

Has the quality of South Africa's export avocados deteriorated in recent years?

Comparing fruit quality for the 2011 and previous export seasons

RM Nelson

SAAGA Overseas Technical Officer
Subtrop, PO Box 866, Tzaneen 0850, South Africa
E-mail: richard.nelson@wanadoo.fr

ABSTRACT

The 2011 avocado export season was a challenging one for the South African avocado industry. In November 2010, severe hail storms devastated many avocado orchards. This was followed by lengthy periods of wetter weather, which further impacted negatively upon fruit quality. The result was that the volume of export quality avocados was considerably lower than originally hoped for, and in many cases the quality of these export fruits was very mediocre. In consequence, the perception in the European trade was that during 2011 the avocados available from other producer countries (mainly Peru and Chile) were of superior quality to those available from South Africa. Unfortunately, the European trade had already formed the opinion during 2010 that South African avocados were of substandard quality. The marketing of South African avocados became even more challenging as a result of the below average quality received from South Africa in 2011. The European avocado market is becoming increasingly competitive and, in anything except an undersupplied market, will only accept top quality produce. The lower volumes available from South Africa did mean that there was less pressure on the market, but Europeans nevertheless used the argument of "substandard South African quality" to negotiate lower sales prices.

The South African industry has made significant progress towards improving the quality of the avocados exported to Europe. In particular, with the advent of the use of controlled atmosphere and 1-MCP, the problem of large volumes of ripening to very ripe South African avocados being delivered to Europe is now largely a thing of the past. In addition to needing to be sold rapidly – often at a discounted price – ripe avocados are also prone to developing other quality defects such as rot or external blemishes (brown cold injury, etc.). Secondly, the incidence and severity of grey pulp has decreased to manageable levels – growers now being more aware that physiologically over-mature avocados have a much greater risk of developing this quality defect. In addition, using 1-MCP for late season, potentially over-mature avocados, has been found to decrease the severity of grey pulp symptoms.

Unfortunately, there are two quality defects which continue to cause marketing difficulties. In both 2010 and 2011 the incidence of such defects was notably higher. These problematic quality defects are lentidamage (on Hass) and black cold injury (principally on Fuerte and Pinkerton). The increased incidence of these quality defects for the 2010 and 2011 export seasons is no doubt partially due to unfavourable climatic growing conditions. However, climate is not exclusively to blame and there is an urgent need to improve the quality of our export quality avocados if the long-term future of the South African avocado industry is to be assured in an increasingly competitive international market.

INTRODUCTION AND BACKGROUND

This paper examines the quality of South African avocados exported to Europe during 2011, based largely upon observations made by and qualitative data collected by the author in his position of SAAGA Overseas Technical Officer (OTO). As OTO since 1997 it was remarkable to note the improved general

quality of South African avocados during the first few years in office. It is of concern to note that in more recent years there has been little improvement and in some cases fruit quality has deteriorated. During the same period, the fruit quality of South Africa's main competitors for the European summer avocado market, Peru and Chile, has improved. The result has



been that the trade has become a lot more discerning than it used to be, with many buyers preferring to choose avocados from these origins rather than "poorer quality" South African avocados. For Peru in particular, the retail price tends to be lower than for South African avocados, and it is difficult to justify a higher sales price for South African avocados when one cannot guarantee superior quality fruits.

This paper summarises the quality of South African avocados delivered to and inspected in Europe during the 2011 export season. Since the general perception in Europe is that the quality of South African avocados has deteriorated in recent years, the 2011 quality data are compared with quality data collected by the author during previous South African avocado export seasons. Only Hass, Fuerte and Pinkerton are discussed in this report. With the exception of Ryan, the volumes for other export cultivars were too low to allow for meaningful data collection. As is generally the case for South African Ryan, there were no major quality defects for this cultivar during the 2011 export season.

OTO SAMPLING PROCEDURES

The 2011 South African avocado fruit quality data on which this report is largely based, were collected by the author between late March and mid October 2011. Quantitative arrival and ripe quality reports were provided to the industry on a weekly basis. Arrival quality was gauged by inspections of pallets on the day of delivery to the importers' warehouses; ripe quality data were obtained from ripened fruits originating from sample cartons collected during arrival inspections. Arrival inspections were carried out at importers' warehouses in Rungis (France) and in Rotterdam (the Netherlands). The driving distances between the various UK centres receiving large volumes of South African avocados, makes it impractical to inspect or sample representative volumes of avocados delivered to that country. Regardless, the author interacts regularly with UK receiving agents and makes a point of meeting with them a couple of times a year. The nature of the avocado trade in the United Kingdom – being largely centred on the pre-ripened market – means that the type of customer feedback differs considerably from that received from continental Europe. Details on sampling and data collection procedures are provided in Nelson *et al.*, 2001.

