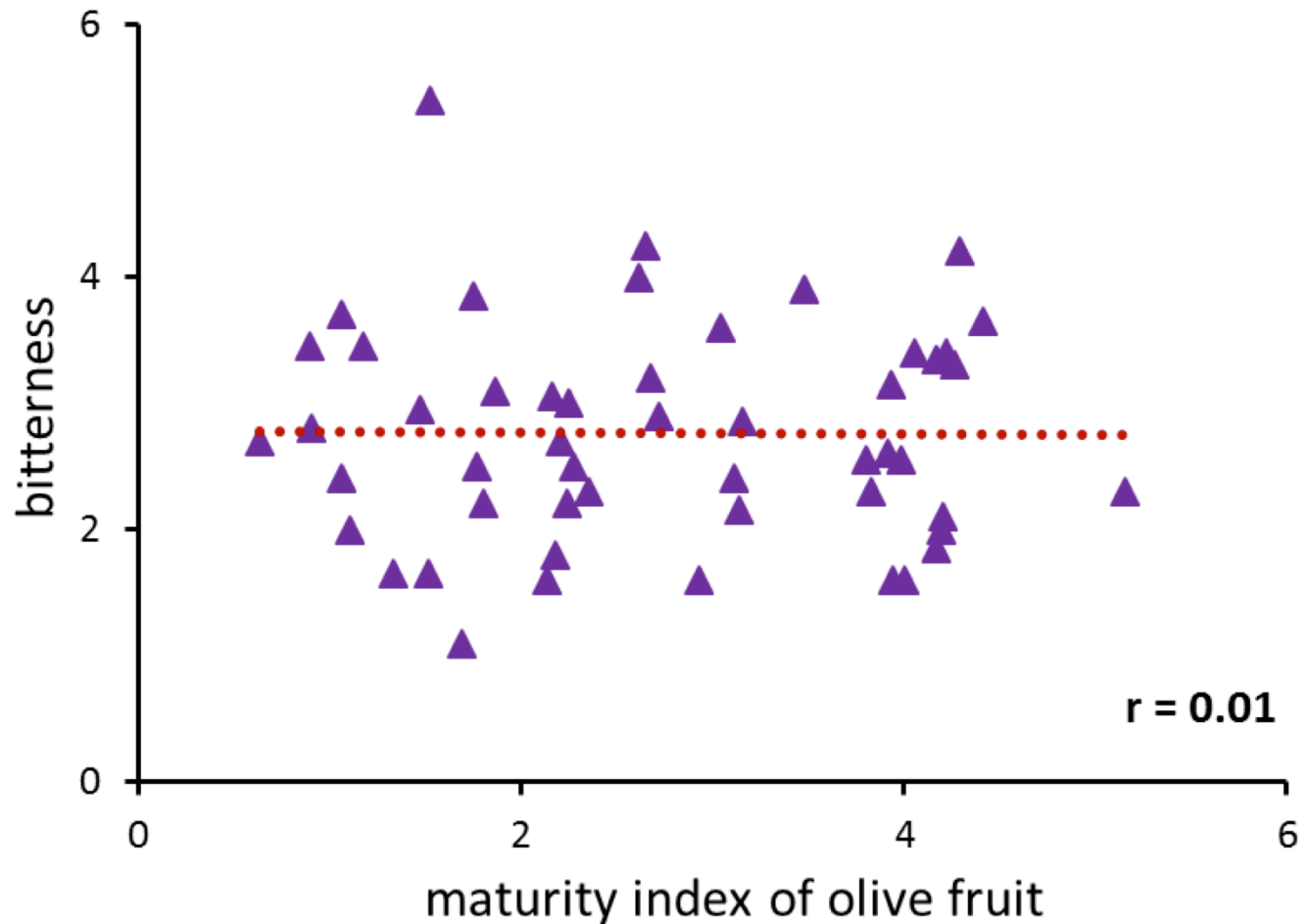
sensory profile of Koroneiki in Messinia

