

## Case study: Coastal Turf

### Eliminating chemical use and a turf pest using a biological control

John Commens and Sarah Mason run Coastal Turf, a family-owned business at Round Mountain.

#### Coastal Turf

A major pest of turf grass is the African black beetle. The larval stage of the beetle causes severe damage to turf as it feeds on plant roots. This affects the quality of the turf but also results in wastage as the turf slab is more likely to break apart at harvest and become unsaleable. The pest also attracts native birds such as egrets that cause further damage as they feed on the beetle larvae.

African black beetle is conventionally controlled with applications of expensive and sometimes hazardous larvicides that also kill beneficial insects in the soil. The practice costs the business, the health of the soil and the surrounding environment.



The introduced species of African black beetle larvae consume the roots of turf grass, as well as other food available for beneficial organisms.



Juvenile nematodes are supplied in a cellulose-based carrier and mixed in water prior to application with conventional spray equipment. Adequate irrigation is also essential to ensure that nematodes come in contact with their insect host.

#### How biological controls worked on the farm

The project involved the release of a beneficial entomopathogenic (meaning insect disease-causing) nematode species in the genus *Heterorhabditis*.

Nematodes are a diverse group of mostly soil-dwelling micro-organisms that can be both plant pests and insect predators.

The *Heterorhabditis* species infect the larval stage of the African black beetle and secrete a bacterium that kills the pest. The nematode then reproduces thousands of juveniles that find their way back into the soil.

***“We have had no need to spray chemical controls on our farm. We are African Black Beetle free! Our turf is regenerating faster, and healthier. Our installers are very happy with the products we are sending them. All in all a very positive result.”***

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The team at Coastal Turf, Round Mountain.

John and Sarah had experimented with the nematode before, but securing Council's grant enabled them to conduct a larger trial to see how it performed in a commercial situation.

A powdered preparation of a commercial product was mixed with clean water and applied via a spray tank a day before forecast rain. Nematodes move freely through water in the soil enabling direct contact with beetle larvae after rain or irrigation.

Despite a wet season that was conducive to the beetle's establishment and feeding, there was no evidence of beetle damage across the 22-acre trial area in the months following application of Heterorhabditis.

The trial was so successful that no chemical controls were required in the ensuing growing season. John and Sarah plan to continue monitoring for African black beetle and anticipate that a release of the beneficial nematode every 2 years will provide sufficient control. Other practices such as the use of chicken litter rather than synthetic fertiliser will help build soil organic matter and a more suitable environment for the beneficial nematode to persist.



The root system needs to be solid and healthy for the turf slab to harvest properly. The roots hold the soil and the foliage together within the slab. Without a healthy root system the slab falls apart during harvest. The slab cannot be sold and turns into a waste product on the farm.

***“We would like to thank the Tweed Shire Council for their financial support to allow us to begin this project. We are expecting to continue with these applications every two years.”***