

Observations on the quality of avocados on the overseas market

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INTRODUCTION

I was based at the Rungis market in France from May until October 1988 as the SAAGA Overseas Technical Officer. My brief was mainly to evaluate experimental consignments as well as to report back on the internal and external quality of avocados under commercial conditions. Poor quality avocados in particular were identified and evaluated.

This paper concentrates on evaluations and observations made at Rungis and all comments should be interpreted in this context. Statistical analysis was generally not possible due to the sampling method and the bias towards poor quality fruit.

MARKETING CONCEPTS

Although marketing *per se* is not within SAAGA's scope, a number of concepts relating to the overseas (particularly French) situation should be mentioned.

- a) South African avocados are being marketed during a relatively difficult period. Avocados compete as an *entree* against produce such as asparagus and a multitude of different salads, which are available throughout the year.
- b) The avocado market in France is divided between the Greenskins and Hass, with Hass considerably more popular, important to note in the Greenskin market, is the fact that all varieties are incorrectly sold as the "Fuerte" variety. A poor Greenskin variety will therefore have a significant effect on the overall Fuerte marketing situation.
- c) Buyers are very aware of the country of origin of the produce. The tendency is to switch completely from one country to another in the event of poor quality. This illustrates the absolute necessity of maintaining high standards throughout the industry.

MODUS OPERANDI

I was present at the opening of containers at Rungis after the arrival of each vessel. Experimental consignments received priority; thereafter containers with Ryan Recorders. Finally fruit with quality problems was also evaluated.

The fruit was evaluated for firmness with the aid of a firmometer, usually on the day of arrival at the market. External evaluations in respect of cold injury and skin

discolouration were undertaken simultaneously. A large number of photographs were taken.

The fruit was allowed to ripen at room temperature and then cut and evaluated for internal quality. Ripening fruit was evaluated daily and when ripe, evaluated for internal quality.

RESULTS

A total of 528 cartons of fruit was evaluated on the overseas market during the 1988 season. The depicted results represent the industry as a whole, ie individual cultivar results for any specific vessel were all pooled together.

Firmometer

The firmometer indicates the firmness of an avocado as a function of ripeness. A fruit is considered ripe for eating at a firmometer reading of 100 per cent. The overseas market demands firm fruit which will allow sufficient time for marketing until the next vessel arrives. The maximum commercial tolerance level for Fuerte, Pinkerton and Edranol is considered to be 35 per cent and 30 per cent for Hass and Ryan.

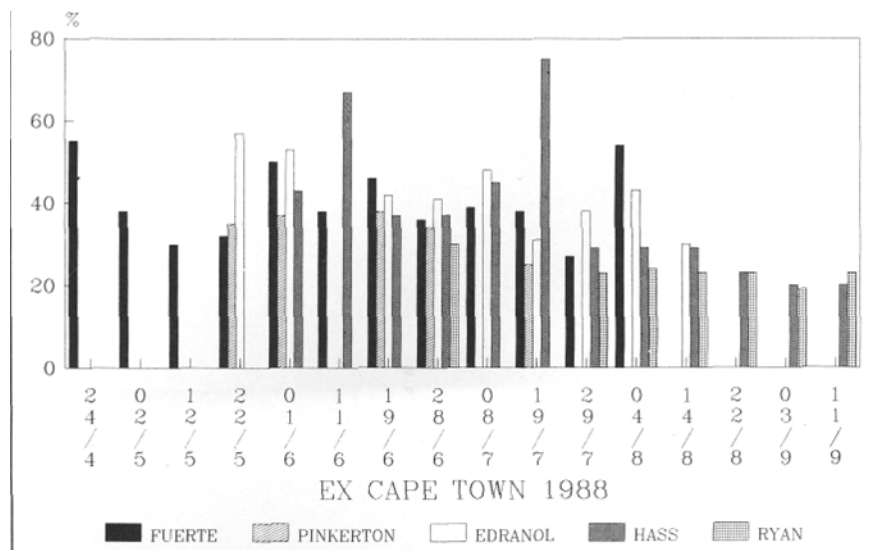


Fig 1 Ripeness of South African avocados delivered at Rungis market during 1988.

The following trends can be concluded from the graph:

- Fuerte, Edranol and Hass arrived overseas with a high variability of firmness and soft fruit. Hass in particular gave cause for concern, because softness was related to certain packhouses/production areas. Note how firm Hass becomes towards the latter part of the season, once those packhouses/production areas stop packing.

- At any specific time, a large number of varieties are being marketed. A variety of poor quality will therefore have a major effect on the dominant variety.

Cold Injury

Cold injury was assessed on arrival at Rungis and is expressed as a percentage. If one accepts the compromise which has to be made between firm fruit and cold injury, the commercial tolerance level is 2,5 per cent and below. A maximum tolerance level of 2,5 per cent represents one fruit with 30 per cent of its skin affected by the symptom from a carton with a count 12.