- distribution of fruitiness



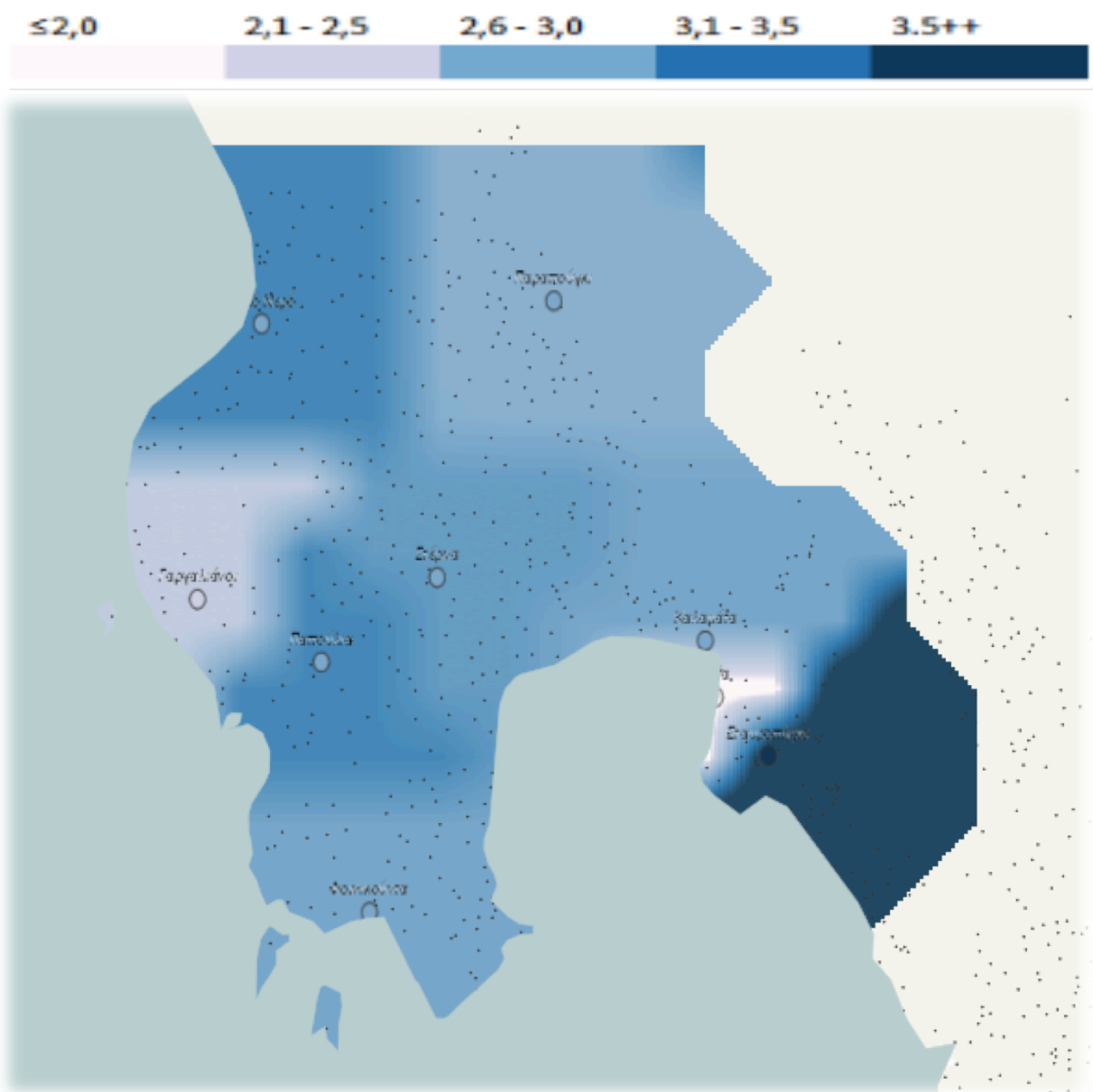
sensory profile of Koroneiki in Messinia

