

# A NATURAL CURE FOR PATERSON'S CURSE



Paterson's curse *Echium plantagineum*, is native to Mediterranean Europe, it was first recorded in Australia in 1843 and declared noxious in 1911. Since then it has become an important weed of agriculture throughout southern Australia. It is toxic to livestock and effectively out-competes pasture species, reducing productivity, reports Kerry Roberts from the Department of Primary Industries.

Although four species of *Echium* have been introduced into Australia, others include *E. vulgare*, *E. italicum* and *E. simplex*, only *E. plantagineum* has become a serious noxious weed. *E. vulgare* is the next most commonly occurring of the four, and is also classed as noxious.

A National Biological control program on Paterson's curse began in the early 1980's at which time six agents were selected and tested as potential biocontrol agents. They underwent strict quarantine testing to ensure they do not attack plants other than Paterson's curse and were not carrying any other pests or disease. The six agents are target specific to *Echium*, with their preferred host being *E. plantagineum*, however they can breed and survive on the other species of *Echium*. Since *E. vulgare* is also noxious and the other two species are rare and not likely to be affected, the agents were approved for release into Australia.

A mass rearing program to breed and distribute the agents throughout Victoria began in 1988. The first agent to be released was the leaf mining moth, *Dialectica scariella*. Damage caused by the leaf mining moth is not severe enough to have an impact on *E. plantagineum* because the moths are very active during the summer months when

the weed has died off. The moth can be quite effective on *E. vulgare* as it occurs all year round.

The next agent to be released was the crown boring weevil, *Mogulones larvatus*. Since 1993 the weevil has been released at over 250 sites. Crown weevils lay their eggs on the leaf stalks and the larvae burrow down to feed in the central crown. Because of this, the larvae are very susceptible to grazing pressure, livestock feed on the central crown effectively eating the developing larvae. However after a number of years, usually with the initial release site fenced off from grazing, the weevil population becomes noticeable. After 5-7 years, dead plants can be seen due to the pressure of the weevils. Redistribution from field sites has been conducted over the past two years and the natural spread of the weevil is well over 5km from the release points.

In 1996 two further agents were released, the taproot flea beetle *Longitarsus echii* and the root boring weevil *Mogulones geographicus*. *L. echii* is a beetle, but has very pronounced hind legs, which it uses to 'hop' about much like a flea. The flea beetles have been released at over 50 sites, and are showing great promise. Collection is possible from several field sites, and spread has been measured at nearly 1km. The flea beetle is not as susceptible to grazing as it spends 90% of its life cycle underground, only emerging for a few months to mate and lay eggs. Larvae feed on the primary and secondary root system.

*M. geographicus* is a root feeder and has proved difficult to breed in large numbers, only 12 releases have been made since 1996. Although the root weevil is surviving at sites it will take some time for the population to reach collectable levels and have any significant impact on the weed.

*Phytoecia coerulescens*, a stem boring beetle was released in 1998. Only one release was made in Victoria, as it is not expected to be an effective biological control agent. Also released in 1998 was the pollen beetle, *Meligethes planiusculus*. The pollen beetle is only active during the flowering season and feeds on the developing seed. Although it has no impact on the seed already in the seed bank it can be quite effective on reducing the amount of future seed fall.

Meat and Livestock Australia, the Australian Wool Innovation and the Victorian Department of Primary Industries are funding the biological control of Paterson's curse program for the next three years. The focus over the next three years will be on redistribution of the already established agents, the crown weevil, taproot flea beetle and pollen beetle, while breeding of the root boring weevil will continue at KTRI in Frankston.

Few releases have been made on organically managed land, which would be suitable to the release of biocontrol agents, as chemicals can adversely affect them. If you have a dense and persistent infestation of Paterson's curse on organically managed land and would like to be involved in future releases please contact:

Kerry Roberts Department of Primary Industry  
Phone (03) 9785 0135 Email: [kerry.roberts@nre.vic.gov.au](mailto:kerry.roberts@nre.vic.gov.au)

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