



Cross pollination and the quality of the Citrus fruits (*Citrus sinensis* Osbeck. Var. Thomson Navel)



Chefrour Azzedine*, Berrouk Houda**, Draiaia Radia**, Bouzebda Abd Errezak*** & Loucif Wahida*

* Department of Pharmacy, University of Annaba (Algeria)

** Department of Biology, C.U. of Souk -Ahras (Algeria)

***Department of Biology, University of Skikda(Algeria)

azchefrour@yahoo.fr

Aims. In crop production area, Citrus trees are considered as a choice food source for the vectors pollinators especially honeybees by the abundance of flowering and their importance in nectar production. But just a small number of grow flowers arrived at the harvested fruit stage.

The purpose of our study is the determination of cross pollination (external factor) that influenced the percentage of fruit-set and fruit quality of the Citrus trees.

Material and Methods. Our investigation focused on an orchard of orange (*Citrus sinensis* Osbeck. Var. Thomson Navel) where we selected 20 trees in a random manner and simple. In each tree, three branches were chosen for our monitoring *phenology*. On other trees, branches selected were isolated to avoid cross-pollination by insects.

The flower number were counted and their evolution (Flowers-drop, fruit-set, fruit-drop and harvested fruits) was controlled periodically. In laboratory, biometrical and Physico-chemical analyses were done. The objective was to determine the difference on fruit quality of the branches submitted to trial (free branches compared to checks).