- bitterness was not affected by maturity stage



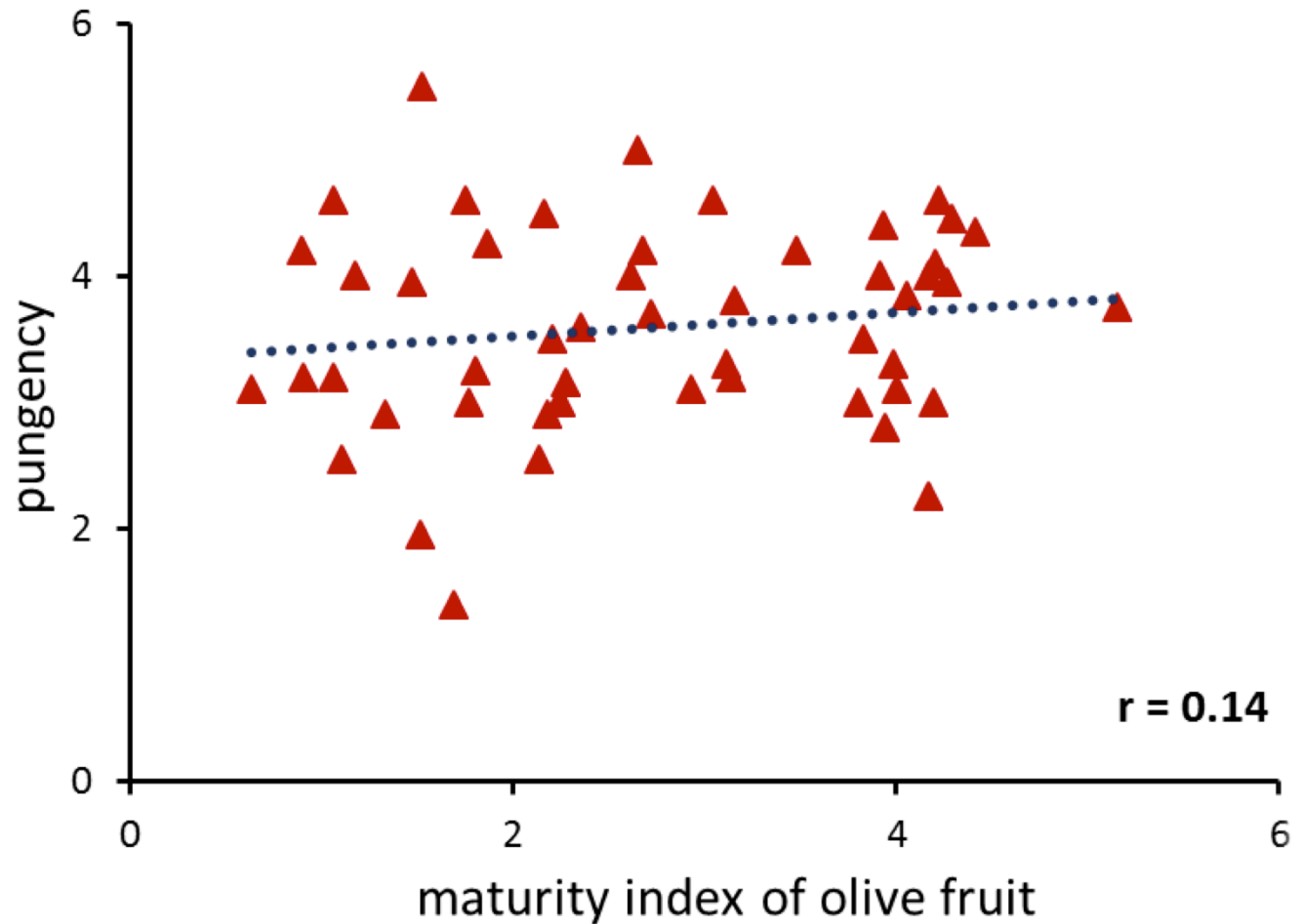
sensory profile of Koroneiki in Messinia