RESULTS AND DISCUSSION

Fuerte quality

In Figure 1 the percentage incidence of black cold injury for Fuerte is plotted on a weekly basis.

The seasonal average for black cold injury was 0.5% in 2011. This is certainly a marked improvement when compared with results of a decade or more ago (*e.g.* 4% for the 1999 export season and 0.9% and 1.5% for the 2001 and 2002 season respectively – Figure 2).

It is likely that the main reason for this improve-

ment has largely been due to better in transit temperature management. In particular, exporters are well aware that early season, less physiologically mature avocados are more prone to development of external chilling injury – they thus select higher shipping temperature regimes for early season export consignments. It has always been considered hazardous to use higher shipping temperature regimes, since this increases the risk of the fruit ripening in transit. However, the use of controlled atmosphere and more recently the increased use of 1-MCP to delay the ripening process, has allowed higher shipping temperatures to be used without increasing the risk of in transit ripening. Having said the foregoing, it should be noted (Figure 2) that the incidence of black cold injury for Fuerte for the 2010 and 2011 export seasons (0.36% and 0.5% respectively) was *much* higher than the results for 2008 and 2009 (0.08% and 0.05%). The incidence of black cold injury for South African Fuerte during 2010 and 2011 has thus increased five- to ten-fold compared with the 2008 and 2009 seasons. Such an increase starts to become noticeable (even at low percentage levels), especially when one realises that it is the larger sized fruits that are always most susceptible to black cold injury. If one breaks down the 2011 Fuerte black cold injury results into count sizes, one notes that for:

- count 12s, BC = 1.18%;
- yet count 14s, BC = only 0.23%; and
- only 0.13% BC for count 16s; etc.

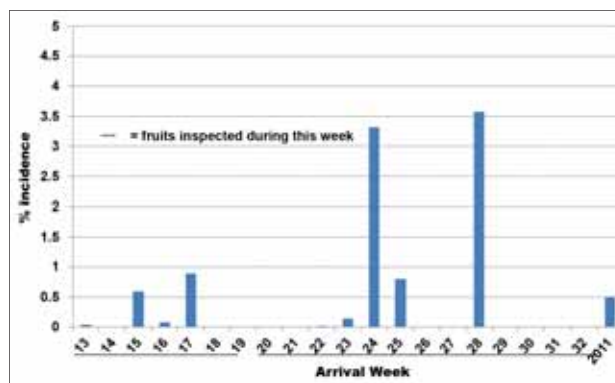


Figure 1. 2011 Fuerte arrival – black cold injury – industry.

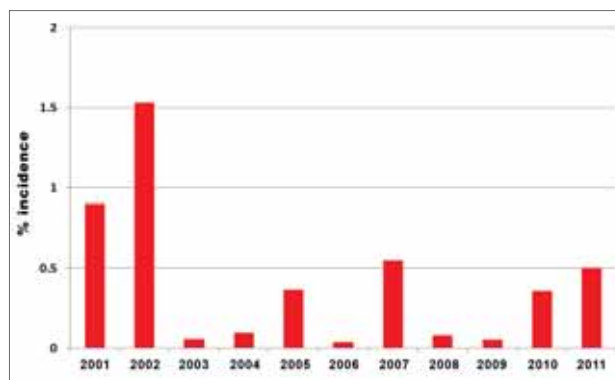


Figure 2. Industry Fuerte black cold injury 2001 to 2011.



Because this pattern is always the same, in comparison the low figures for 2008 and 2009 translate into “very rare cases of black cold injury lesions” – even for the larger sized fruits that are more prone to developing such lesions. It is thus understandable that the European trade has noted that the quality of South African Fuerte has deteriorated over the past couple of years. It should also be noted that over the past few years, Peruvian Ettinger has become available in Europe in significant volumes during the early part of the South African export season. Peruvian Ettinger is generally very attractive and rarely displays external blemishes.

