

## THE INFLUENCE OF WET PICKING ON POST HARVEST DISEASES AND DISORDERS OF AVOCADO FRUIT

**J.A. DUVENHAGE**

*Merensky Technological Services P.O. Box 14, Duiwelskloof 0835, RSA*

### ABSTRACT

*Fuerte and Hass fruit were picked when wet due to rain or dew, as well as when dried off. After storage and ripening, fruit was evaluated for the incidence of post harvest diseases and disorders.*

*Both cultivars, Fuerte and Hass, showed a significant increase in lenticel damage when fruit was picked wet. Fuerte fruit also showed significantly increased black cold damage and pulp spot incidence when picked wet, while vascular browning of Hass was increased significantly by wet picking. No significant difference in the total percentage of fruit without any symptoms of post harvest diseases or disorders was noted between dry or wet picked fruit of either Fuerte or Hass.*

### UITTREKSEL

*Fuerte en Hassvrugte is gepluk wanneernat as gevolg van dou ofreën, sowel as wanneer afgedroog. A/a opberging en rypwording is vrugte geëvalueer vir die voorkoms van na-oessiektes en -afwykings.*

*Beide kultivars, Fuerte en Hass, het 'n betekenisvolle verhoging in lentiselskade getoon wanneer vrugte nat gepluk is. Natpluk het die voorkoms van swart koueskade en pulpvlak van Fuertevrugte betekenisvol verhoog, terwyl vaskulêre verbruining van Hassvrugte ook betekenisvol verhoog is. Geen betekenisvolle verskil in die totale persentasie vrugte sonder simptome van na-oessiektes of afwykings is egter gevind tussen nat of droog geplukte Fuerteof Hassvrugte nie.*

### INTRODUCTION

Due to results obtained in previous investigations (Darvas, 1982), avocado fruits are not picked when wet as a result of rain or dew. However, this practice is expensive in terms of lost man hours of pickers and packhouse personnel. It also results in unpredictable picking and packing tempos which, in turn, gives rise to disorganised transport and shipping schedules, and fluctuating fruit volumes on overseas markets. This can influence prices negatively. Sudden large fruit volumes on markets can also result in longer storage times which are expensive and can lead to increased spoilage losses.

The object of this study was to further evaluate the effect of wet picking on post harvest diseases, as well as physiological disorders of Fuerte and Hass fruit.

## **MATERIALS AND METHODS**

Mature fruit from Fuerte and Hass orchards on Westfalia Estate were picked when wet (due to rain or dew). Fruit from the same trees were picked again as soon as they dried off, later during the same day. Picking dates were as follows:

**Fuerte:** 23 March (2 mm rain)

1 April (Dew)

9 June (Dew)

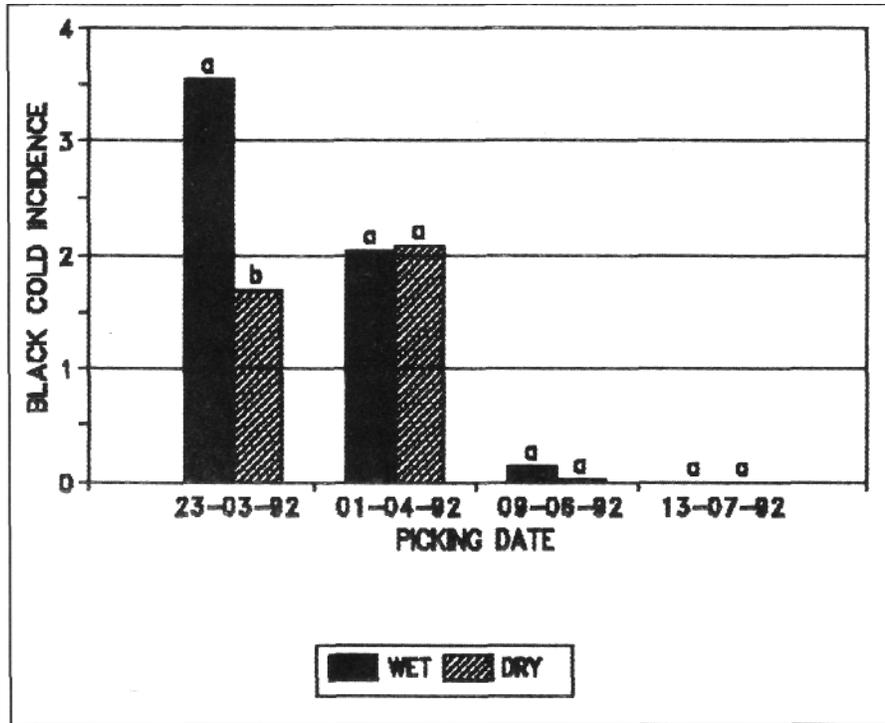
13 July (2 mm rain)

