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THE IDENTIFICATION OF CAUSES OF TYPICAL SURFACE LESIONS ON AVOCADO FRUIT

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OPSOMMING

Om die juiste identifikasie van verskillende tipes oppervlakkige letsels op avokadovrugte vas te stel, is Fuerte vrugte op vier verskillende stadia van vrugtontwikkeling aan vrugtevlieë nl. ***Ceratitis capitata en C. rosa,*** *die valskodlingmot,* ***Cryptophlebia leucotreta*** *en kunsmatige meganiese beskadiging as verskillende behandelings blootgestel.*

'n Duidelike onderskeid in simptome kan waargeneem word tussen vrugtevlieg en valskodlingmot beskadiging. Die Mediterreense vrugtevlieg steek nie avokados nie maar wel die Natalse vrugtevlieg. Die alombekende skilpadskil letsel by oestyd word veroorsaak by vrugte wat tydens golfbalgrootte mega nies beskadig word.

SUMMARY

Fuerte avocado fruit at four different stages of development were exposed to the following treatments, namely fruit flies, ***Ceratitis capitata and C. rosa,*** *false codling moth,* ***Cryptophlebia leucotreta,*** *and artificial mechanical damage in order to identify the different types of surface lesions found on the fruit at harvest. Fruit were individually enclosed in nylon gauze bags.*

A marked difference in symptoms could be seen between fruit fly and false codling moth damage. It was found that the Natal fruit fly, ***C. rosa,*** *attacks avocados while the Mediterranean fruit fly,* ***C. capitata*** *does not. The well known tortoise shell lesion (carapace) develops at harvest on fruit that was mechanically damaged during golf ball size stage.*

INTRODUCTION

With the expansion of the avocado industry in South Africa, the need arose for the exact identification of the typical lesions which appear on the surface of the peel of the avocado. Mechanical and insect damage on the avocado are very similar. The aim of this experiment was to induce typical lesions artificially so as to be able to distinguish between the different types of lesions.

PROCEDURE

In an orchard experiment at Westfalia Estates, Fuerte avocado fruit at different stages of development were exposed to the following treatments, namely: fruit-flies *Ceratitis capitata* and *C. rosa),* false codling moth, *Cryptophlebia leucotreta,* and artificial mechanical damage. The four stages of fruit development were, viz. pea size, marble size, golf ball size and tennis ball size.

To expose avocados to fruit-fly damage, fruit were individually enclosed in nylon gauze bags, 300 x 180 mm, each containing approximately 25 adult Mediterranean fruit-flies. In the second treatment 6 false codling moth pupae per fruit were used. Mechanical damage was done by lightly scratching the fruit with a dry twig. Fifty fruit were used per treatment and in treatment no. 3, 25 fruit were lightly scratched and the remaining 25 were more heavily scratched. The untreated control group were also covered in bags, while a second control group was left uncovered.

These 5 treatments were done during various stages of fruit development as already described and were examined and photographed at regular intervals. Final examination was carried out at harvest time.

RESULTS AND CONCLUSION

A distinct difference in symptoms could be seen between fruit-fly and false codling moth damage. Fruit-fly damage by the insect's ovipositor developed into a typical crack or starshaped lesion (Fig. 1A) in contrast with the raised crater with an inconspicuous hole in the middle where the young larvae of the false codling moth had entered the fruit months previously (Fig. 1 B & C). During the first few weeks of fruit damage, the fruit-fly and false codling moth lesions are very similar in that they both have a small inconspicuous hole which is covered by fruit sap which later dries and becomes a white powder (Fig. 1 D). This experiment also proved that the Mediterranean fruit-fly, *C. capitata,* does not lay on avocados, while the Natal fruit-fly *C. rosa* does. The latter was also the dominant species found in the surrounding pheromone traps.

Artificial mechanical damage of fruit during the pea size stage appears at harvest as a green scar (Fig. 1 E). The original brown, damaged tissue is replaced by a green scar, which is not very noticeable and is often still suitable for export. Fruit which was mechanically damaged during the marble size stage, has, at the end of the season, a light brown lesion with small dark brown pieces left over from the original damaged peel (Fig. 1 F). The widely known tortoise shell lesion (carapace) appears after mechanical damage on golf ball size stage fruit (Fig. 1 G), approximately 70 days before harvest. Mechanical damage during tennis ball size stage causes a dark brown solid scar, which shows distinct cracks (Fig. 1 H).

The closing of the fruit with bags causes the build-up of scale and thrips due to the exclusion of parasites and the favourable microclimate.

The percentages of control fruit which were recovered at harvest time were 10%, 16%, 62% and 94% respectively for the 4 fruit stages (re. pea, marble, golf ball, and tennis ball).

