Silverleaf Nightshade Demonstration – Final Report 2013

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The Silverleaf Nightshade (SLN) project has run for twelve years, it has been a collaborative effort involving NSW DPI staff, Linda Stockman-CWFS, Glenn Neyland, Noxious Weeds Officer Bland Shire Council and Ungarie SLN farmers group, particularly Harry Rowling (Chairman) and Malcolm & Kaye Forrest who set-aside two hectares of land for the demonstrations. We were very grateful the earlier trial work of Barney Milne, Weed Research Officer (retired), Orange ARI.1986-1993 and that Dow Agro Sciences supported the group and supplied most of the herbicides for this work.

In mid-2006 we were fortunate that the SLN group was supported by two Research Agronomists (Weeds) Hanwen Wu and Rex Stanton, with NSW Department of Primary Industries at Wagga Agricultural Research Institute. They were funded for three years by Meat & Livestock Australia (MLA) to research the innovative management of SLN and prairie ground cherry. Rex was involved in herbicide field trials, seed bank & rhizome studies, and the eucalypt allelopathy study. Hanwen coordinated the funding, the DNA studies and the grower workshops.

2000-2013 Commercial Herbicide Demonstration:

SLN is an intractable weed because it is not a simple single plant but an expansive rhizomatous colony. The main herbicide demonstration (large and unreplicated plots) was established on 24thNovember 2000, in a pasture paddock and consisted of nine single plots.

The selection of products at the March 2000 meeting; was based on the successful products used in previous trials and the registered products & rates used by farmers. The demonstration was based on a split treatment strategy, as used in the trails of Barney Milne.

The rhizomatous nature of SLN makes it impossible to actually identify individual plants. The data collected in this demonstration was based on counting the stems emerging from the rhizomes. The size of each individual plot was 10x50 metres. The sample area for the stem counts was a 4m wide section that ran down the centre of the plot and for a length of 50m; this was to minimise the potential for counting stems that may have emerged from rhizomes coming from colonies in the adjoining plots. The initial stem count for the plots ranged from 966 to 1,508 in November 2000.

Herbicides treatments in these demonstrations were applied with 75 litres water/ha at a pressure of two bars to produce large droplets, and usually at 9.00am. Stem counts were taken at the begin of each spring when new stems were initiated, this was to evaluate the effectiveness of the late summer- berry application on damaging the rhizome buds and the depletion of starch reserves in the rhizomes.

An early spring treatment was applied 4 to 5 weeks after the first stems emerged; killing the first cohort of stems was intended to compel the SLN plants to expend a considerably amount of the starch reserves stored in the rhizomes and to produce an even second emergence of stems. This should then produce a uniform flowering event and development of berries in late summer, which in turn should maximise the impact of the herbicides applied as the second treatment.

The second treatment was targeted at early berry development. The aim was to sterilise the seeds, stop future flower development and to maximise the translocation of herbicides with the flow of soluble-carbohydrates down into the rhizomes to increase the level of injury to the buds on the rhizomes. Many species of summer growing perennial forbs translocate carbohydrates from their shoots into rhizomes, crowns or tubers in late summer or autumn.

The earlier SLN trials conducted by Barney, found that there was an issue with physically wetting this plant with spray. This weed has an unusual leaf surface and it is therefore hard to get the herbicides into the leaves. The trials conducted by Barney to evaluate adjuvants, identified Caltex Summer Oil® (CSO – and formerly Ampol Summer Oil®) as the most effective penetrating adjuvant to aid in the control of SLN. CSO was a 839.g/L petroleum oil and registered as desiccant aid for cotton and for scale insects on citrus. It then cost $0.35/litre. CSO was used in the demonstration until stocks were exhausted in 2010, when Caltex Broadcoat® was used; it is a similar product with 846 g/L petroleum oil.

Treatment .1. **The Control** area, the SLN had not been spayed since 1999. The stem count in the first year (2000), found there were 1,358 SLN stems in the "controls" sample area (a density of 6.8 stems/m²). Stem populations fluctuated significantly over the twelve year period due to the drought. Stem counts fell to their lowest number in 2006 when only 8 stems could be found in the sample area (0.04 stems/m²).

Treatment .2. **Gulgong Farmers BMP**. Some of these farmers had claimed that applying 2,4-D amine (500g/L dimethylamine salt) with a summer oil, each month had eradicated SLN from their pastures. It was not always possible to apply this treatment each month at the Ungarie site due to prevailing drought conditions. Local the treatments were only applied when the new stems were present. The plot received on average three treatments per year. In 2010/11 the plot received five applications. The years 2005, 06 and 08 there were only two treatments were applied, as the paddock was grazed bare by livestock and there was no subsequent inter-seasonal regrowth.

Treatment.3 the **Rural Supply Store BMP**. Many sales staff have claimed that fluroxypyr (Starane 200) has given significantly superior control of SLN, compared to either 2,4-D amine or ester formulations, and that is why they recommend it. In 2001 this treatment was costing $20.25/ha, plus the oil.