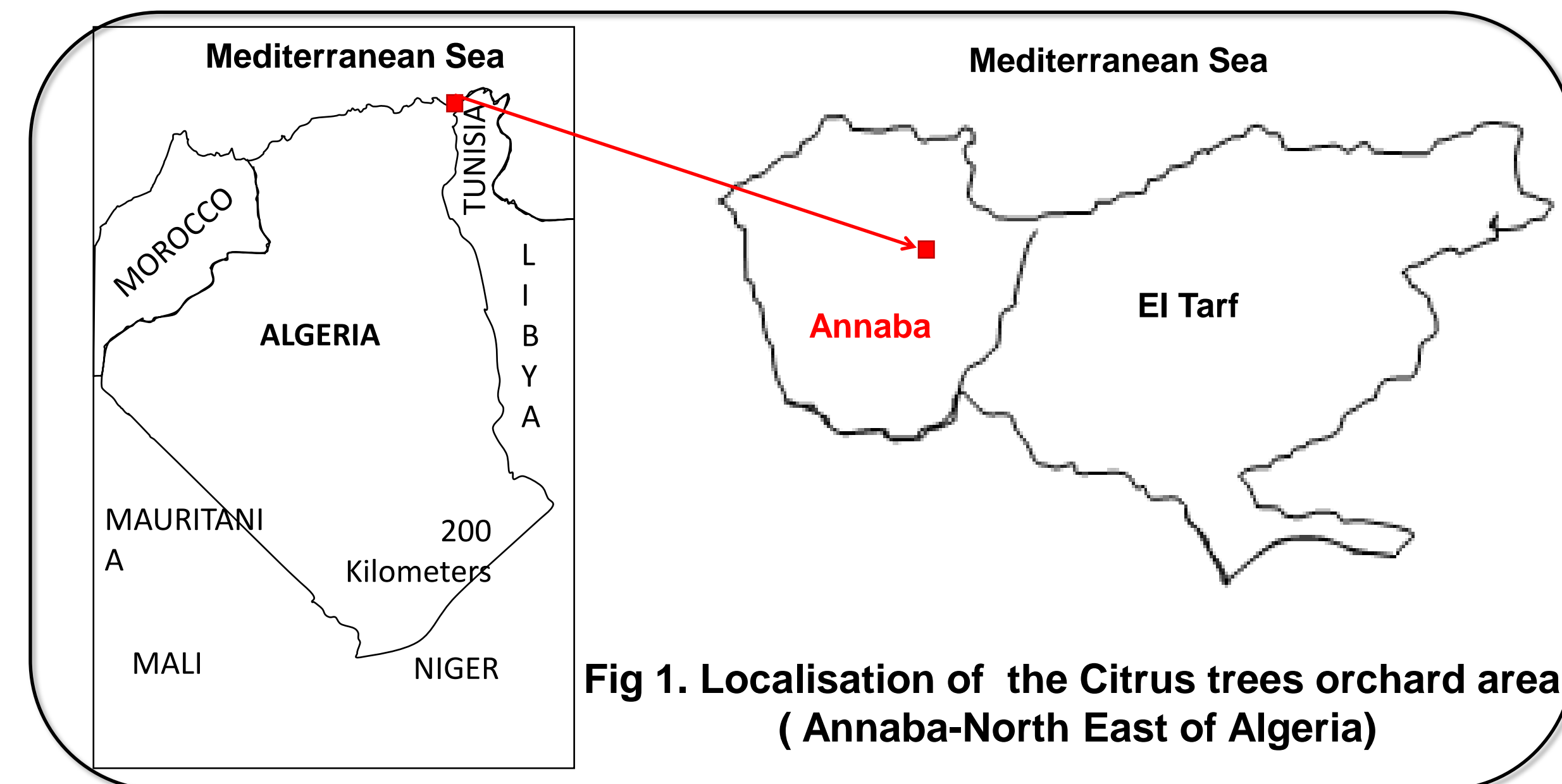


Fig 1. Localisation of the Citrus trees orchard area (Annaba-North East of Algeria)

RESULTS

On this basis of the results found in Figure 2, we notice that:

*The percentage of flower-drop on isolated branches is higher (72,75%) than that of the free branches (61,44%),

*The percentage of fruit-set on free branches (38,61%) is higher than that of the isolated one (27,27%),

*The harvested fruits percentage of Citrus trees on free branches was 07,1%, where as it was of 10,84% for isolated branches.

The Figures (3, 4) presents the biometry and the chemical analyses results obtained during our experiment in laboratory studies.

The mensuration (fruit size) of harvested fruit on free branches was superior (8,71cm) than that of isolated branches (8,15cm). A significant difference of the average weight of harvested fruit has been found on both types of branches (307,43%, 273,76%).

The pulpe weight and the juice volume are higher in fruit visited by honey bees.

The vitamin content is very significant in Citrus juice of free branches fruit.