REFERENCE

SCHWARTZ, A. 1978. Vrugtevlieg en valskodlingmot by avokado produksie. SAAKV Vol. 2: 62 - 63.

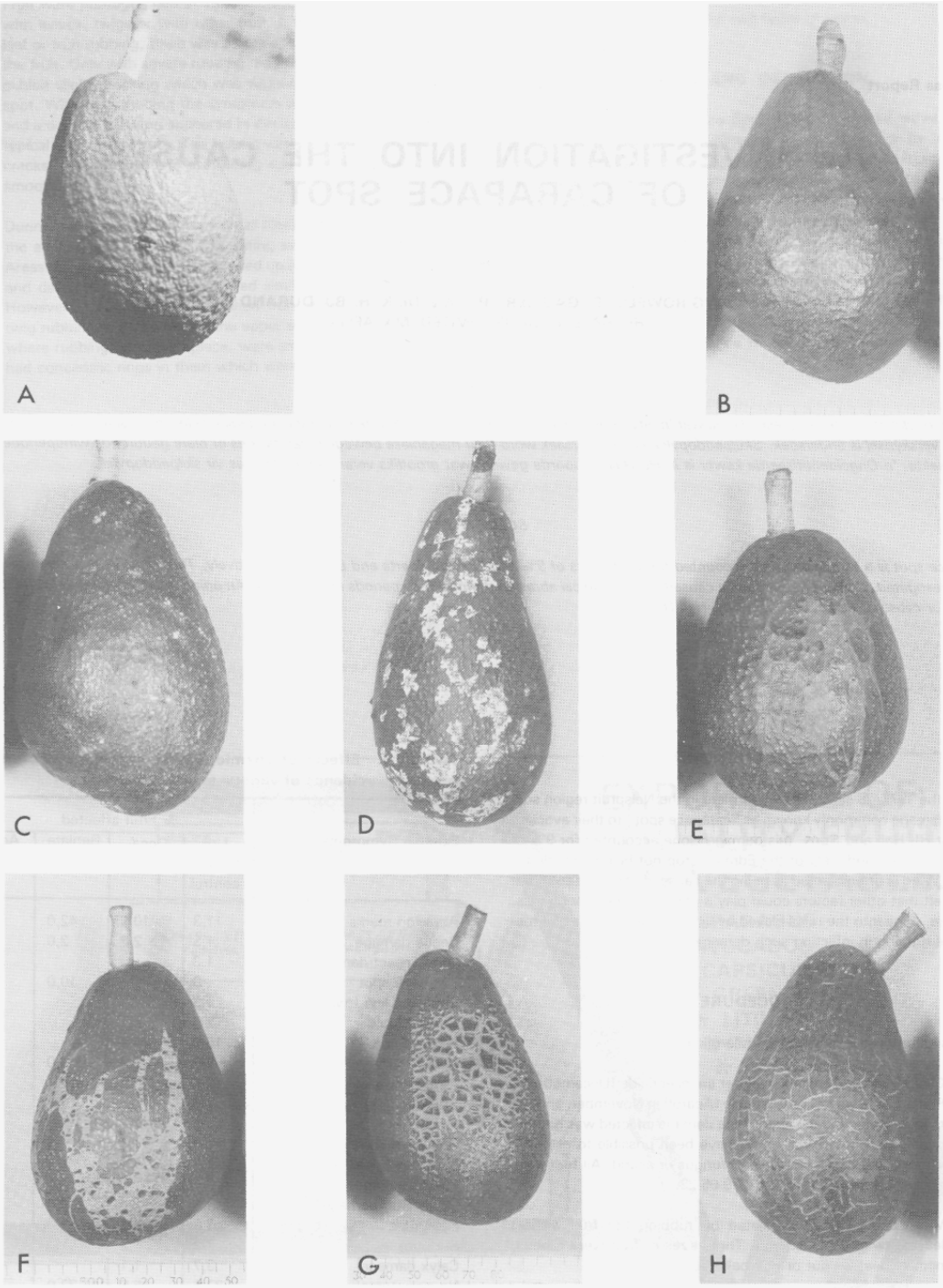

FIG. 1

A — A Natal fruit-fly, *Ceratitis rosa,* lesion on an avocado fruit.
B — False codling moth, *Cryptophlebia leucotreta,* lesions on a marble sized fruit.
C — False codling moth damage on a golf ball sized fruit.
D — False codling moth damage on a tennis ball sized fruit.
E — Symptoms at harvest of mechanical damage on pea sized fruit which develops as a green scar.
F — Scars resulting from mechanical damage on marble size fruit.
G — Mechanical damage at golf ball size fruit develops into a carapace lesion at harvest time.
H — Mechanical damage of fruit at tennis ball size.