INFLUENCE OF EARLY SEASON MATURITY ON FRUIT QUALITY IN HASS AVOCADOS IN NEW ZEALAND

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Immature fruit are prone to a range of quality disorders, which may be exacerbated by periods of extended coolstorage. The New Zealand industry is faced with the issue of managing the export maturity standard to minimise maturity related quality problems in early season (August) exports to the USA while obtaining as early a market presence as possible. The current industry maturity standard for 'Hass' avocados is an average dry matter (DM) of 24% with a constraint on variability within a 20 fruit sample. Studies on early season maturity over the past three years (2000-2002) have focussed on 1) determining regional rates of DM accumulation early season 2) influence of fruit size on DM content and 3) investigating the relationship between DM content and fruit quality. Regional patterns of DM accumulation have been followed on monitor orchards in three of New Zealand's production areas (Far North, Northland and Bay of Plenty) for the past 3 seasons. Samples of 20 fruit were drawn at 2 weekly intervals from several monitor orchards in each region for a period of 2-5 months at the start of each export season. Fruit weight and DM were determined for each individual fruit in the 20-fruit maturity sample. DM increased in a linear fashion within each region for a given season and ranged from 0.06 to 0.11% DM per day. Regional differences in rates of DM accumulation were not consistent on a seasonal basis. No significant relationship was observed between DM content and fruit size (weight) in any region for the 2000 and 2001 seasons, with weak relationships observed in the 2002 season.

At several times during the monitoring period samples of between 100-300 fruit were harvested before the start of the export season. Fruit were held in coolstorage at 4-5 ºC for a period of either 2, 4 or 6 weeks. Fruit were then ripened at 20 ºC and fruit quality assessed at eating ripe by hand feel (equivalent to 85-100 on a firmometer using a 300g weight). Significant relationships were observed between DM content and several aspects of fruit quality in each season, notably checker boarding, flesh adhesion to the stone, vascular stringiness and rot incidence, all of which decreased as fruit maturity increased. Minimum DM content within the maturity sample was a better indicator of fruit quality than the sample average.