**Hass:** 10 June (Dew)

13 July (2 mm rain)

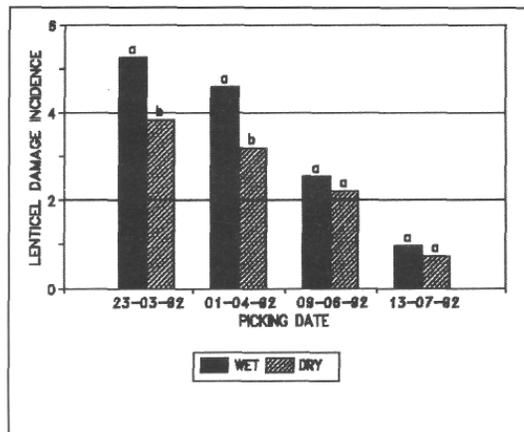
5 August (12 mm rain)

Fruit received standard orchard and packhouse treatments and were stored at 5,5°C for 28 days to simulate sea export. Subsequently, fruit was ripened at 18°C and evaluated for post harvest diseases (Anthracnose, Dothiorella/Colletotrichum complex [D/C], and stem end rot) and physiological disorders (cold damage, lenticel damage, internal browning, pulpspot, grey pulp, and vascular browning). The total percentage of fruit with no incidence of disease or disorder was determined (percentage clean fruit). Results were expressed using an index of 0 (totally unaffected) to 10 (100% of fruit area affected by the disease or disorder in question).



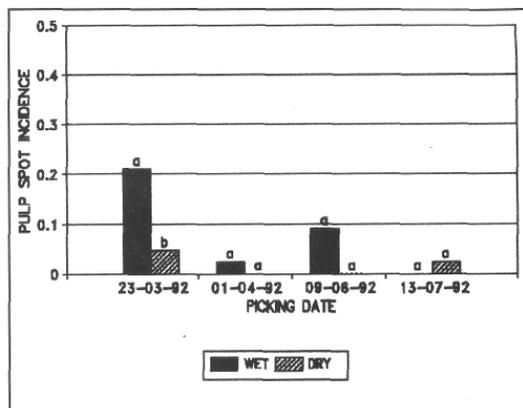
Values within one picking date not followed by the same letter are significantly different according to Duncan's multiple range test ( $P = 0,05$ ).

**FIG. 1** The influence of wet or dry picking at different dates on incidence of black cold damage of Fuerte fruit.



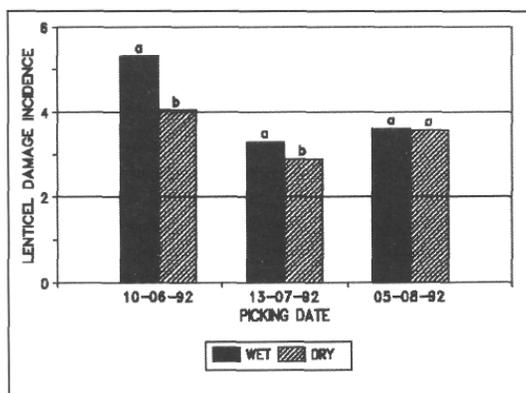
Values within one picking date not followed by the same letter are significantly different according to Duncan's multiple range test ( $P = 0,05$ ).

