

# Case Study 4 – Woodlands

Joe Hopwood, “Woodlands”, Boree Creek, New South Wales

Joe operates his 1,500 ha property on arable land in Southern NSW. In 2008 he converted his farm from a mixed enterprise to cropping only, typically growing canola, wheat, barley, field peas and faba beans.



## The production system

Joe and his family have been at Woodlands for over 100 years. His grandfather established the family farm in 1903. The property has expanded and now includes two neighbouring farms, which are now managed as one business. The western boundary borders on 7,000 acres of Buckingbong State forest, which is predominately pine forest. The soil types vary from sandy loam down to grey clay. The average annual rainfall is 450mm.

Woodlands was run as a mixed farm enterprise until 2008, but Joe currently crops wheat, barley, field peas and faba beans. Crop sequence is flexible and the focus is on trying to keep weeds, pests and disease under control and to improve crop nutrition.

Average crop yields are: 3 tonne/ha for wheat, 3.5 tonne for barley, 1.5 tonne for canola, 1.5 tonne for peas, 1.5 tonnes faba beans.

Joe has removed internal fences after the sheep were sold. He believes the operation is more efficient and herbicide resistance is less of an issue (i.e. less harbor sites for weeds in firebreaks along fence lines).

## Silverleaf nightshade

Allegedly SLN infestations originated on a neighbouring farm in 1970, via a mob of purchased sheep. They did not have an effective management program, and SLN became a broadacre issue on that block, and still is. Joe has been aware of this weed on Woodlands since the 1980s. It is established along fences and roadsides due to seed dispersal by birds. Joe’s father was worried about the risk of SLN spread and used to spot spray infestations.

The main source of spread throughout the farm was originally via sheep. Now the greatest risk of spread comes from seed set by plants on dam banks and other non-crop areas that are not vigilantly sprayed. Joe believes birds also play a role in the spread of seed.

SLN grows largely uncontrolled on a neighbouring property and in the neighbouring state forest, providing a regular source of reinfestation. Therefore eradication is not possible. Joe aims to prevent the weed from becoming firmly established on Woodlands and to minimise its spread and impact.

Joe estimates SLN infests less than 1% across his whole farm and is not visible in cropping paddocks. The areas of highest density are around dam banks, i.e. the areas not included in the cropping weed management program (approximately 1 plant per 20 square metres). Joe doesn’t monitor these regularly, since stock have been removed and they are not a major concern as he is gradually filling in dams.

## Control & Management Strategies

Cultivation and soil disturbance is minimal, with crop sown using a minimum till tyne seeder, conducted in autumn as the SLN plants become dormant. There is limited risk of spread by distributing SLN roots.

Joe estimates he spends about 90 hours summer following (3 passes over his crop area) and also spends a week spot spraying during the summer months.

Joe has built up his understanding of SLN management working with his agronomist, James Madden, and from trials on his property, involving the local Weed Officer, Rodney Anderson.

## Herbicides

Treating SLN as an ongoing part of the summer season’s farm management activities at Woodlands has been essential.

In addition to broadacre summer fallow sprays, spot spraying with glyphosate is the main control measure that specifically targets SLN. Each plant is sprayed once or twice per season. Joe uses glyphosate because it’s cheaper (in comparison to other herbicide options), easy to apply, and they always have some in the shed.

They have tried various other herbicides including picloram, fluroxypyr and 2,4-D. They found that while 2,4-D rapidly knocks SLN it may recover. Glyphosate appears to kill the plant, but there are often new shoots on the same spot, originating either from roots or seeds.

Glyphosate on stubble is also used to control SLN in the crop area as part of the summer fallow program.

Prior to 2008 when Joe grew lucerne, he observed competition effects from this pasture species which inhibited the growth of SLN. However, the weed returns rapidly after the 5 year lucerne phase. Joe suspects this may be because it is difficult to identify the weed in lucerne pastures so it may escape control over a number of years.

## Benefits & Costs

Profitability is the Joe’s main goal. He aims to generate a 10% return on capital. Farm decisions are also driven by the sustainability of the enterprises, such as growing legumes for nitrogen fixation, addressing canola yield decline and reacting to commodity price changes.

Joe estimates that if left uncontrolled, SLN would spread to cover a third of Woodlands. The impact on their enterprise ~~and~~ be estimated from NSW DPI trial results across different seasons that showed that average pasture production may be reduced by 40% and crop yields by 20%.

Joe thinks his current infestation levels do not devalue his property, however he surmises that densities over around 5% or greater (as observed on his neighbours’ properties), would have considerable economic impacts.

Joe believes that his current all-cropping enterprise, compared with the previous mixed farming business, has greater returns and is less problematic with respect to controlling SLN.

### Summary of annual SLN related costs

Crop Production Loss (yield losses due to competition)	\$54,375
Direct Control Costs (herbicides, labour)	\$3,790
Lost Land Value (lost market value appreciation)	\$3,000
<b>Total farm costs of SLN</b>	<b>\$61,165</b>

## Keys to success ✓

Joe’s key messages and advice for managing SLN:

- ✓ Be aware it is important to control SLN, because if you don’t control this weed, it will take over the farm
- ✓ Weed planning is very important
- ✓ Correct identification of the plant and recognition of it as a serious weed was also important. Joe feels that if he had known less about it, they may not have been so determined to control it
- ✓ Is looking forward to seeing the results of the Dual Action trials he has established on his farm earlier this year

