

## **SOME ABNORMALITIES OBSERVED IN AVOCADO FRUITS AND FLOWERS\***

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### **Two Seeds in Mature Avocado Fruit**

On September 11, 1972, while picking avocado fruits of the Mexican "Duke-K" type\*\*, our attention was drawn to a 200-g fruit, which was somewhat broader than a normal fruit of the same type.

Upon cross-dissection of this fruit, two complete, fully developed seeds were found, located side by side. One seed was about twice the size of the other, their weights being 23g and 11g. (Fig. 1, 2). A normal fruit contains only one seed.

### **Anatomical Studies of Flowers and Fruitlets**

While studying some aspects of the nature of pre-fertilization and early stages of avocado fruit development, numerous floral receptacles, ovaries and minute fruitlets were dissected, and microscope slides were prepared and examined. A normal flower contains one ovary with a single ovule. The following abnormalities were observed:

1. In two cases, one of each variety, Fuerte and Tova\*\*\* a dissected flower had two fully developed gynoecia, (ovary and pistil), with each ovary containing one ovule.
2. In three cases, one each of Fuerte, Hass and Tova, ovaries with two normal ovules were observed (Fig. 3).
3. Two embryo sacs were found in one ovule of the Tova variety.
4. In further studies hundreds of minute avocado fruitlets were picked shortly after setting and anatomical sections were prepared and examined under a microscope. An 8-mm diameter Hass fruitlet with two seeds in the early stage of development was observed (Figs. 4, 5).

A number of possibilities and degrees of abnormality may exist in avocado flower and fruit development. It seems, however, that such cases are quite rare and do not exceed a few in a thousand. Since the drop of flowers and young fruitlets on avocado trees is usually extremely high, the chances of such an abnormal fruit reaching maturity are very low. The two-seeded mature fruit mentioned here, had undoubtedly developed from a flower with one ovary containing two ovules, both of which had been fertilized and developed into two separate mature seeds. Such a phenomenon in avocado seems to be very rare, and this is the first such report to the best of our knowledge.

Schroeder (1) reported a case in which two embryo-sacs were found in a single ovule. In a later publication (2), he also reported the occasional occurrence of a double avocado fruit containing two seeds.

## References

1. Schroeder, C. A. (1952) Floral development, sporogenesis, and embryology in the avocado, *Persea americana*. Bot. Gaz. 113:270-278.
2. \_\_\_\_\_. (1953). Abnormal fruit types in avocado. Calif. Avoc. Soc. Yrbk. 38:121-24.

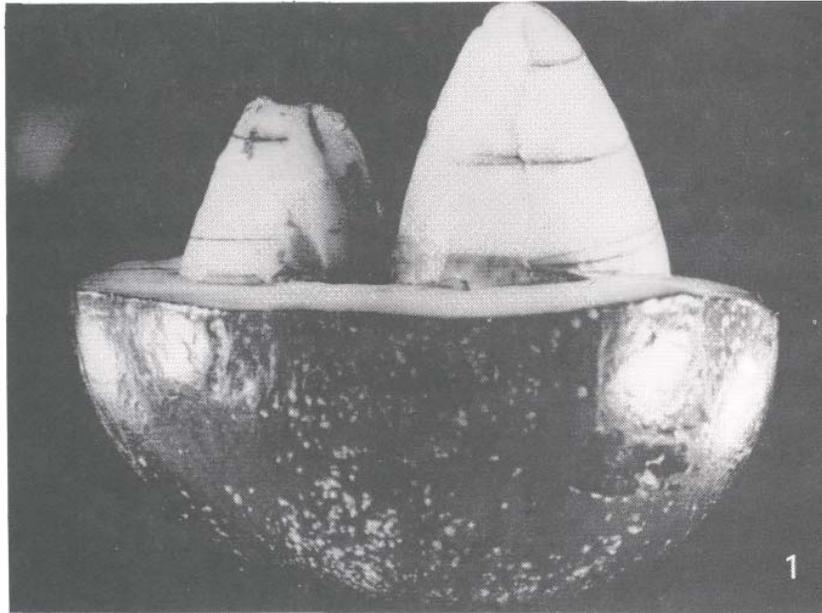


Figure 1. Cross-section of mature Duke K avocado fruit containing two seeds, side view. Natural size.