**FIG. 2** The influence of wet or dry picking at different dates on incidence of lenticel damage of Fuerte fruit.



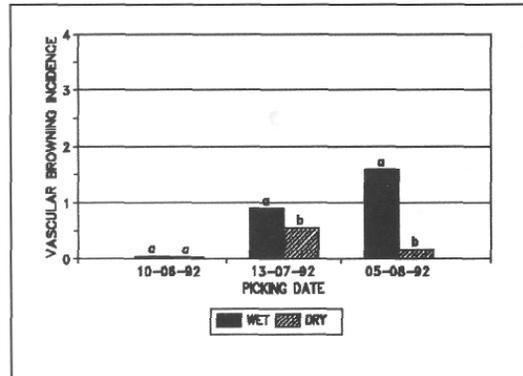
Values within one picking date not followed by the same letter are significantly different according to Duncan's multiple range test ( $P = 0,05$ ).

FIG. 3 The influence of wet or dry picking at different dates on incidence of pulp spot of Fuerte fruit.



Values within one picking date not followed by the same letter are significantly different according to Duncan's multiple range test ( $P = 0,05$ ).

FIG. 4 The influence of wet or dry picking at different dates on incidence of lenticel damage of Hass fruit.



Values within one picking date not followed by the same letter are significantly different according to Duncan's multiple range test ( $P = 0,05$ ).

FIG. 5 The influence of wet or dry picking at different dates on incidence of vascular browning of Hass fruit.

## RESULTS AND DISCUSSION

### Cultivar Fuerte

Wet picked fruit had a significantly higher incidence of black cold damage during the first picking date (Fig. 1), which may be ascribed to the low storage temperature of 5,5°C (early season fruit are less mature and are prone to cold-related physiological disorders such as above). Lenticel damage of wet picked fruit was significantly higher during the first two picking dates, when compared to dry picked fruit (Fig. 2). However, incidence of lenticel damage was high for all fruit early in the season (Fig. 2). Better temperature management will probably reduce this tendency. Although pulp spot incidence was significantly higher for wet picked fruit than for dry fruit, it occurred at an extremely low level (average index of 0,2 for wet picked fruit) and can not be considered a commercial problem (Fig. 3). No significant difference occurred in the incidence of any other disease or disorder evaluated, or in the total percentage of clean fruit, when fruit was picked wet or dry (results not presented).

The increase of stem end rot and D/C on wet picked fruit reported by Darvas (1982) could not be confirmed. However, the low general incidence of different diseases may be attributed to the dry weather of the past season (471 mm rain for 1992 compared to an average yearly rainfall of 1300 mm), and the trial will be repeated during the coming season.

### Cultivar Hass

Wet picked Hass fruit had a significantly higher incidence of lenticel damage during the first two picking dates (Fig. 4). This may not pose a problem however, due to the darkening of Hass fruit on ripening, and lenticel damage therefore becoming inconspicuous. Incidence of vascular browning of fruit picked wet during the last two picking dates increased significantly when compared to dry picked fruit (Fig. 5). Due to this and the fact that few wet periods normally occur during the Hass season (and fruit

can easily be picked when dry), wet picking of Hass later in the season is not recommended. No significant difference occurred in the incidence of any other disease or disorder evaluated, or in the total percentage of clean fruit when fruit was picked wet or dry (results not presented).

## **ACKNOWLEDGEMENTS**

Special thanks to Dr J.J. Bezuidenhout of Westfalia Estate for useful discussion during this trial and Mr J.J. van Rensburg for technical assistance

## **REFERENCES**

DARVAS, J.M. 1982. Etiology and control of some fruit diseases of avocado (*Persea Americana* Mill.) at Westfalia Estate. DSc. (Agric) Thesis 136 pages, University. Pretoria, Pretoria.