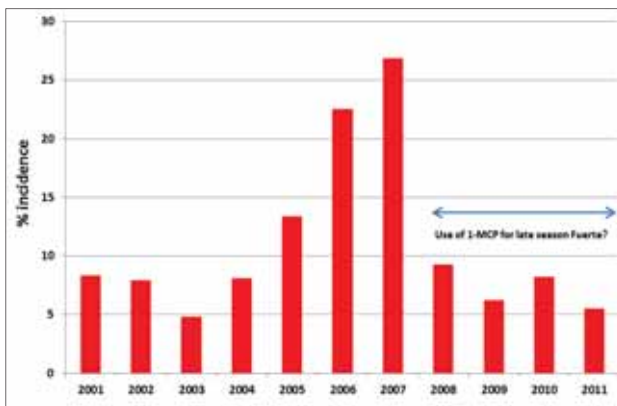


Figure 3. Industry Fuerte grey pulp 2001 to 2011.

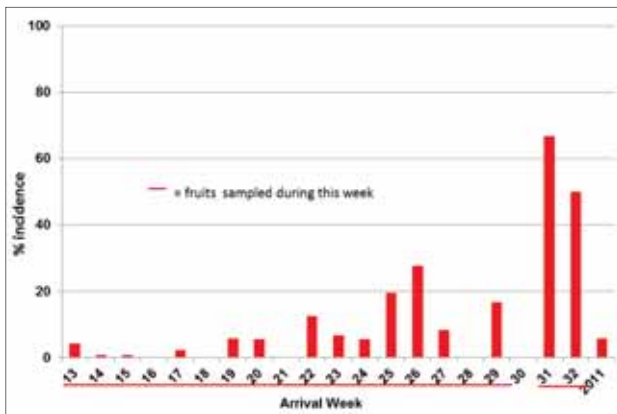


Figure 4. 2011 Fuerte grey pulp – industry.

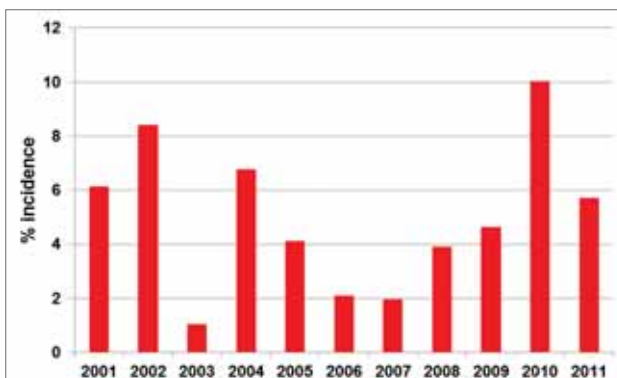


Figure 5. Industry Hass lentidamage 2001 to 2011.

Figure 3 shows that the incidence of grey pulp in South African Fuerte has been less than 10% since 2008, after continual increases in the incidence of this quality defect from year to year between 2003 and 2007. This increase in grey pulp incidence correlates with the South African avocado industry having sent larger volumes of Fuerte later and later in the season – confirmation that the increase in grey pulp was largely related to fruit physiological maturity. The motivation for hanging one’s Fuerte for the late-season European market is that there tends to be an undersupply of green-skinned avocados in September and October in Europe, and sales prices are correspondingly higher. The South African industry continues to export significant volumes of Fuerte late in the season and (Figure 4) there was again a corresponding increase in grey pulp incidence in 2011. However, it has been observed that treating more mature avocados with 1-MCP decreases the severity of grey pulp development and most exporters now do so for their later Fuerte consignments. Hence the lower percentage incidence of grey pulp since 2008 and again in 2011 (Figure 3 and 4). Fuerte grey pulp is thus one area in which the South African avocado industry has made progress in recent years.

Hass quality

Comparing OTO arrival quality data since 2001 (Figure 5), it can be seen that the seasonal average for Hass lentidamage during 2011 was somewhat higher (5.7%) than has been the case for several years – the only exception being the 2010 export season with 10% – the highest since 2002. I should like to emphasise that the lentidamage figures that I supply are *averages* – in other words a figure of 5% lentidamage would mean (for example) that there were many pallets (perhaps even the majority) which were practically free from lentidamage, but that there were also a significant percentage of pallets with a much higher percentage of fruits with noticeable lentidamage. The higher incidence of Hass lentidamage during 2010 and 2011 is most likely due to unfavourable climatic conditions in the production areas. Regardless, the result has been that for the past two export seasons, the European trade has been presented with lots of lentidamaged South African Hass. Such fruits compare unfavourably with Hass from Spain and Peru, which are largely free from lentidamage. Lentidamage has been identified as one of the quality defects that caused the most marketing challenges. It is strongly advised that all growers and pack houses consistently follow the SAAGA recommendations for minimising lentidamage incidence.