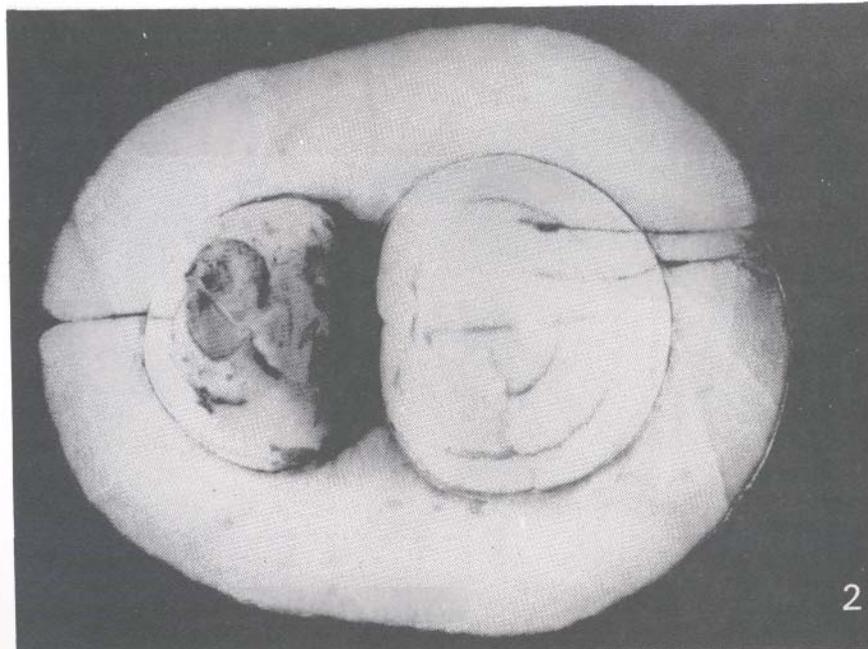


Figure 2. As in Figure 1, top view.

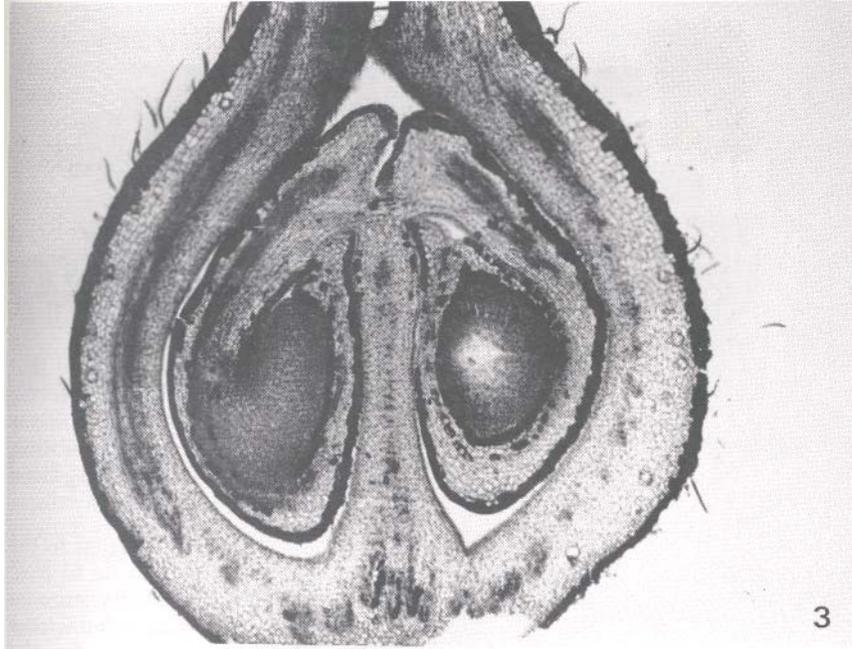


Figure 3. Fuerte ovary containing two normal ovules, longitudinal section. Magn. x 15.



Figure 4. Cross-section through a Hass fruitlet containing two seeds of different size and shape. The left seed is parthenocarpic and its volume is occupied almost entirely by the nucellus, showing in the center remains of the embryo sac. (marked by an arrow) Mag. x 15. Figure 5. Same fruitlet as in Figure 4, showing a median section of the right seed. Note developed embryo (*em*) and endosperm (*en*). Mag. x 15.