

## FLOWER AND FRUIT DROP

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### **OPSOMMING**

*Die hoof blomval periode was vanaf 8 September tot 12 Oktober 1979 en die grootste vrugval het voorgekom vanaf 8 September tot 16 November 1979. Geen enkele faktor beha/we rouband kon met blomof vrugval gekorreleer word nie.*

### **SUMMARY**

*The main flower drop stretched over a five week period from 8 September to 12 October 1979.*

*The highest rate of fruit drop occurred from 8 September 1979 to 16 November 1979. Ringneck was the only factor that could be correlated to flower and fruit drop.*

### **INTRODUCTION**

The period during which the avocado tree flowers and the fruit start developing is undoubtedly one of the most important phases in the season for the producer. What happens during this period will to a large extent determine the yield of the tree (Kotzé, 1979).

The flowering and fruit set have been studied by many different researchers such as Schroeder (1942) Schroeder (1944) Bergh (1967) Robertson (1969) and Papadimitriou (1976). These researchers have suggested different factors that influence flower and fruit drop which eventually determine the yield (Kotzé, 1979).

In this study it was decided to monitor the following factors: temperatures, humidity, soil moisture status, nutritional status, Mediterranean fruit-fly population and ringneck. Ringneck was first described by Coit (1928) as "Blemishes on the fruit stem or pedicel in the form of superficial areas of dead tissue more or less separated from the living tissue of the pedicel below. It is particularly liable to affect the thickened segment of the pedicel next to the fruit. Sometimes a complete ring of surface tissue dies, separates from the pedicel and peels off leaving a scar."

This study can only be done effectively on trees that are not infected with *Phytophthora cinnamomi* thus the soil was also tested for the presence of *P. cinnamomi*.

From the data obtained it was hoped to be able to obtain guidelines for a more in-depth study of the way in which flower and fruit drop are affected and how they can be manipulated.

## **METHODS AND MATERIALS**

Data was taken from two Fuerte in Block 34B avocado trees which were planted in 1974. Under each tree a hessian cloth net was placed covering the entire drip area below the tree.

All the flowers and fruits which fell from the trees were collected and counted daily. Temperature and humidity was measured with a thermo hygrograph. Rainfall figures were obtained from a meter situated less than a kilometer away. A fruit fly trap was placed in the block to obtain data on the population. This reading was taken on a weekly basis. The nutritional status was monitored by taking leaf samples monthly. A tensiometer was placed below each tree at a depth of 30 cm to monitor the moisture status.

Analyses for *Phytophthora cinnamomi* was done by J.M. Darvas before and after the study. In both cases no *P. cinnamomi* was found.

## **RESULTS**

Flower drop:

Results of the weekly flower drop are given in Fig. 1. Results for both trees were similar and showed exactly the same peaks. Results are thus given for only one tree. The cumulative flower drop results are given in Fig. 2.

