

## The potential for the use of growth regulators in poppy production

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This experimental work was aimed at maximizing the total yield of morphine in poppy (*Papaver somniferum*) capsules. Previously, in Tasmania it has been shown that capsule dry matter peaked at 2-3 weeks following full bloom and then fell by up to 30% at dry commercial maturity (12% moisture in capsules) while maximum morphine concentration was not reached until 3 weeks after peak dry matter (1). The approach has been to use growth regulators to arrest this drop in capsule dry matter and to maximize machine harvestable capsule morphine, by reducing plant height to make the crop less susceptible to lodging from disease and adverse weather conditions.

### Methods

In 1982/83 field experiments were sown at Forthside in N.W. Tasmania. Maleic hydrazide and cycocel were applied as foliar sprays at early stem elongation, 10 days before flowering and 5 days after flowering at nil, 500 and 2 000 ppm. In 1983-84 at Forthside, daminozide for height reduction was foliar applied at nil, 5 000, 15 000 and 20 000 ppm at early post herbicide, rosette and early stem elongation. In another experiment IAA at nil, 500, 1 000 and 1 500 ppm was foliar applied at rosette, hook and one week after full bloom. These factorial experiments were set out in randomised blocks with two replicates. Between full bloom and dry maturity 0.5 m<sup>2</sup> quadrats were harvested weekly for the measurement of dry matter yield and morphine concentration.

### Results and Discussion

In 1982/83 neither maleic hydrazide nor cycocel had any effect on any plant characteristic. In the 1983/84 season, daminozide at 20 000 ppm was most effective in reducing plant height by 22 cm at maturity when applied at the rosette stage (Fig. 1). Lodging was reduced from 13.5% to 1.5% by weight of capsules. IAA at 1 500 ppm gave a trend to increase harvestable capsule yield at dry maturity when applied at both the hook stage and one week after full bloom but not at the rosette stage (Fig. 2). Morphine concentration was not affected by either daminozide or IAA and thus both materials show promise.