Pinkerton quality

The main quality defects associated with Pinkerton are black blemishes on the fruit peel (black cold injury) and internal greying of the fruit pulp (grey pulp). In both the 2010 and 2011 South African export seasons, numerous complaints were received from the European trade – the message being that the qual-



ity of South African Pinkerton has deteriorated compared with previous seasons.

If one looks at the incidence of grey pulp on South African Pinkerton since 2001 (Figure 6), one notes that the lowest percentage was for the 2003 export season, with the incidence of grey pulp having been higher than every season since then. Having said that, from 2007 onwards the incidence of Pinkerton grey pulp has been below 4% every season with the exception of 2010, when the incidence was about 6%, and that the grey pulp incidence in 2011 was the lowest since 2004 – at just over 2%. There has thus in general been a marked improvement in the internal ripe quality of South African Pinkerton in recent years. As for Fuerte, some of this improvement is probably partially due to the increased use of 1-MCP for later season Pinkerton. In Figure 7 it can be seen that while there was more grey pulp towards the end of the season – associated with physiological over-maturity – the incidence was rarely above 5%.

The incidence of rots on ripened Pinkerton (Figures 8 and 9) has remained relatively stable over the past several years, although it has been noted that in both 2010 and 2011 the incidence of rots was higher than was the case during 2009 (another reason for the Europeans to believe that South African avocado quality has deteriorated). It is suggested that some growers, who have been hanging their Pinkertons late in order to take advantage of the better green-skin prices that are often achieved in Europe in September and October, have not ensured that their orchard copper spraying programmes provide sufficient protection against late season rot development.

The one quality defect which continues to plague South African Pinkerton is the development of black cold injury lesions. The incidence of black cold injury has always been significantly higher than the incidence of this defect for South African Fuerte. As mentioned above (Figure 2), from 2003 onwards the incidence of black cold injury for Fuerte has never been higher than 0.55% (2007). In contrast, while from 2003 to 2009 the incidence of black cold injury for Pinkerton was never above 2% incidence (Figure 10), it was never as low as the worst incidence for Fuerte for the same period. The lowest incidence of black cold injury for Pinkerton was 0.81% in 2005. In 2010 and 2011, Pinkerton black cold injury was higher still (4.5% and 3.1% respectively). Such percentage incidences represent three- to four-fold increases in comparison with the preceding years, and explains why the European trade is convinced that the quality of South African Pinkerton has deteriorated over the past couple of seasons (2010 and 2011). In December 2011, at SAAGA's request, two new, higher avocado shipping temperature regimes were introduced specifically for use for Pinkerton exports. It has been proven scientifically that the easiest way of reducing the incidence of black cold injury on Pinkerton is by using higher in transit temperatures. Having stated this, it must be emphasised that the root cause for some consignments may well (and often does) originate in the orchard –

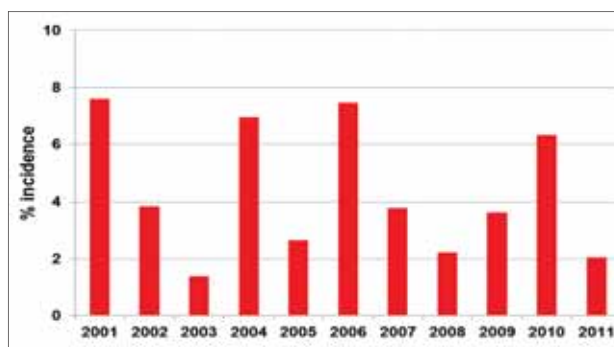


Figure 6. Industry Pinkerton grey pulp 2001 to 2011.

