

# STARCH AND ENERGY ASPECTS OF FRUITING AND DELAYED HARVEST IN 'HASS' AVOCADO [*PERSEA AMERICANA* MILL.]

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## ABSTRACT

Growth and partitioning in the avocado is reviewed and, in that context, two experiments are presented that constitute part of the South African Avocado Growers' Association (SAAGA) and the South African Foundation For Research Development's active research programmes. This is followed by a general discussion of the topic and some proposals made for future research.

In the first experiment, a study of the phenological and physiological impact of 'late hanging' of mature 'Hass' avocado fruit in the Natal midlands (R.S.A.), at a cool and warm site was carried out during 1989 and 1990. Effects of fruiting, discussed in the literature review, were inconsistent but the general trend was that harvesting trees before flowering tended to result in earlier flowering, higher tree trunk and main branch wood and bark starch concentrations and a more prolific first (spring) growth flush than those harvested after flowering. While this experiment should be regarded as a preliminary investigation towards ongoing research in this field, the author expressed his opinion that producers should limit 'Hass' fruit hanging to the month of September to ensure balanced (low risk) cropping for maximum long term returns. Further, if Natal midlands producers intend to harvest their fruit later than September in future, it might be necessary for them to consider fruit thinning early on in the season after set, depending on the crop load.

In the second experiment a tentative fertigation solution was proposed for the growth of young nursery avocado plants in a pre-enriched, mixed 1:1 pine bark to sand medium. Further, under the precept of producing vigorous nursery plants that are suitable for transport and field establishment, the growth response of young avocado plants to daily fertigation with three levels of  $\text{NH}_4\text{NO}_3$  (*i.e.* 40, 140 & 240  $\text{mg l}^{-1}$ ) was studied under differential temperature regimes *i.e.* cool (day 22 °C for 12 hr/ night 12 °C for 12 hr), warm (day 26 °C for 12 hr/ night 16 °C for 12 hr) and hot (day 30 °C for 12 hr/ night 20 °C for 12 hr). Leaf concentrations of starch, N, P, K, Ca, Mg, Zn, Fe, Mn, Cu & B were also determined. A general level of 90  $\text{mg l}^{-1}$   $\text{NH}_4\text{NO}_3$  was recommended as an industry standard, and the results obtained were discussed within the parameters of the treatments set.