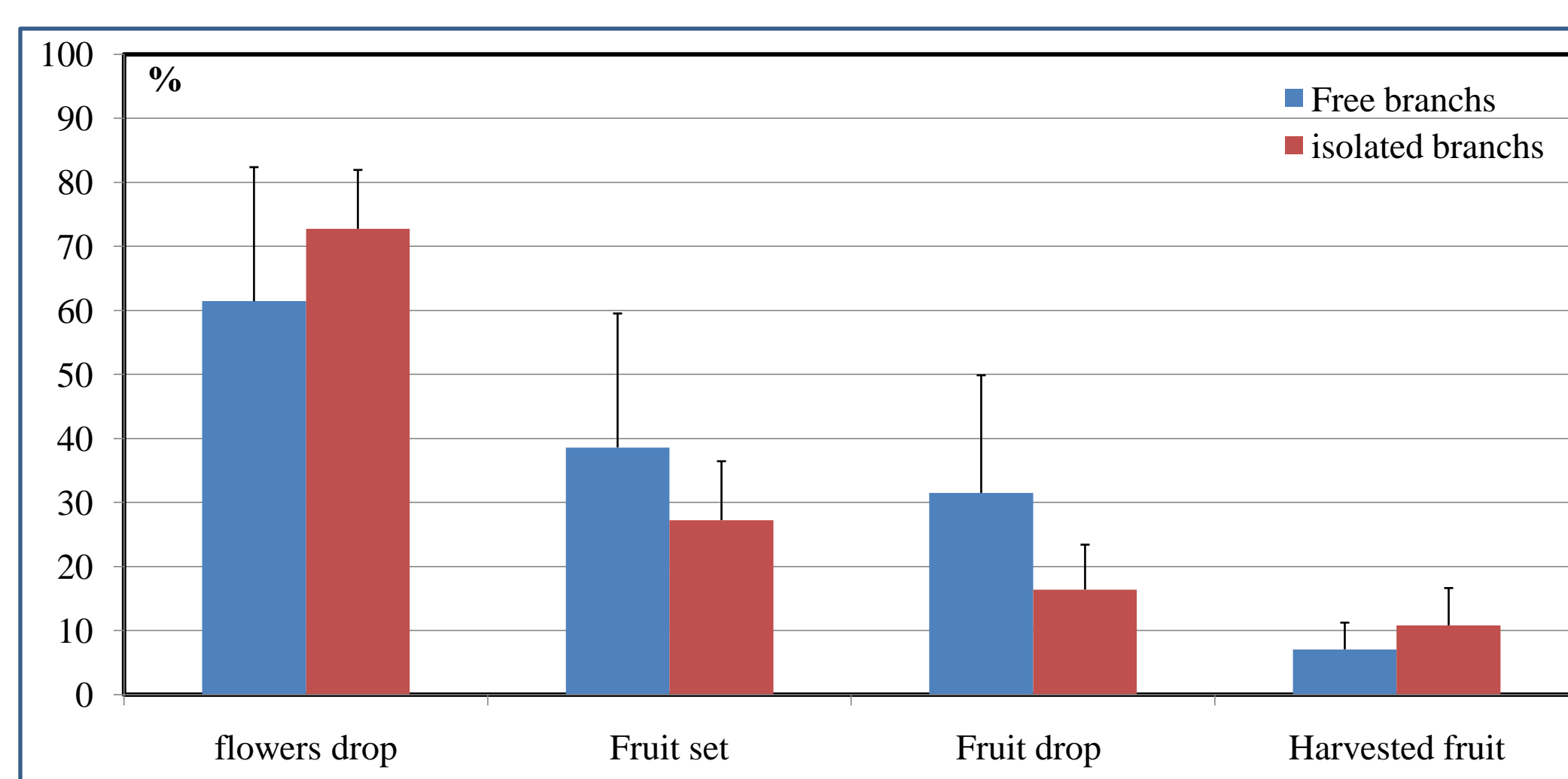


Fig. 2. cross pollination effect on harvested fruit percentage of Citrus trees

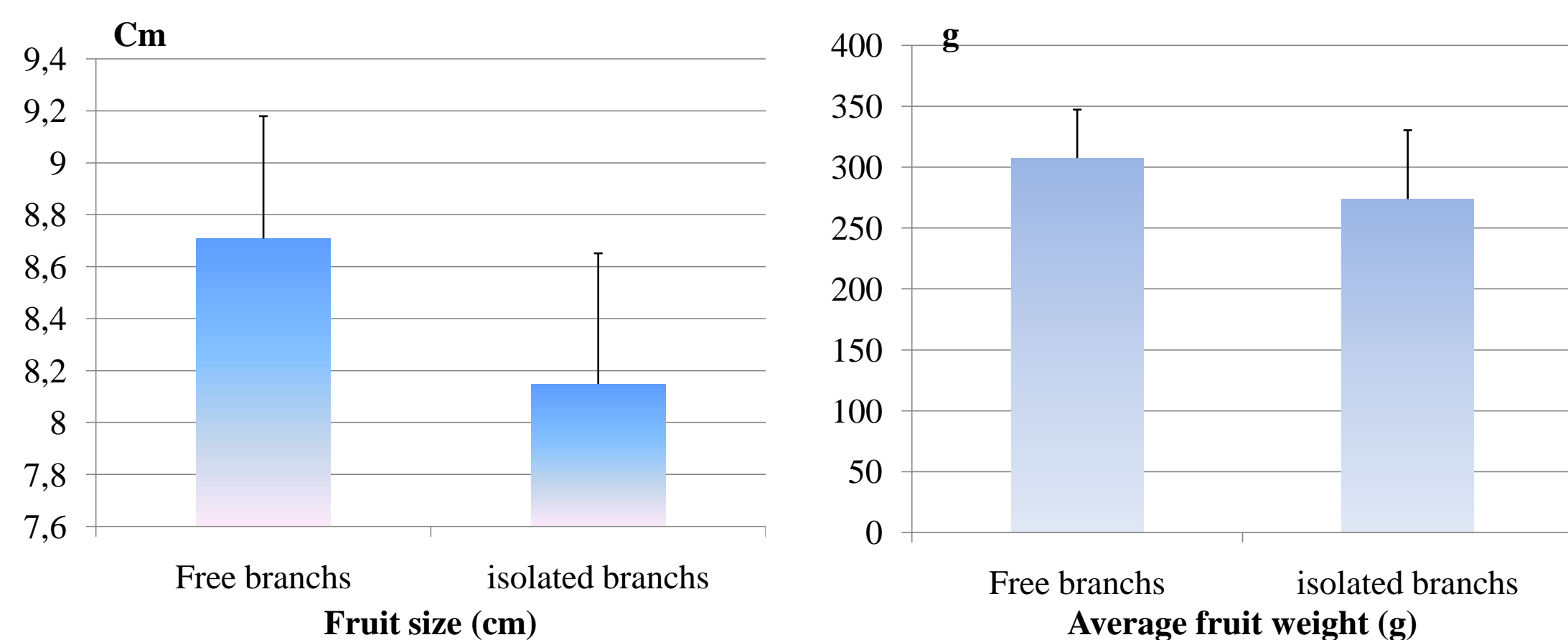


Fig. 3. Cross pollination effect on biometry of harvested fruit of Citrus trees

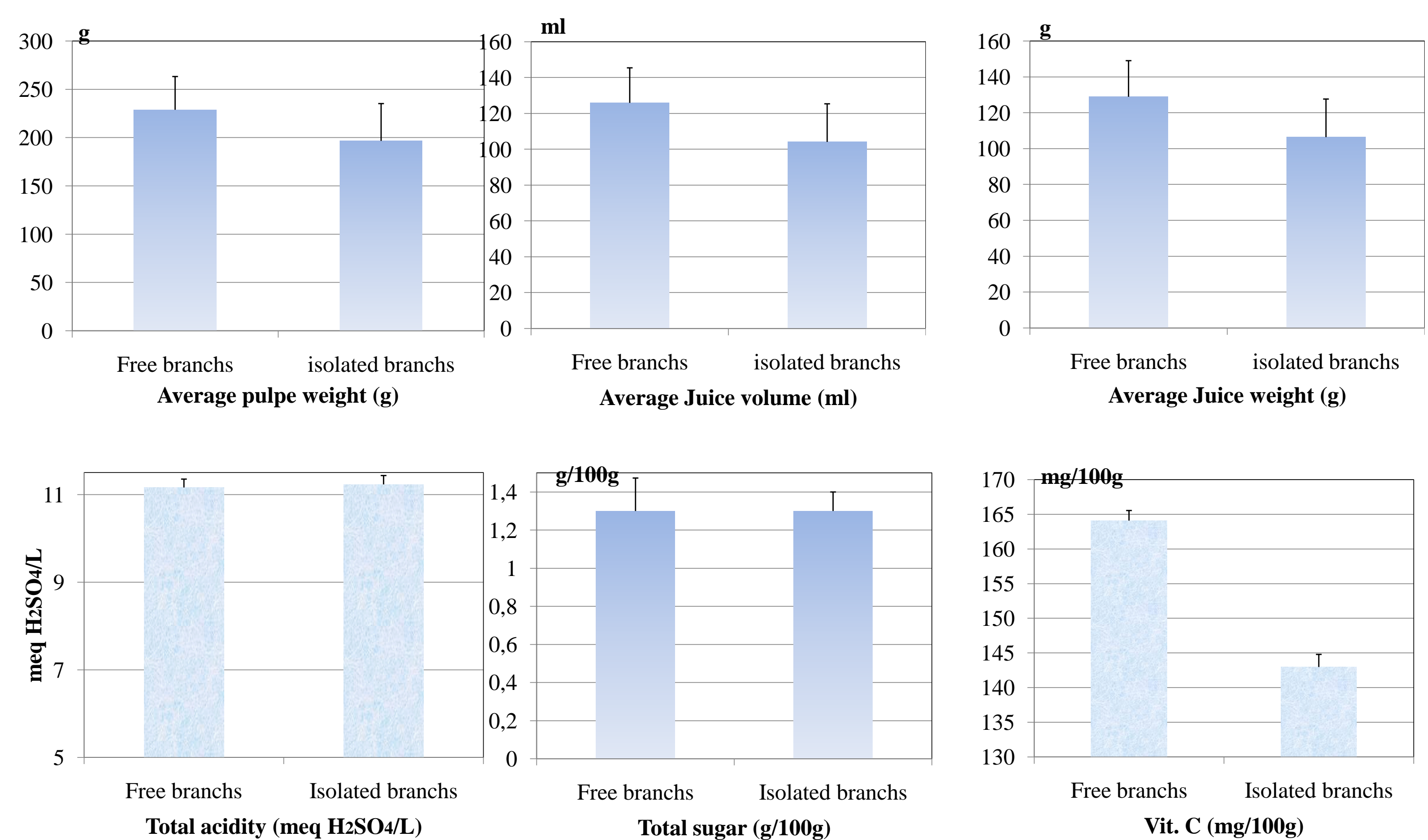


Fig. 4. Effect of cross pollination on harvested fruit of both trial branches

Conclusion

Breeding bees in the orchard is very important to producing the honey and improving crop production.

The Navel oranges is recognized by a *parthenocarpic* phenomenon. Despite this character, physic-chemical analysis revealed the presence of a significant difference due to pollinators, which had a large role in pollination. As we already know that fruit set depends on pollination and fertilization. The cross pollination increase the activity of ovarian hormone secretion, which will excite the cell division in the ovary.