- distribution of bitterness



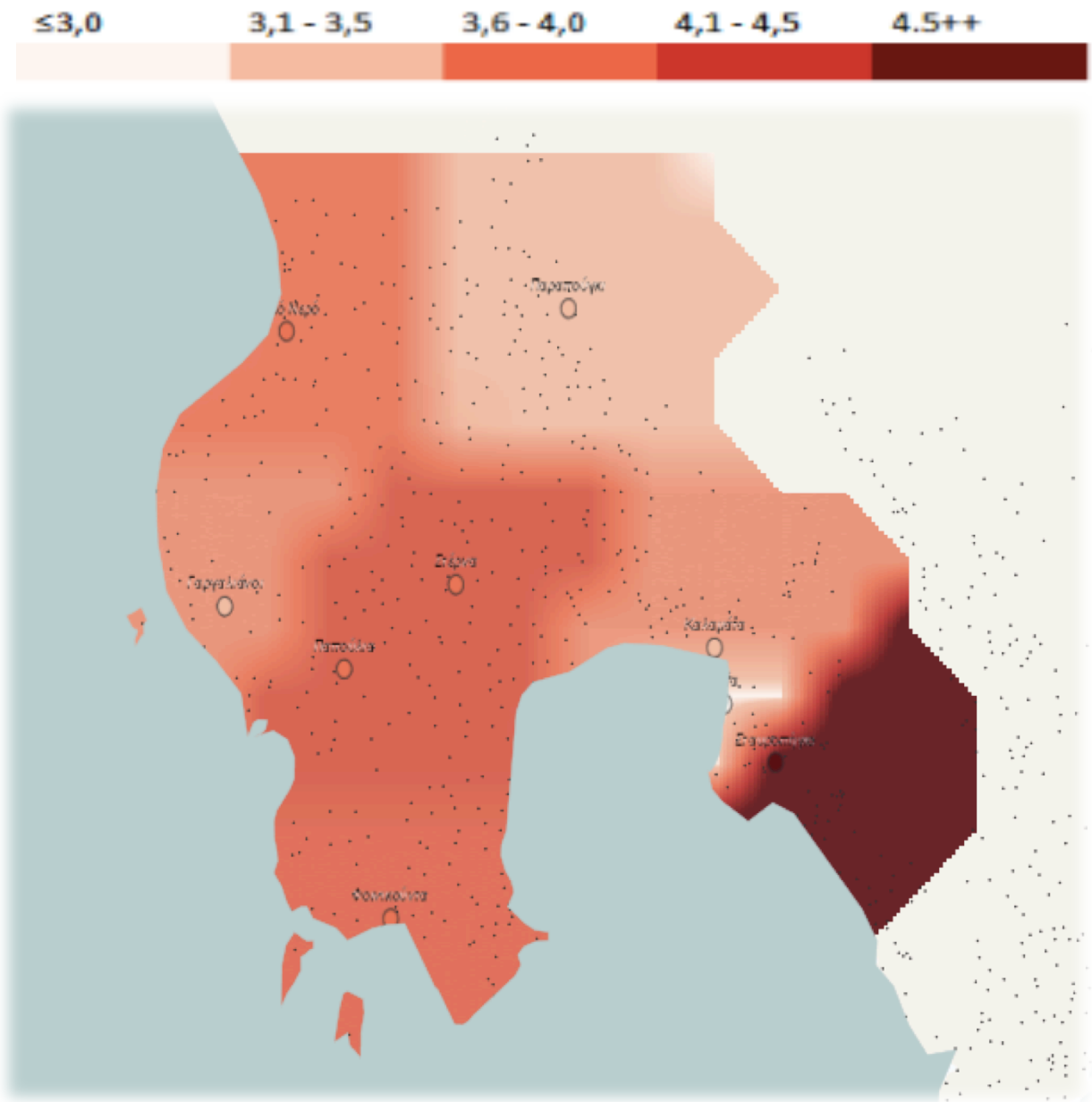
sensory profile of Koroneiki in Messinia