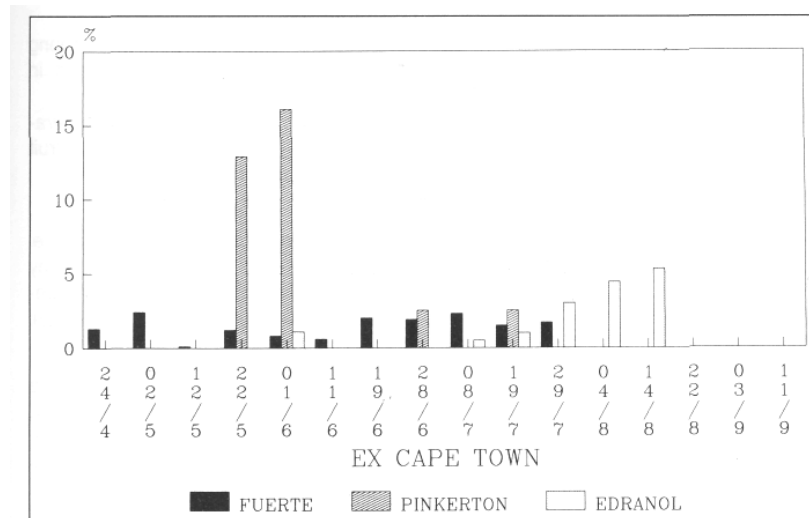


Fig 2 Incidence of cold-injured South African avocados delivered at Rungis market during 1988.

- It should be noted that a high incidence of cold injury was obtained on the vessels prior to my arrival overseas.
- Nevertheless, in contrast to previous seasons, it appeared that Fuerte had an acceptable level of cold injury. The recently introduced temperature regime is probably responsible for this beneficial effect.
- Pinkerton gave cause for concern with an alarmingly high incidence of cold injury. Edranol had an unacceptably high-level of cold injury, which is expected at these temperature regimes. An increasing incidence of cold injury could, however, not be explained.

Skin discolouration

It was necessary to add this external assessment as a separate identification factor due to the significant difference between skin discolouration and cold injury. The tolerance level for skin discolouration is 2,5 per cent.

Skin discolouration can probably best be described as an ill-defined, light to hazy brown colour which usually affects the distal portion of the avocado. The symptoms are usually poorly developed at storage temperatures, but manifest clearly after a number of hours at ambient temperatures.

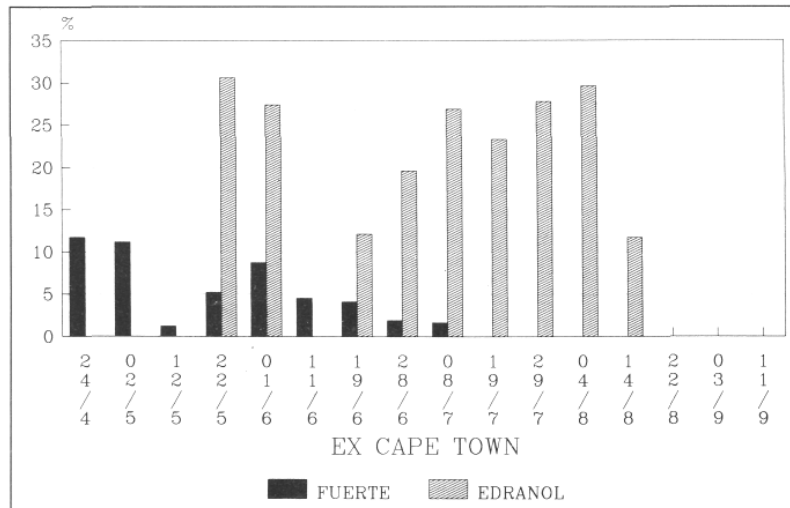


Fig 3 Incidence of skin discolouration on South African avocado fruit delivered at Rungis market during 1988.

Fuerte and Edranol appear to be susceptible to these physiological disorders.

- Fuerte indicates a decreasing incidence of skin discolouration with time, which may indicate that low temperatures may be responsible for this phenomenon. Thus as the season progressed and the avocados matured at a higher oil content, less susceptibility to cold was observed.
- Edranol is particularly difficult to interpret as no trend is discernable. However, the incidence of skin discolouration is alarmingly high. A stress factor such as moisture loss may be responsible for this phenomenon.

Grey pulp

Grey pulp is the most serious internal physiological disorder on the overseas market. The complex nature of grey pulp and the inability to identify this disorder at the packhouse makes it imperative to direct research in this direction.

- Pinkerton marketed during certain periods of the season had very high incidences of grey pulp.
- Edranol gave continuous high incidences of grey pulp.
- Hass initially gave unacceptably high levels of grey pulp which was associated with certain packhouses.
- Ryan was also problematic early in the season although this was associated with immature fruit which took too long to ripen.