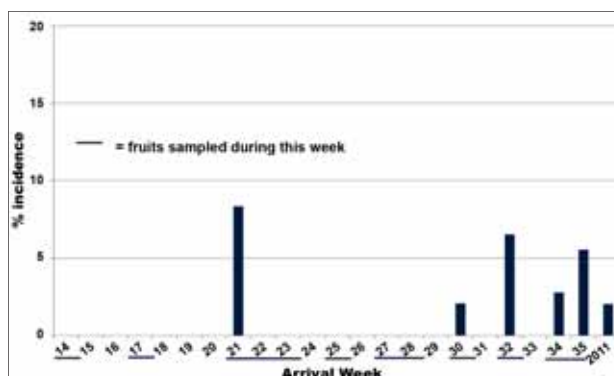


Figure 7. 2011 ripe Pinkerton – grey pulp – industry.

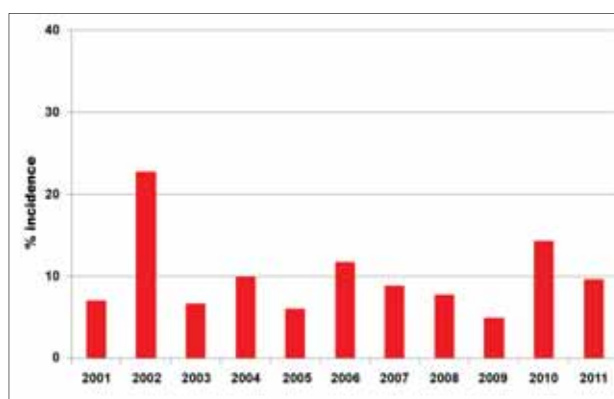


Figure 8. Industry Pinkerton anthracnose 2001 to 2011.

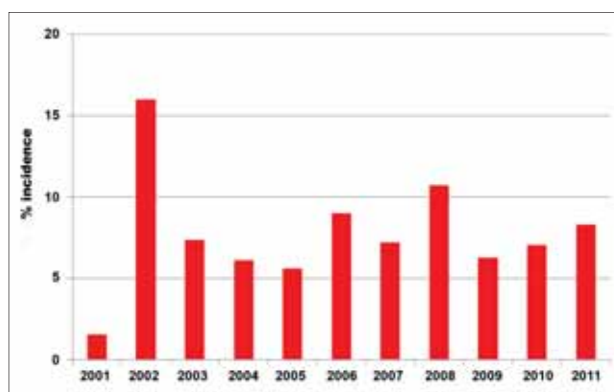


Figure 9. Industry Pinkerton stem-end rot 2002 to 2011.



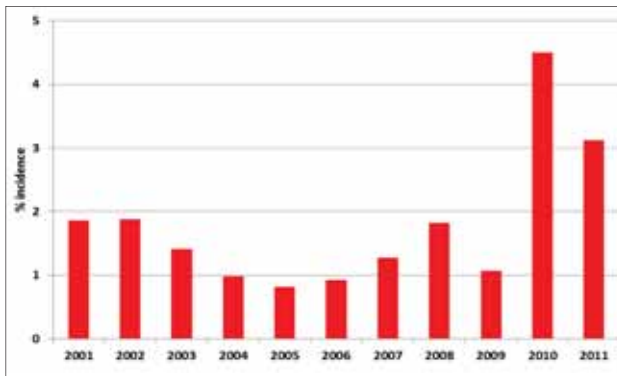


Figure 10. Industry Pinkerton black cold injury 2001 to 2011.

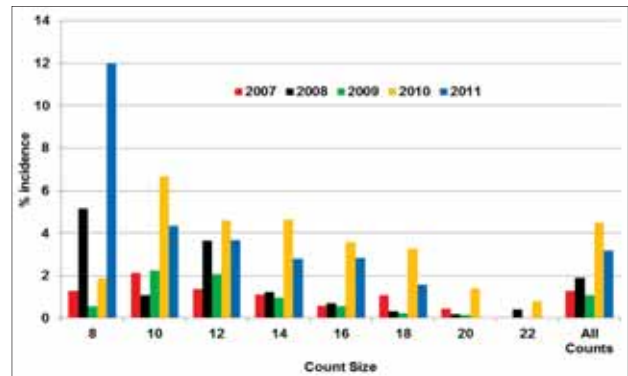


Figure 11. Black cold incidence per count size.

e.g. orchard soil nutrient imbalances. Using a higher shipping temperature may well lessen the risk of a high incidence of black cold injury, but it is unlikely to remove this risk entirely if the growing conditions are not ideal.

