Solving the ‘Hass’ skin colouring riddle

When consumers feel they cannot trust the external appearance of an avocado to tell them when the inside is ready to enjoy, exports come under threat. Fortunately a recently completed three-year study provided some answers.

The skin colour of ‘Hass’ avocados changes from green to purple to almost black when they ripen. This movement through the colour spectrum has become an established ripening indicator for growers and consumers alike.

In recent years, however, this ripening guide seemed to have failed markets importing ‘Hass’ avocados from South Africa. In some consignments, variable colouring and colouring that did not correspond with the softening of the avocado flash, have resulted in quality challenges.

Consequently, consumers in especially our most lucrative export markets have started questioning the reliability of colour changes as a ripening or softening indicator.

Realising the threat that such doubts pose to the South African avocado industry’s credibility and ultimately market share, the South African Avocado Growers’ Association (SAAGA) commissioned the Post-harvest Technologies Division of the Agricultural Research Council’s Institute for Tropical and Subtropical Crops (ARC-ITSC) and Lowveld Post-harvest Services to determine the pre- and post-harvest factors that could be causing the problem.

The research team concluded that the incidence of variable colouring in ‘Hass’ avocados during ripening is prevalent mainly in early harvested fruit, irrespective of ripening temperatures.

Interestingly, fruit harvested from orchard blocks with slopes was found to be most susceptible to variable colouring during ripening. In addition, variable colouring is escalated by external chilling damage, and external chilling damage is associated with fruit harvested from lower slopes.

The results from this study confirmed that variable skin colour development during ripening is predominantly an early-season occurrence, regardless of production area, orchard slope, fruit canopy position, ripening temperature or post-harvest treatment with 1-MCP.
The impact of 1-MCP on the colour development of 'Hass' fruit during ripening is illustrated by the poor skin colour of untreated avocados during early season.

That variable skin colour development during ripening was predominantly an early-season occurrence, regardless of production area, orchard slope, fruit canopy position, ripening temperature or post-harvest treatment with 1-MCP. The team concluded that the environment had a minimal impact on how colour developed in 'Hass' avocados, and that colour development could mainly be manipulated at protein and enzyme level. Consequently, a new research proposal on the impact of proteins and enzymes on anthocyanin synthesis and skin colour change will be drafted and submitted to the industry for consideration.

In the 2016 season, Nhlanhla and his team investigated whether girdling, which is a pre-harvest cultivation practice, drives sugars towards the fruit skin and, therefore, enhances anthocyanin synthesis. However, they found that girdling only improved fruit size.

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**KNOW YOUR AVOCADO OIL**

As the worldwide drive to live healthier lifestyles gathers momentum, avocado oil is becoming increasingly popular. It is not surprising, considering that the oil is derived from a fruit known for its health properties.

Avocado oil is packed with mono-unsaturated omega-3 and omega-6 fats, and is naturally cholesterol free.

Its high smoking point of 250°C means avocado oil is safe for high temperature cooking methods, such as frying, baking and roasting, and makes it a good substitute for sunflower and canola cooking oils.

Because of its neutral flavour, avocado oil can be used for a virtually unlimited variety of dishes without influencing the taste of the food.

In South Africa, Westfalia makes avocado oil from locally grown 'Hass' avocados.