Case Study 5 – Arcadia

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The Strongs are based in the Birrego district near Narrandera on the family farm that has been operating for over 100 years. Silverleaf nightshade is their highest weed priority.

The production system

The Strong family farmed their 1,830 ha farm predominately as dryland croppers until around 2000, when they started to change their enterprise to almost entirely livestock. With climate change in mind, they planted saltbush and native vegetation to drought proof their property. They have predominately duplex soils with sandy loam over clay and have an average annual rainfall of 430mm.

The pasture types are predominantly lucerne (10%) saltbush and native grasses (40%), with barley, oat and lupin crops also sown. Their rotations are based on a long-term strategy aimed at avoiding weed problems (resistance, hard-to-kill weeds) and crop diseases.

In 1996 the Strongs had a change in their management direction with their first saltbush plantings. This was prompted by a CSIRO seminar they attended on long range rainfall patterns which predicted a high probability of a substantial drought in the coming decade.

Silverleaf nightshade

SLN is the number one weed priority on their properties. Annual weeds are usually grazed strategically, sometimes sprayed, and perennials are sprayed with backpack or small spraycart.

SLN was not present in the area until the 1970's when a neighbour share-farmed an infested property several kilometers away. Through livestock movement and cultivation, the seed spread to the property. The Strongs became aware of the SLN infestation in the 1980's, but were surprised at the extent of the weed when they bought the property in 1988. They had not seen SLN before.

Of 1,830 hectares, 90% is used for grazing. There were moderate infestations of SLN on 20% of the farm, 70% would be lightly infested, and about 10% with no SLN.

Several different types of SLN occur on the property (prostrate to tall variants with many spikes). The shorter, prostrate types are the hardest to control as they are closer to the ground - hence more difficult to see. A small amount of the native lookalike, quena (*Solanum esuriale*) is also present in some paddocks.

Control & Management Strategies

Where possible, SLN is first sprayed in early summer- before seeding if possible. Any seed present is collected from paddocks before they are grazed. Although the sheep do not eat SLN, they may ingest seed accidently if there is lucerne or grasses growing with it. Sheep are used to graze down infested pasture paddocks so it is easily seen and sprayed. Repeated sprayings are done if possible- up to April/May if necessary. This strategy has seen a huge improvement in the lucerne and grass paddocks where there are much fewer SLN plants now. The saltbush plantations are also proving to be robust competition for SLN.

If not controlled, SLN would be transferred to other native grass areas and perennials, including the windmill grasses -curly windmill grass (*Enteropogon acicularis),* umbrella grass (*Chloris truncata*), wallaby grass (*Austrodanthonia* spp.), kangaroo grass (*Themeda triandra*), Queensland bluegrass (*Dichanthium sericeum*) and red grass (*Bothriochloa macra*).

Herbicides

Originally the Strongs only used glyphosate to control SLN. They found that while this appeared to "knock SLN infestations back" the results seemed to depend very much on getting the timing correct. Early spray is important to prevent seed set.

The current herbicide program usually begins in October and continues until May each year. , they started using a mix of Starane Advance® and 2-4,D (low volatility) at the beginning of the season, followed by glyphosate at the end of the season, which they have found is better to apply after late February.

Benefits & Costs

The Strongs have been diligently managing SLN infestations over 1830 ha for the last 15+ years.

The Strongs have a low input pasture cropping system that produces average cropping yields of 2t/ha and believe it is difficult to assign a production cost to their crop.

They believe they suffer a small loss in pasture biomass each year due to SLN infestation.

An estimated cost in the order of $50,000 on SLN control since 2000. The dual action approach has had a major effect in reducing the size and density of the SLN patches, and herbicide use has reduced by about 80%.

SLN infestation could possibly devalue a property by up to 5%, depending on the infestation level and intended future use.

Keys to success ✔

The Strong's key messages and advice for managing SLN:

✓ If you have seedlings emerge, you will achieve the best control if these are sprayed immediately, before they build up deep root systems.

✓ Cost and inputs are worth it, otherwise SLN would easily colonise a paddock which could be virtually worthless in a few years under ideal growing conditions.

✓ Shorter SLN variants are hardest to control

✓ Biggest limitation to success in the early years was their focus on rootbank - paying less attention to the seedbank.

✓ Multiple sprays over multiple years at the correct time will show a reduction in SLN populations