It should also be noted that (as was mentioned for Fuerte above) larger sized Pinkerton fruits are more susceptible to developing black cold injury (Figure 11). Pinkerton trees tend to bear a high percentage of large fruits and thus a large proportion of exported South African Pinkertons are Count 8 through 14. In consequence, a significant percentage of the total South African export Pinkerton crop is prone to developing black cold injury lesions during the lengthy cold storage associated with sea-freight transport to Europe. The obvious solution would be to limit the number of large-sized Pinkertons that are exported, favouring the marketing of such fruits on the domestic market (where large green-skinned avocados are very popular). Or, alternatively, to export large sized Pinkertons to the European markets by air – air freight is only an economically viable option when European avocado prices are very high. Thus every effort must be made to minimise the incidence of black cold injury on large count sea-freight Pinkerton exports.

It is probable that the Pinkerton quality defects observed during the 2011 season (and, for that matter, also for the 2010 season) were caused by factors such as unfavourable climatic conditions and / or incorrect agricultural practises. The Subtrop technical staff has been mobilised to inform Pinkerton growers and their pack houses as to the appropriate steps to take to minimise the risk of black cold injury on Pinkerton.

SUMMARY AND RECOMMENDATIONS

The South African avocado industry has, over the past couple of decades, made considerable progress in improving the quality of avocados marketed in Europe. Specifically, the most important advances have been in reducing the amount of soft deliveries to negligible levels and in reducing the percentage of fruits affected by grey pulp. Despite this progress, other quality defects continue to cause sales diffi-

culties in a market which has become increasingly competitive, and which can now choose from a number of different avocado producing countries during the European summer, when the majority of South African avocados are available for sale. Furthermore, over the previous two export seasons (2010 and 2011) the quality of South Africa's exported avocados was inferior to the quality observed during the seasons immediately preceding these two years. The incidence and severity of lentidamage in Hass and of black cold injury for both Pinkerton and Fuerte, increased markedly in 2010 and 2011 – hence the perception by the European trade that the quality of South African avocados has deteriorated in recent years.

The impact of having a reputation for supplying substandard avocados cannot be underestimated – buyers are only too willing to switch to other source countries or to negotiate lower sales prices because of "poor quality" fruit. It is acknowledged that it is more challenging to limit the incidence of quality defects when local weather conditions are unfavourable. For example, extra care needs to be taken when harvesting and packing Hass after it has rained, in order to minimise the amount of lentidamage that develops. Growers should also carefully follow the SAAGA recommendations regarding the agricultural practices that should be followed to minimise the risk of black cold injury, and are encourage to seek the advice of their local Subtrop technical advisor.

It is imperative that the South African avocado industry regains the favourable reputation that it enjoyed a few years ago – that of being a reliable supplier of good quality avocados. If we do not achieve this goal, then there is no guarantee that our traditional export market – Europe – will continue to accept and buy our avocados for an economically profitable price. Our competitors are increasingly able to supply avocados that meet the European's required standards, and the buyers are aware of this.

REFERENCES

NELSON, R.M. 2006. Is the quality of South African avocados improving? The 2005 export season – how fruit quality compared with previous seasons' results.



South African Avocado Growers' Association Yearbook, 29: 14-18.

NELSON, R.M. 2010. Quality challenges facing the South African avocado industry – An overview of the 2009 South African avocado season. *South African Avocado Growers' Association Yearbook*, 33: 7-13.

NELSON, R.M., BEZUIDENHOUT, J.J. & DONKIN, D.J. 2001. An overview of the export market situation and fruit quality during the 2000 export season. *South African Avocado Growers' Association Yearbook*, 24: 5-12.

NELSON, R.M., DONKIN, D.J., BEZUIDENHOUT, J.J., EKSTEEN, G.J., HUYSAMER, M. & OOSTHUIZEN, M. 2000. Evaluation of avocados exported to Europe and the UK during the 1999 season. *South African Avocado Growers' Association Yearbook*, 23: 21-29.

NELSON, R.M., BEZUIDENHOUT, J.J. & DONKIN, D.J. 2003. Trends in the quality of exported avocados: Report on the quality of fruits exported to Europe during the 2002 export season and comparisons with previous seasons. *South African Avocado Growers' Association Yearbook*, 26: 113-122.

