

## Control of St John's wort (*Hypericum perforatum* L.) in Large Paddocks on Hill Country

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St John's wort was introduced to "Birnam Wood", Coolah in the 1946 drought in hay from Mudgee. Despite spot-spraying with herbicides, aerial topdressing with fertilisers, aerial sowing subterranean clover and heavy grazing with Merino wethers and a Suffolk flock between 1946 and 1975, St John's wort spread throughout the steep hills on the property. By 1975 it looked as though the past efforts to control the weed were a lost cause and new techniques had to be tried. Two techniques are discussed in this paper.

### Aerial spray-sow technique (Campbell, 1986; Watson and Campbell, 1994)

In 1975 a 25 ha paddock, heavily infested with St John's wort, was aerially sprayed with 3.2 L/ha of Roundup<sup>(R)</sup> (glyphosate) in April and aerially sown with phalaris (half Australian commercial and half Siroso), cocksfoot (Currie) and subterranean clover in May. Fertiliser (SF45) was also aerially applied in May. The paddock was spelled until the phalaris had seeded in summer 1975/76, spelled again in spring and summer 1976/77 and then grazed heavily over the following 18 years.

The sown pasture replaced 80% of the St John's wort in 1975/76 and has gradually increased control until now 90% of the paddock is free of the weed.

### Grazing management

In 1979, grazing with a mixture of cattle and goats began on hills heavily infested with St John's wort that had been aerially sown with subterranean clover and topdressed with fertiliser. The goats grazed the blackberries, briars and thistles and reduced the height of the grass allowing the cattle to range freely over the complete area of each paddock. The stocking rate used was 8.2 DSE/ha; in the beginning it comprised 4 dse/ha goats and 4.2 DSE/ha cattle, but after two years, the stocking rate of goats was progressively reduced and that of cattle increased. Now, consistent rates are 2.2 DSE/ha goats and 6 DSE/ha cattle. Feral goats of various colours were used with Santa Gertrudis cattle. The Santa Gertrudis breed appears to tolerate the detrimental effects of St John's wort better than breeds with white markings.

By 1986 the goats had controlled the blackberries, briars and thistles, and by 1994 the ground cover of St John's wort in the grazed paddocks had been reduced from 90% dense wort, before grazing commenced, to 20% dense wort, 50% scattered wort and 30% nil wort. The stocking rate had been increased from 2.5 dse/ha pre-1979 to 8.2 DSE/ha in 1994. The paddocks are now turning off fat cattle. By grazing at 8.2 DSE/ha the quality of the pasture has improved because the animals are now grazing mainly subterranean clover and native grasses, along with the wort. The feed value of the leaves of the weed is high (Table 1) which could contribute to the increased animal production.

Despite some wort still remaining in the grazed paddocks, surprisingly, the animals suffered very little from the photosensitising effects from the wort; i.e., animals with white skin (Hereford x Santa Gertrudis cattle and white goats) were only slightly affected.

### Discussion

On hill country the aerial spray-sow technique is the best method to use to control St John's wort. For long-term control of wort, it is essential to sow phalaris and subterranean clover, graze heavily and fertilize regularly. The disadvantage of the aerial spray-sow technique is that it costs from \$100 to \$150/ha. Although this is a profitable investment, because it lifts stocking rate from 2.5 to 8.2 DSE/ha, finding the initial investment finance can be difficult.

Table 1. Feed value of St John's wort.

Plant part	Crude protein (%)	ADF <sup>1</sup> (%)	DMD <sup>2</sup> (%)	ME <sup>3</sup> (Mj/kgDM)
Leaves	20.9	15.3	79.7	12.0
Flowers, top stems, top leaves	20.0	23.6	72.6	10.9
Side stems	7.0	49.5	45.7	6.9
Main stems	4.3	59.8	36.1	5.4

<sup>1</sup> Acid Detergent Fibre; <sup>2</sup> Dry Matter Digestibility; <sup>3</sup> Metabolisable Energy.

Grazing management does not require as high a financial outlay as the spray-sow technique. However, it is essential to aurally sow subterranean clover, fertilize and upgrade fences before heavy grazing with cattle and goats can begin. Control of St John's wort by heavy stocking is probably limited to hill paddocks of less than 80 ha in size, because in bigger paddocks it is difficult to get cattle to graze the whole area of the paddock; cattle tend to graze the lower parts of the paddock near water. By providing water near the top of the hill, control in paddocks larger than 80 ha could be attained. However, this provision, and the alternative of sub-division, are costly procedures.

As Santa Gertrudis cattle range more freely than

British breeds in steep hill paddocks they are better suited to the "Birnam Wood" situation than the British breeds. Good fencing and eliminating rogue goats that lead mobs out of their home paddock has made goat management relatively easy.

### References

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