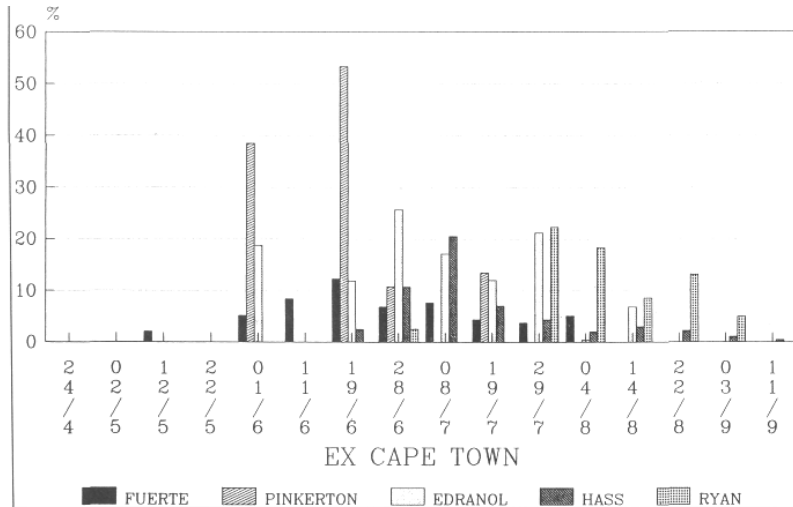


Fig 4 Incidence of grey pulp in South African avocados delivered at Rungis market during 1988.

Other physiological and pathological disorders

Fruit was also evaluated for pulp spot, vascular browning, anthracnose, stem-end rot, and anthracnose/dothiorella complex, although the incidence of these disorders was so low, that they are not reported on in detail. Pathological problems appeared to have been very well controlled and the industry has made tremendous strides in this regard.

Age of fruit

The age of each carton from packing to arrival in Rungis was noted and the following average age for all fruit from each vessel is given.

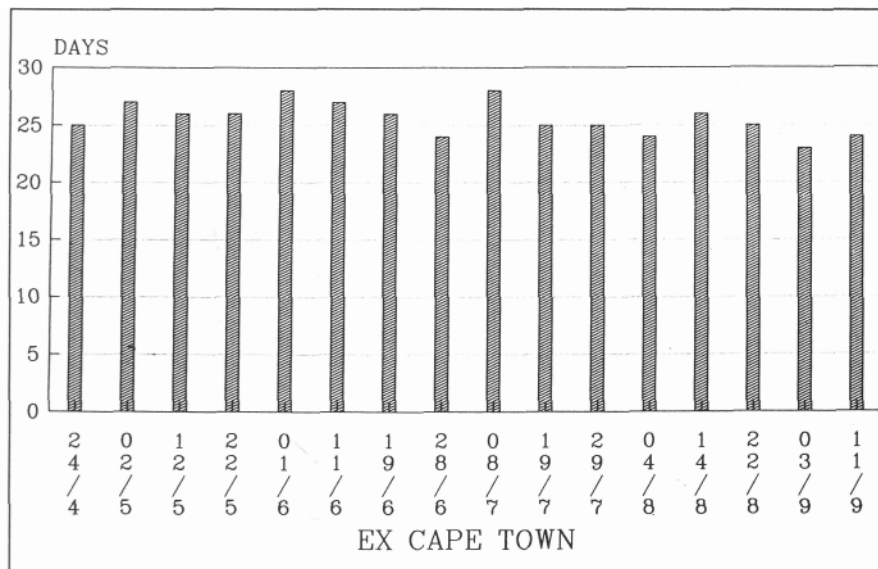


Fig 5 Mean age of South African avocado fruit delivered at Rungis market during 1988.

Packhouses appear to have a major effect on the average age of fruit although this is not discernable in the graph. An exponential increase in fruit disorders can be expected in fruit older than 28 days on arrival at Rungis.

CONCLUSIONS

This paper has dealt with quality aspects of avocados on the overseas market from a cultivar point of view. I would like to give a brief overview of how I regard each cultivar.

Fuerte

Still our largest (single) cultivar and well accepted and well-known in France. Cold injury has been largely overcome although firmness of fruit is variable.

Pinkerton

Relatively new cultivar which bears prolifically at an early age although relatively unknown in France.

Major problems of cold injury and high incidence of grey pulp. Large fruit and ripening characteristic also poor.

Edranol

Despite having been around for a long time, this fruit is poorly regarded in France, due to quality problems.

Soft fruit, cold injury, skin discolouration and grey pulp indicate that this fruit should not be freighted to France.

Hass

Cinderella of the avocado in France. Travels well and should not have any problems although same were experienced in the first half of the season.

Ryan

Aesthetically well received in France due to firmness and no cold injury. Large pip, indifferent taste and poor ripening characteristics are disadvantages.

RECOMMENDATIONS

- Grey pulp remains the single most important internal physiological disorder affecting avocados on the overseas market. The complex nature of grey pulp requires a multidisciplinary research approach to the problem. Export losses, probably

amounting to millions of Rands, are incurred.

- It is vital to determine whether the environment or the packhouses were responsible for poor quality during the first half of the season. This will determine what strategy must be followed to address the situation.
- The controversy surrounding Pinkerton must be addressed by the industry. Experiments should be sent overseas to evaluate the fruit of the two so-called "different sources of Pinkerton". No new plantings should take place until clarity has been obtained.
- Edranol should only be exported by air until new technology (eg modified or controlled atmosphere) is available. Growers should be encouraged to implement a phased approach to top-working their existing Edranol orchards.