- pungency was not affected by maturity stage



sensory profile of Koroneiki in Messinia

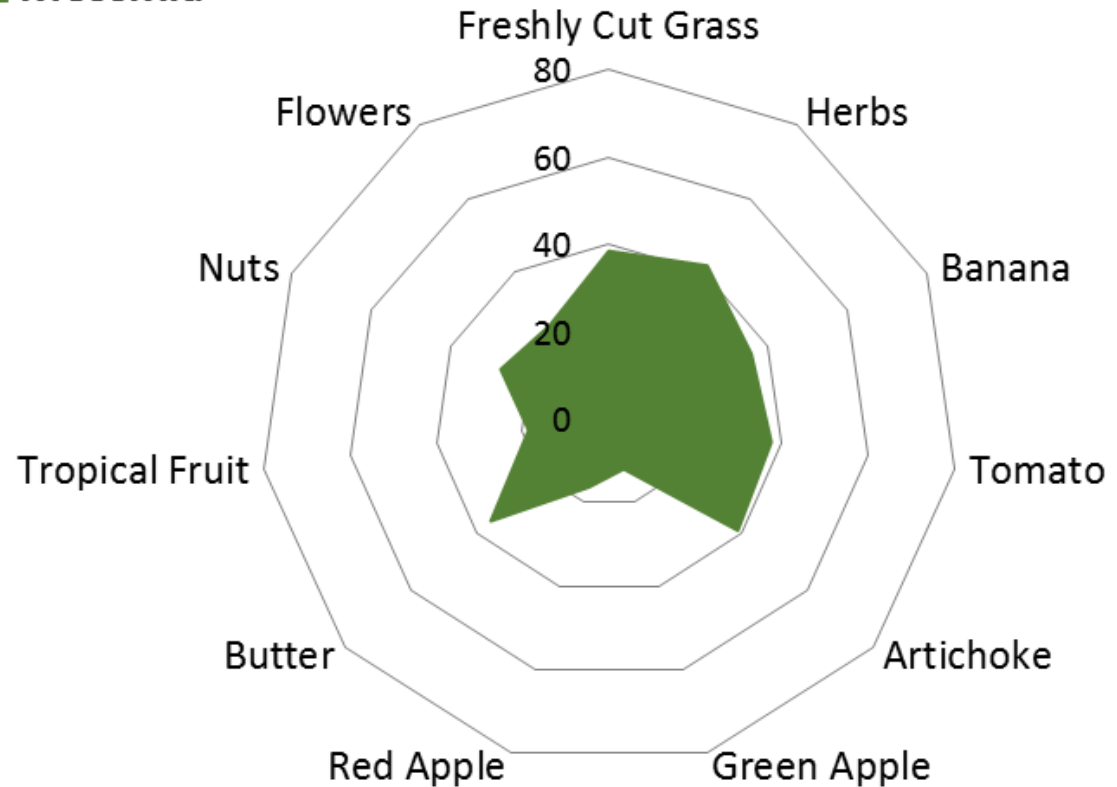
- distribution of pungency



aromatic profile of Koroneiki in Messinia

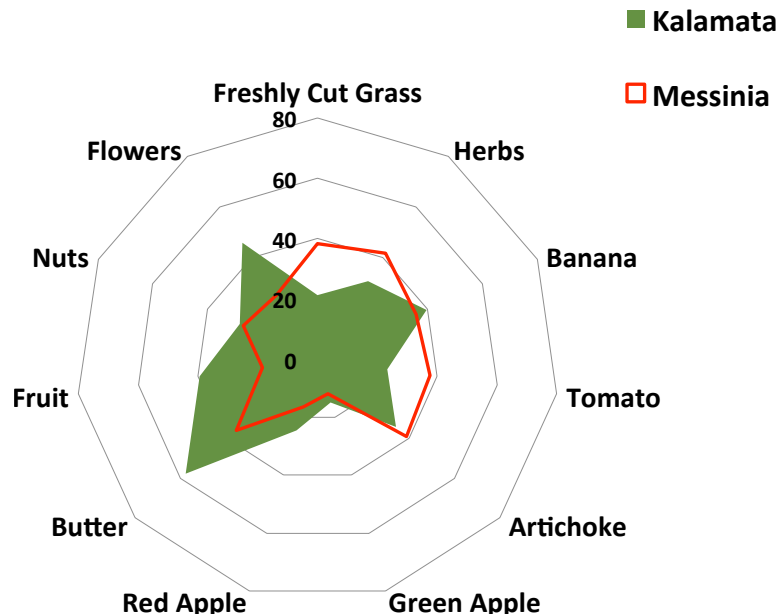
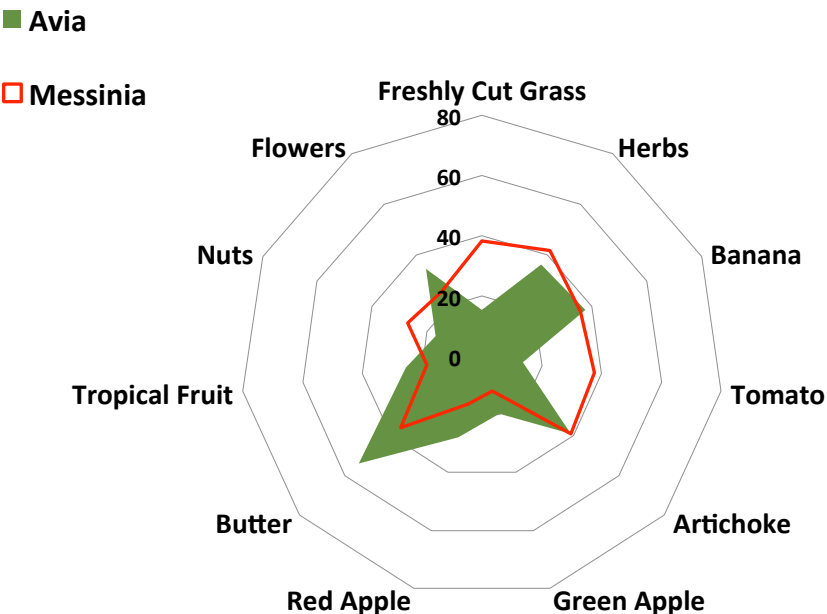
The aromas of the Koroneiki variety are distinguished into green (freshly-cut grass, herbs, banana, tomato, artichoke, green apple) and ripe (red apple, butter, tropical fruit, nuts, flowers).

