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**USE OF ETHREL® TO ELIMINATE LATE FLUSHING AND PROMOTE
FLOWERING IN MANGO**

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In the tropical region of northern Australia, late vegetative flushing in mangoes 1-2 months before the inductive cold period often causes poor flowering and low productivity. It has been demonstrated that late flushing depletes carbon reserves, reduces the number of sufficiently matured terminals to ‘perceive’ the flowering stimulus (low temperatures), and that the presence of young leaves on their own inhibits flowering.

Preliminary experiments have shown that hand tip pruning is effective in promoting flowering and fruiting in the mango cultivar Kensington Pride in the Darwin region (Blaikie, unpublished). This technique is not suitable for commercial orchards due to the intensive labour required and associated costs. We have trialled a method of chemical pruning to remove or prevent late vegetative flushing. Foliar spraying of Ethrel® (a.i. 48% Ethphon) at 0.1% concentration on new flushes less than 5 cm long effectively “burned off” the new flush and promoted better flowering. Ethrel® spray treatment targeted the whole tree using a battery operated spray unit, and the canopies were sprayed until dripping.

At the time of treatment



1-2 weeks after treatment



Results from the 2004 season showed that 0.1% Ethrel[®] (without wetting agent) was 100% effective in “burning off” new buds/flushes. Side effects were loss of recently mature leaves (< 5%) and loss of old, shaded leaves which often are not active carbohydrate producers (20-30%).

In the 2005 season 0.1% Ethrel[®] was still 100% effective in burning off new buds, but the side effects appeared stronger with 24% loss of recently mature leaves, 25% loss of hardy mature leaves and 36% loss of old leaves. A lower concentration of 0.05% Ethrel[®] was 78% effective in completely “burning off” new buds, with minimum losses of non targeted leaves: 4% loss of recently mature leaves, 1% loss of hardy mature leaves and 17% loss of old leaves. Loss of old/shaded leaves is beneficial to a tree’s overall performance; in Darwin, mango growers sometime employ people to strip off old leaves from the trees.

Results showed that a “dose-effect relation” was not consistent over the two years of the experiment. It appears the effectiveness may have depended on weather (temperature), canopy maturity, soil water conditions and spray methods. An optimum dose-effect relation needs to be determined which has the best agronomical and economical outcomes, i.e. a sufficient amount of new growth is removed, with no negative effect on recently matured leaves, for a better economic return. Nevertheless, at this stage, it is quite safe for the growers to experiment by themselves using 0.05% to 0.1% Ethrel[®].

Another positive effect of Ethrel[®] is that treated trees showed reduced flushing activity in the weeks following treatment: e.g. 15 days after the first treatment, 33% of the control tree canopies were still flushing while none of the 0.1% Ethrel[®] sprayed trees produced new flushes.

This year we also conducted a pilot trial on ‘holding up’ flushing, i.e. spraying mature canopies with 0.1% Ethrel[®] to postpone bud break until a flower-inductive cool period arrives. Two sprays spaced two weeks apart were applied. Results were encouraging: on average 25% of control tree canopies flushed while none of the treated trees flushed. Spraying for this objective should be carried out after 5 pm and lower concentrations of Ethrel[®] (0.05-0.07%) should also be trialled.

Other benefits of Ethrel[®] application include shedding of old, diseased leaves, opening up the canopy and suppressing new growth, which may reduce pest/disease outbreaks, and improve synchronization of phenology, reducing management costs.



Emerging panicles below the abscised terminal



Other effects: loss of old leaves