

AVOCADO FRUIT QUALITY STUDIES IN THE NELSPRUIT AREA FROM 1977 1981

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OPSOMMING

Fuerte, Edranol en Hass-vrugte, in verskillende stadia van volwassenheid, was van 1977 tot 1981 versamel. In 'n vergelyking tussen die voorkoms van antraknose en stingelend-vrot het dit geblyk dat Fuerte meer vatbaar is vir hierdie na-oesprobleme as Edranol en Hass. Baie mm an-traknose en stingelend-vrot het by Hass voorgekom. Die omvang van die antraknose-probleem dui daarop dat voorsorgmaatreels nodig is. Die kwaliteit van Fuerte, na 'n seisoen met 'n hoë reënval, was swak.

SUMMARY

Avocado fruit taken at different stages of maturity were sampled from Fuerte, Edranol and Hass orchards from 1977 to 1981. A comparison of stem-end rot and anthracnose incidence on these varieties showed Fuerte to be more sensitive to these disorders than the other two varieties, especially in the early part of the season. Edranol was sensitive to anthracnose with only minor stem-end rot problems. Very little stem-end rot or anthracnose occurred with Hass. The extent of the anthracnose problem indicates that control measures should be taken. Fuerte quality was poor after seasons of heavy rainfall.

INTRODUCTION

The main diseases which occur on avocado fruit at the ripening stage in the Nelspruit area are stem-end rot and anthracnose. The severity of these symptoms vary from season to season and also within any particular season.

Fruit taken from various orchards on HL Hall and Sons throughout the seasons from 1977 to 1981 were inspected for these diseases at the ripening stage. This report draws comparisons of fruit quality for the three varieties Fuerte, Edranol and Hass during this period. No fungicidal sprays were applied to the orchards.

MATERIALS AND METHODS

At intervals varying from 1 — 3 weeks 15 avocado fruit were sampled from each of seven orchards i.e. 105 fruit per sampling occasion. From each sample five fruits were used for an oil determination, five were stored at ambient temperature until ripe and five

were stored at 5,5°C for 28 days before ripening at ambient temperature. When ripe the fruits were inspected externally for anthracnose and stem-end rot and incidence recorded as nil, slight or severe. The fruit were then cut and notes made of internal disorders. In this article eating quality reflects the absence of internal disorders. Results from storage at ambient and cold storage conditions have been combined as there was no obvious difference in quality.

RESULTS AND DISCUSSIONS

For each of the varieties (Fuerte, Edranol and Hass) oil content has been plotted against the percentage incidence of slight and severe infections of stem-end rot and anthracnose and against fruit eating quality. These results are shown in Figs. 1—5. In general sampling of the Fuerte variety started at a lower oil content than the later varieties of Edranol and Hass. Comparisons between the three varieties at the lower oil content are, therefore, not possible.

Stem-end rot

Fuerte: There was a high level of stem-end rot at the lower oil contents. The incidence dropped as the fruit matured. The severity of the symptoms varied from year to year and if incidence of severe infections is taken as a measure of fruit acceptability, this occurred at about 9% oil in 1981 and 12% in 1977.

Edranol: Fruit sampling only began at 11% oil and stem-end rot was generally at a low level with most samples taken which contained 11 — 18% oil. Only the occasional sample showed unacceptably high levels.

Hass: This variety was not sampled consistently each year, but all samples taken showed a very low level of stem-end rot. 1980 was the only year when regular sampling was done and fruit quality was good even at the first sampling of 9% oil.

Anthracnose

Fuerte'. This variety generally showed a higher incidence of anthracnose than Edranol and Hass. There appeared to be no consistent trend in the symptoms from year to year. In 1978 and 1980 it was at a high level below 8 — 10% oil and then decreased gradually to very low levels at 16 — 18% oil. In 1977 and 1981 severe symptoms had a peak at the lower oil contents and decreased to very little as the fruit matured. Light infections had peaks at the lower oil contents, then decreased as the fruit matured and increased again at the end of the season. Light anthracnose infections were very high in 1981 and these lesions could have developed during transport overseas to affect the fruit quality.

Edranol: Severe infections were only consistently high in 1978. Light infections were high in 1978 and 1981, with only one sample at 12,5% oil being recorded as high in 1980. There was no consistent trend in the degree of occurrence of these symptoms through the season.

Hass: Very low levels of severe symptoms recorded. Only in 1977 were significant amounts of light anthracnose recorded. This variety appears to be considerably less sensitive than Edranol and Fuerte to external disorders.

Eating Quality

Fuerte: Eating quality as reflected by lack of internal disorders was generally poor below 10% oil with a general tendency for eating quality to improve as the fruit matured. Fruit stored at 5,5°C for 28 days did not soften during this period as often occurs after rail and sea transport overseas. Rainfall figures for each growing season were: 1977 - 667 mm., 1978 - 928 mm., 1979 - 579 mm., 1980 - 786 mm., 1981 - 1164 mm. The graphs indicate that eating quality was poorest in the years 1978 and 1981. These are the years of highest rainfall.

Edranol: No consistent trends were apparent but generally fewer problems occurred than with Fuerte.

Hass: Somewhat variable quality in 1977 but good quality in 1978 and 1980.

CONCLUSIONS

The Fuerte variety in general showed high levels of stem-end rot and anthracnose (Kotzé (1978)). While stem-end rot was generally higher at the lower oil contents, there appeared to be no consistent trend with anthracnose. The severity of the symptoms varied from year to year and to obtain good quality fruit the indications are that the minimum oil content for marketing fruit should vary according to fruit quality each season. The high levels of anthracnose recorded indicate that control measures should be taken. The quality problems are more severe after seasons of heavy rainfall.

Edranol sampling only started at 11% oil and at this stage very little stem-end rot was recorded. Anthracnose was high on occasions and control measures should be taken with this variety. This variety shrivels badly if picked below 12 — 14% oil and should, therefore, not be marketed before this.

Hass was in general a high quality fruit and indications are that it could be picked at 9% oil or less with very limited stem-end rot or anthracnose problems.

More useful information could be obtained from these results if climatic factors at time of picking were related to quality.

LITERATURE CITED

KOTZÉ, JM, 1978. Anthracnose of avocados. SA Avocado Growers Assn Research Report for 1978, 2: 45 - 47.