■ Messinia



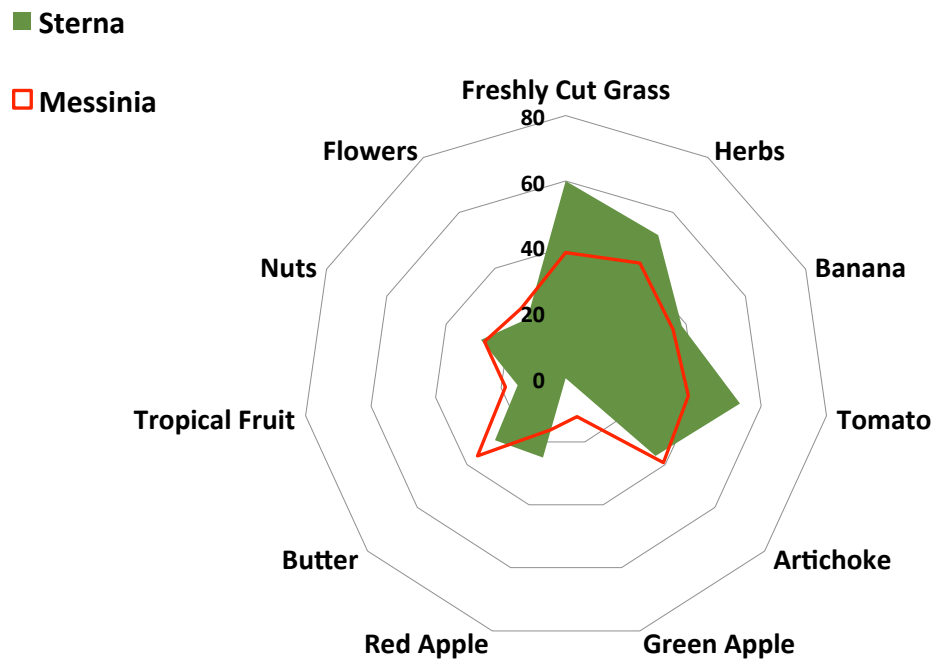
aromatic profile of Koroneiki in Messinia

The coastal areas of Kalamata and Avia produced olive oil of a similar aromatic profile: banana, artichoke, butter and flowers.