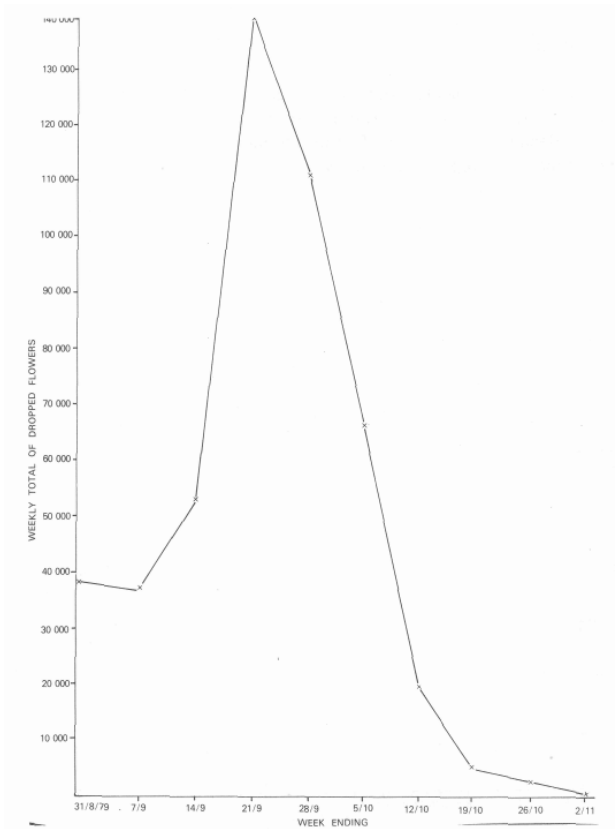


FIG. 1: Weekly total of dropped flowers from one Fuerte avocado tree

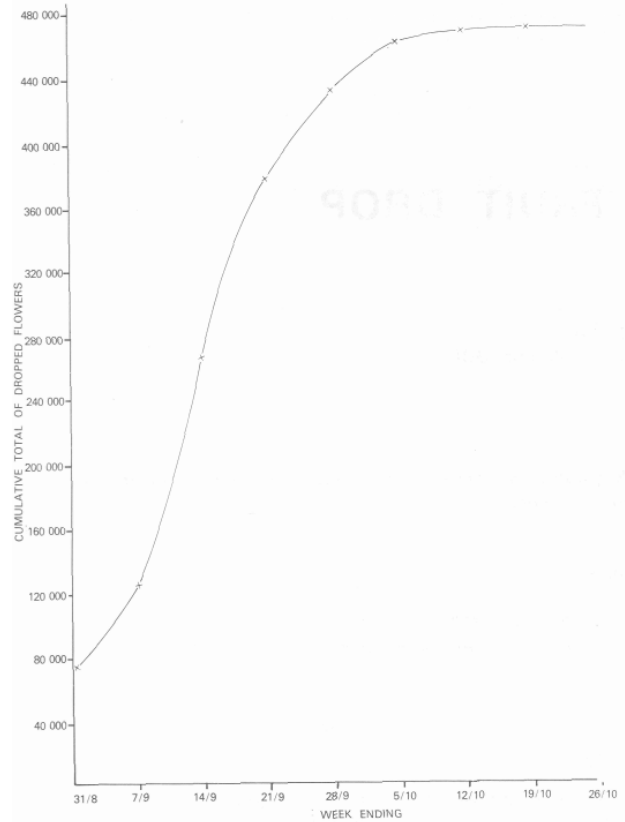


FIG. 2: Cumulative total of dropped flowers from one Fuerte avocado tree

### Fruit drop:

The results of the weekly fruit drop are given in Fig. 3 and the cumulative fruit drop results are given in Fig. 4.

Results for the other factors monitored are not given as it would make the report too lengthy.

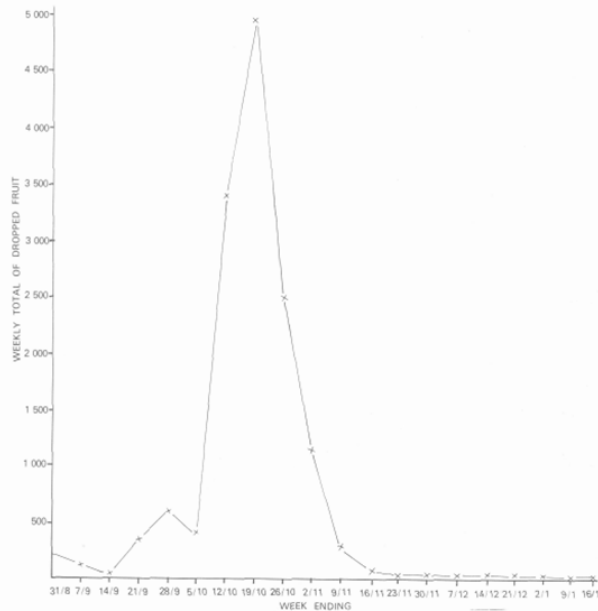


FIG. 3: Weekly total of dropped fruit from one Fuerte avocado tree

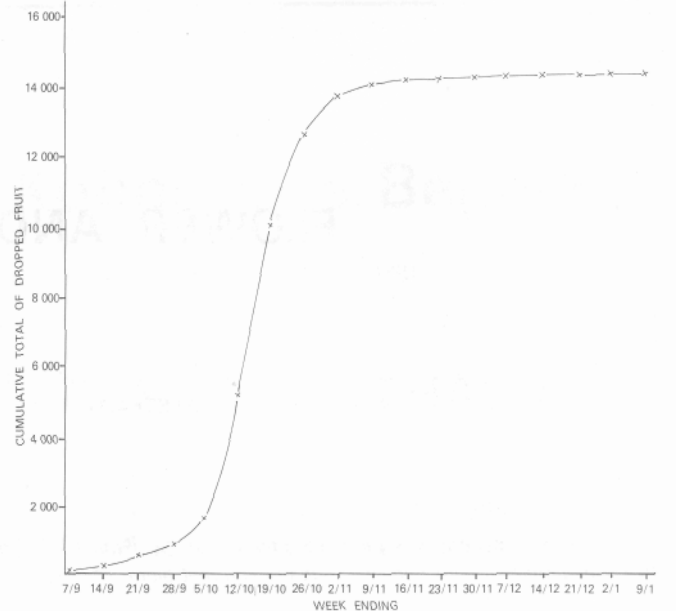


FIG. 4: Cumulative total of dropped fruit from one avocado tree

## DISCUSSION

### Flower drop:

Flower drop was on a low level until the week ending 7 September 1979. It reached a peak during the week ending 21 September 1979 after which the flower drop decreased. After 12 October 1979 the main flower drop was considered finished. Factors that were monitored viz. temperature, relative humidity, soil moisture, fruit fly and nutritional status could not be correlated in any way with the flower drop. The above mentioned factors were at no stage at very low or very high level during the study and the season could be considered as a good one for fruitset.

The main flower drop period stretched over 5 weeks starting 8 September 1979 and ending 12 October 1979. These five weeks of flower drop are also the main period of fertilization and development of the proembryo. According to Robertson (1969) the proembryo stage is a very sensitive period in the development of the fruit. This would also then be the period during which the tree is very sensitive to any adverse conditions.

### Fruit drop:

The fruit drop was on a low level up to 8 September 1979 and then started to increase rapidly until it reached a peak on 19 October 1979 and then decreased until 16 November 1979. Fruit size at this stage had an average diameter of 17,1 mm.

During the period 17 November 1979 to 5 March 1980 a total of 308 fruits dropped. Ringneck was first noticed during this period. The results for ringneck can be seen in Table 1.

TABLE 1: Percentage of dropped fruit with ringneck symptoms

Date period	% Fruit with Ringneck
1979.12.01 to 1979.12.07	15,8
1979.12.79 to 1979.12.14	21,1
1979.12.15 to 1980.01.02	43,6
1980.01.03 to 1980.01.09	42,3
1980.01.10 to 1980.01.16	28,0
1980.01.17 to 1980.01.23	58,0
1980.01.24 to 1980.01.81	50,0
1980.02.01 to 1980.02.07	26,7
1980.02.08 to 1980.02.14	21,0
1980.02.15 to 1980.02.21	25,0
1980.02.21 to 1980.02.27	0

From Table 1 it can clearly be seen that ringneck had an influence on the fruit drop. In this study ringneck was the only factor that could be correlated to adversely affecting fruit drop.

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