

CHEMICAL REGULATION OF TIMING AND SYNCHRONY OF BUD BREAK AND FLOWERING IN DIFFERENT WOOD TYPES OF APPLE

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ABSTRACT

Bud break and flowering of apples is protracted in New Zealand's maritime climate in spite of the accumulation of sufficient winter chilling units. This lack of synchrony is further accentuated by a high propensity for axillary buds on one-year old woody shoots to flower and set fruit; these buds typically developing 7-10 days later than terminal buds on older spur wood. A protracted bloom makes it difficult for growers to determine the optimum time to apply routine sprays such as flower and fruit thinners or to begin a program of gibberellin sprays for russet reduction, and also leads to mixed fruit maturity at harvest, necessitating multiple picking of most cultivars in order to achieve the uniform maturity required in fruit lines destined for export markets. Various horticultural sprays (HiCane™, Waiken®, Erger® G, Urea, Armobreak® + KNO₃) were tested for their effects on the timing and synchrony of bud break and flowering of one-year old shoots and spur wood of apple cv. 'Royal Gala' in two regions and seasons. Application of Hi-Cane™ or Erger® G advanced bud break and bloom by 7-8 days, but did not reduce their duration (Fig. 1). Armobreak® + KNO₃ advanced bud break and bloom by only 3-4 days in one study.

Hi-Cane™ or Erger® G were the most effective treatments to advance bud break and flowering but did not reduce the duration of budbreak. In separate experiments Hi-Cane™ and Erger® G significantly increased the duration of bud break and flowering. This response was attributed to the lower ambient air temperatures either immediately prior to or during buds break. Earlier bud break and bloom resulted in increased fruit russet due to spring frost damage in one experiment.

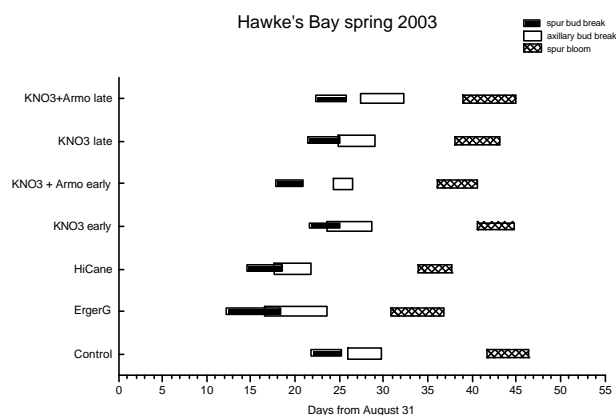


Fig. 1. Effect of dormancy breaking treatments on the timing of bud break on spur and axillary buds and of spur full bloom on 'Royal Gala'/MM.106 apple trees in Hawke's Bay, NZ in spring 2003. The length of the horizontal bars represents the interval for 20-80% completion.

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