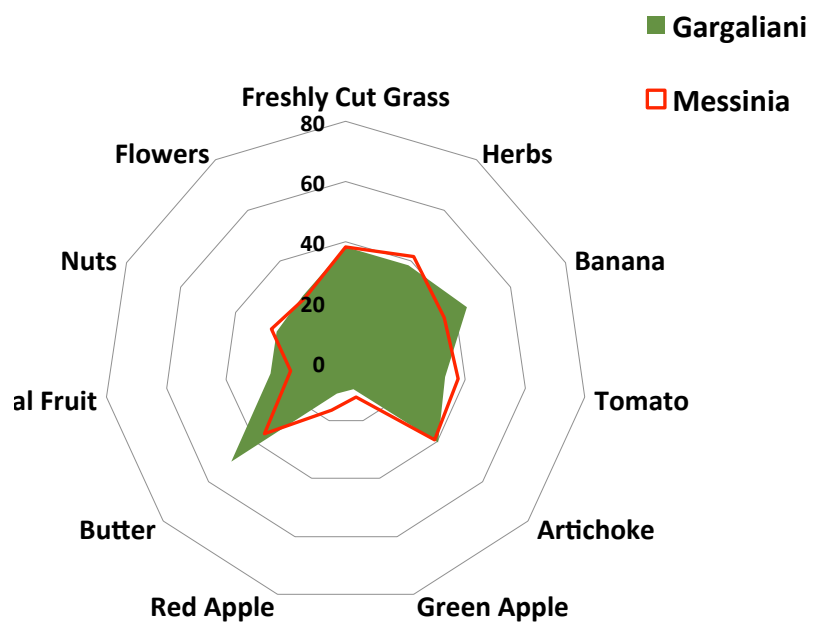
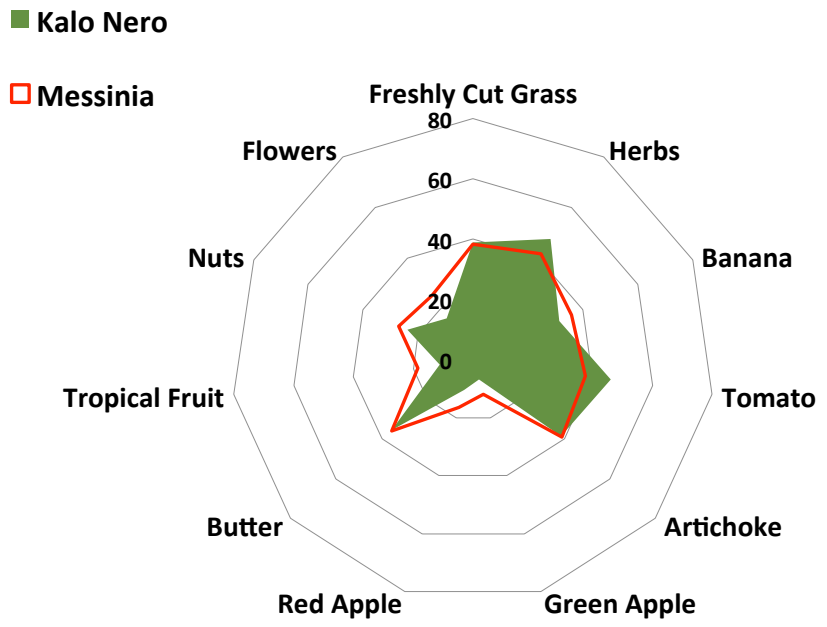
aromatic profile of Koroneiki in Messinia

In central Messinia, especially in the area of Sterna, intense green aromas of freshly-cut grass and tomato as well as ripe aromas of butter and nuts were identified.



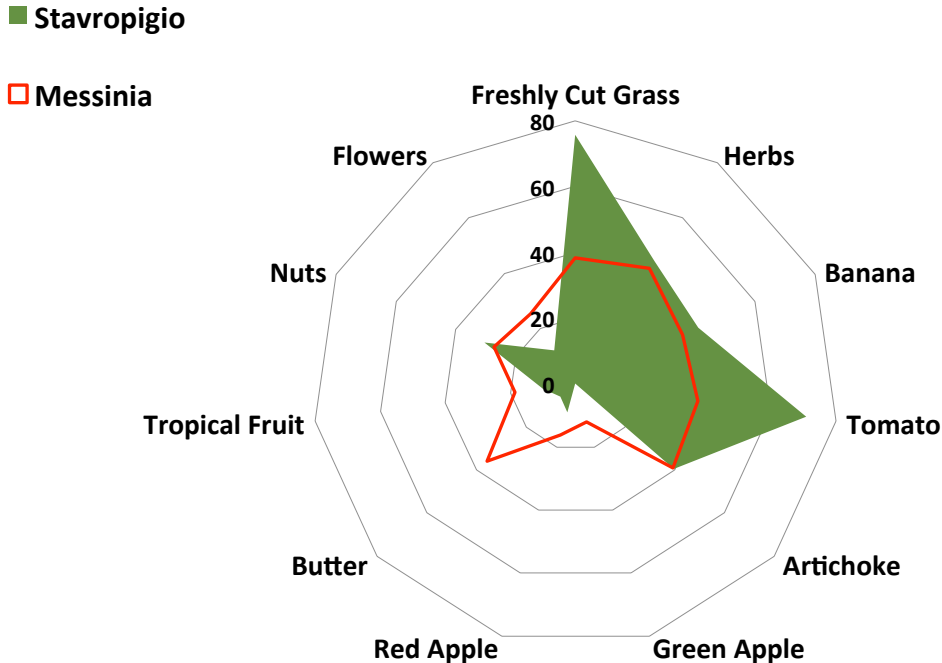
aromatic profile of Koroneiki in Messinia

