AAco winning the war on weeds: research, trial and innovation

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Summary Prickly acacia (*Acacia nilotica* L.) is a WoNS species that has a serious impact on the Julia Creek region (Qld), with many properties carrying extensive infestations. With pastoral holdings of over 1% of Australia, the land is recognised as AAco's greatest asset. Weeds are recognised as one of the greatest threats to these lands and so it is not surprising that AAco has approached the Prickly Acacia problem at its Carrum Station through strategic planning and some innovative ideas.

AAco purchased Carrum Station (50,614 ha), 25 km south of Julia Creek, in 2004. At this time Carrum was largely infested with several weed species, including parkinsonia (*Parkinsonia aculeata* L.) and noogoora burr (*Xanthium occidentale* Bertol.); however, the worst infestation was that of prickly acacia, with 32,350 ha of Carrum supporting light, medium or dense infestations.

A variety of weed control treatments have been implemented or trialled on prickly acacia at Carrum. These treatments range from chemical applications (Graslan pellets or a diesel/Access solution) to mechanical control and browsing livestock (goats).

Chemical treatments have been very successful with nearly a 100% kill rate, and generally only one follow-up treatment. Chemical control has been an expensive option due to the employment of contractors, and the rising cost of diesel. The various mechanical treatments employed have all been successful. Loaders, chaining and blade ploughing have all been employed with up to 100% kill rate achieved. The cost of the latter two options was significantly higher than clearing with the loader.

The most innovative of treatments currently being undertaken at Carrum is the use of browsing livestock to control regrowth and the emergence of new seedlings. The goat herd was introduced to Carrum in October 2006, and has been an integral part of prickly acacia management since then. Originally comprising 700 nannies and 25 Billies, the herd of Boer × Feral goats has increased in size to 1500 nannies, 860 weaners, and 25 Billies, with further expansion planned. At present the goats are browsing mature prickly acacia trees across a 2000 ha area. After the 2007/08 wet season the goats will also be used as a follow-up treatment for mechanically treated areas.

Due to the lack of information and available prior knowledge on goats as an effective weed control, a monitoring program has been set up to assess the browsers impact. Five sites have been identified on Carrum for monitoring, including one control point. Information currently being collected includes: density of regrowth, presence of seedlings, height grazed, length of thorn, density of seed pods, deaths, ground cover, soil condition, and information regarding current stocking rates and spelling. This information is recorded twice annually, after the dry season and after the wet season. Photographs are also taken at each monitoring point. The monitoring program has only recently commenced and it is not expected that a good body of analysable data will be available for several years.

The Carrum Goat Project has been highly successful, and along with being an effective treatment for prickly acacia, the goats can provide a significant income aside from the main cattle breeding operations. While set-up costs may be high (i.e. goat fencing and new yards) the returns in terms of weed control are worth it.

There are several other key factors that contribute to future management of prickly acacia on Carrum, other than cost effectiveness. The need for repeat treatments; required frequency of follow-up work, and post-treatment recovery ability and time period are all considered in AAco's integrated approach to prickly acacia treatment.

Carrum has been used as an experimental showcase for AAco to demonstrate the application of a variety of conventional and innovative weed management options. This integrated approach to weed management has proved highly successful, although there is still quite a lot to be achieved.

Keywords Prickly acacia, chemical control, mechanical control, goats, innovation, integrated weed management.