

Case Study 13

Trent Harris, Cleve, South Australia

Trent Harris manages his 5,000 ha family property on the Eyre Peninsula. Silverleaf nightshade was detected by his father in 1944 introduced by sheep that were agisted elsewhere.



The production system

The Harris family have a 5,000 ha mixed farming operation of which 3,500 ha is cropped (mainly wheat, lupins and barley), with the remaining area growing vetch and medic pasture, which is allocated to their sheep meat enterprise – 1,400 Merino ewes joined to white Suffolk rams.

The farm business used to produce 50% crop and 50% livestock, but now has a more intensive cropping program.

The average rainfall varies from 400mm on the hill areas to 350mm on 'home' block. In the Cleve area farmers aim to achieve maximum crop water use efficiency. If that is possible then there is not much available soil moisture for the SLN plant to utilise.

Silverleaf nightshade

SLN has been present on the family farm since World War II, when the land was originally cleared in the late 1940s. Trent's father agisted sheep on another property, when they returned, they spread seed of "tomato bush".

There are now 4 to 5 variations of SLN in the Cleve area (white and purple petal variants).

According to Trent, 5 years ago, the Cleve district was "a sea of SLN", as can be seen from the photograph on the next page. Now it is even hard to find on the roadsides.

Control & Management Strategies

Twenty years ago Trent's father relied on cultivation to kill SLN plants. No herbicides were used and the end result was very dense and widespread infestations. Nowadays, you'd be lucky to find a single plant.

The density of SLN infestations dictates the farming practice for each paddock - heavily infested paddocks are sown to cereals first to keep SLN levels under control.

Trent finds SLN 'germination' is more staggered on heavier soil types than the sandy soils, making it difficult to develop a well-timed control program. Emergence on sandy soil seems to be more consistent.

While Trent's father used to spend many hours monitoring and spot spraying, this is no longer a major commitment as the spray program is on a broadacre scale. Trent believes that the reduced level of infestation has been due to a combination of strategic herbicide application and a shift from cultivation to direct drilling, which has reduced the spread of root fragments.

Risk of new infestations is minimized by quarantining purchased sheep; they are placed in a holding area and monitored for weeds.

Herbicides

It took 4 years of summer control using glyphosate before the Harris family started to see big benefits. To begin with, in order to save money, Trent only sprayed every 2 years. The moment he sprayed every year, he saw results.

Typically SLN starts its emergence around late October, in the Cleve District. The first herbicide treatment is around early January (depending on the summer rain). Trent will apply a second spray if there is summer rain to 'germinate' more plants. He found that spraying in February was too late, as SLN plants have produced berries by then.

Trent uses a combination of glyphosate and 2,4-D amine. He no longer uses 2,4-D ester as it burnt the SLN leaves. He believes that the slower action of the amine formulation and high water rates with glyphosate allow better penetration and efficacy on the root system. He believes that a dew will also aid coverage.

Benefits & Costs

Trent has seen yield penalties in heavily infested areas, with SLN plants competing for water and nutrients. For example, barley yields increased from about 1.1 t/ha on heavily infested areas to 4.4t/ha when SLN populations were controlled. .

Trent believes that it would take 2 summer sprays per year, for 3-4 years, to be able to see results in a paddock with infestation levels of 70% SLN.

Trent believes the benefits are more obvious on sandy country than off heavy country, as the sandy soil can produce a higher gross margin.

Summary of annual SLN related costs

Crop Production Loss (yield losses due to competition)	\$86,050
Stock Production Loss (lost carrying capacity)	\$34,870
Direct Control Costs (chemicals, labour)	\$89,000
Lost Land Value (lost market value appreciation)	\$10,000

Total farm costs of SLN **\$209,920**

Keys to success ✓

Trent's key messages and advice for managing SLN:

- ✓ Summer spraying is very important.
- ✓ Spot spraying every acre regardless of pasture or crop with a minimum of two applications (if required). This is critical to success
- ✓ Spray your SLN infestations at the right time – often 3am with some dew. The fresher the plant, the more effective it will be
- ✓ Use robust chemical rates (don't skimp) but not too high either (no greater than 2L/100L). Often a slow kill is a better kill