The aromatic profile in the west of Messinia was very close to the mean aromatic profile. Herbs and artichoke were the predominant green aromas while butter, nuts and flowers were the main ripe ones.



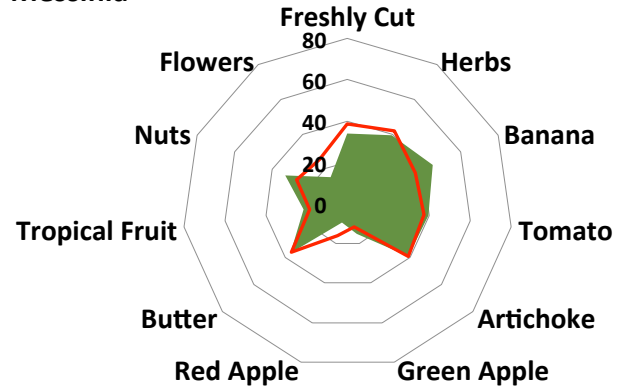
aromatic profile of Koroneiki in Messinia

Olive oil samples from the mountainous area of Stavropigio had intense freshly-cut grass and tomato aromas

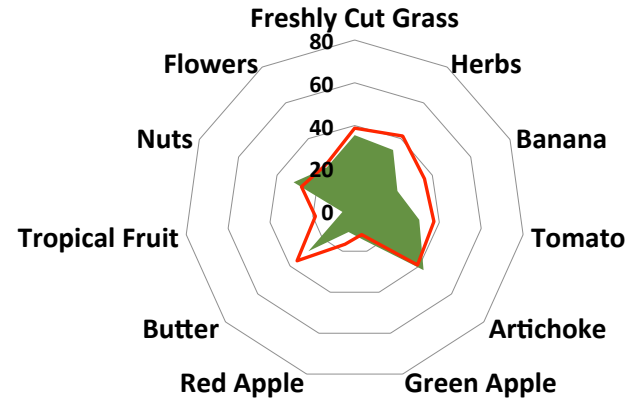


aromatic profile of Koroneiki in Messinia

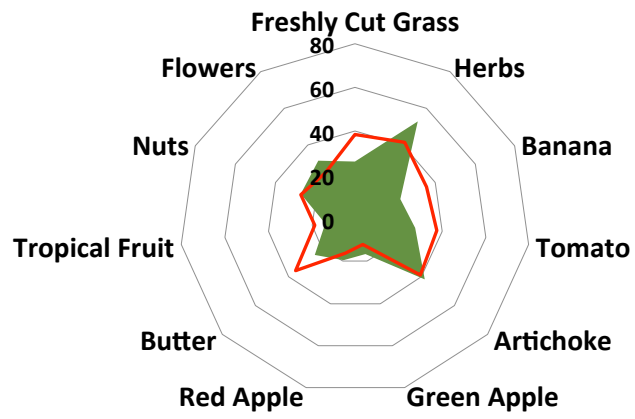
■ Papoulia
□ Messinia



■ Parapougi
□ Messinia



■ Finikounda
□ Messinia



basic chemical parameters

all samples were EVOOs (mean values)

- acidity: 0.31 %
- K_{232} : 1.54
- K_{268} : 0.14
- peroxide Index: 6.3 mEqO₂ Kg⁻¹
- total phenol content (caffeic acid): 235 mg Kg⁻¹
- sterols: 1,142 mg Kg⁻¹

mean values (mg Kg⁻¹)

- oleocanthal: 126 (± 39) 56 - 226
- oleacein: 90 (± 58) 0 - 222
- total phenols: 477 (± 236) 56 - 1,044