Treatment.4 **Barney's Best Bet**. Previous trials had shown that with the later application of glyphosate 360 or 450g/L products and with a higher 2.0 litre/ha rate of CSO, at early berry formation, had produced the best results in his 1986-1993 trials.

Treatment.5 **Old Faithful**. The traditional early application of 2,4-D amine followed by a later dose of 2,4-D ester 800g/L. This was the traditional treatment for SLN, it quickly burnt-off the stems and reduced the vigour of the colonies but it was pretty ineffectual strategy, as it had not eradicated SLN in thirty years but it was useful as benchmark for inclusion in this demonstration.

Treatment.6 **The Big Hope**. Tordon 75-D is registered for the control of SLN at spot spray rate of 600 ml/100L water; and at 15 L/ha for a boomspray application. It was hoped that the picloram in the Tordon 75-D would have more impact on the rhizome buds than the stand-alone 2,4-D amine or ester products. Initial advice suggested to use Tordon 75-D at double the rate registered in wheat and not to use a crop oil.

Treatment.7 **MCPA is Better**. The hope was if Tordon 75-D was to be better than 2,4-D amine the product, than a picloram product with MCPA might damage the SLN more than a picloram product with 2,4-D. Other trials with perennial plants such as lucerne and horehound showed that 2,4-D caused rapid visual damage to plants but most plants recovered later; where the MCPA was less visually spectacular and slower to wilt, but the MCPA actually killed most of the lucerne and horehound plants.

Treatment.8 **Canola Special**. There were tantalising rumours that some southern farmers growing TT canola around The Rock, near Wagga, had eradicated SLN with atrazine. The atrazine was applied to the Ungarie plots in March in most years, where as the atrazine would have been applied to most of the canola crops as a pre-emergent treatment, around The Rock from mid April to late May.

Treatment.9 **Sorghum Special**. There were tantalising reports that some northern sorghum growers had eradicated SLN with an atrazine application. This herbicide regime is the reverse of the "Canola Special".

Discussion:

The results for this demonstration are shown in the following tables 1 & 2. All of the herbicide treatments reduced the number and vigour of spring stem production. As a general observation - all of the herbicide options reduced the production of spring stems by about 85% of the control plot, and those stems were also reduced in height to 50-150mm, compared to the stems produced in the control plot that were 400-600 mm tall. The persistence of drought conditions often made operations difficult. The early stem treatments were applied as early as practically possible.

The early-berry spray treatments were applied to all plots each year, but the drought also created problems with those second treatment applications. In several years the SLN colonies struggled in late summer to produce new stems, often over 50% of the stems that emerged failed to produce flowers; and very few of those stems that manage to produce flowers in 06 & 08. Even fewer stems had sufficient vigour to produce more than a few berries. Conditions were also less than ideal for the translocation of soluble carbohydrates and herbicides into the rhizomes.

The proposed monthly applications of 2,4-D amine for the Gulgong BMP treatment was often difficult to achieve, as most summers were very dry and there was often no regrowth in the plots following first application (in October) until the following April. Applying 2,4-D amine six times a year, as per the Gulgong BMP, is a very costly regime and over 12 years it was an investment of $650.00/ha. I want to see some evidence of eradication before recommending this monthly regime, in preference to just two seasonal applications.

The fluroxypyr (Starane 200) results obtained in the first three years looked promising; but over 12 years, fluroxypyr did not produce significantly better results than the 2,4-D amine or ester formulations in this demonstration. With so many generic fluroxypyr products now on the market it is now at least price competitive with a 2,4-D amine treatment.

The Tordon 75-D treatment did not produce significantly better results than applying 2,4-D. I also think that was a mistake not to have used a crop oil with the Tordon 75-D. Tordon 242 appeared to be more damaging to SLN than Tordon 75-D but it did not eradicate the SLN. We should have also used a crop oil with this product.

While Barney's earlier trials had shown that the later application of glyphosate 360 or 450g/L products, at early berry formation, had produced the best results, it was not significantly better results than the 2,4-D amine or ester formulations in this demonstration. One point to note, is that glyphosate products with active ingredient levels of 540g/L or higher contain different adjuvants to keep the glyphosate in solution, and these products with the higher active ingredient levels don't seem to translocate into the SLN plants rhizomes. If you are interested in glyphosates I suggest that you have a read of Kondinin's Farming Ahead report No.206, March 2009, p.28.

SLN has demonstrated a significant sensitivity to a <u>foliar</u> application of atrazine but the "Canola Special" and "Sorghum Special" regimes applied over 12 years failed to eradicate SLN. In all probability the farmers that claimed to have eradicated SLN with a single atrazine application may have mis-identified queana or some other solanaceae species as SLN. Weed control is expensive and in some wet summers it may be a practical option to crop problem paddocks with a grain sorghum or Sudan grass, to cover weed control costs. Please note that if atrazine is applied as a pre-emergent treatment, on to the soil, it may not afford any control of SLN. Atrazine usually stays in the top 5mmm of the soil surface but SLN stems seldom produce roots in that area, so the plant won't pick-up any atrazine.

After twelve years of diligent herbicide applications, none of the products succeeded in eradicating SLN; therefore no one product was superior to the other treatments. The goal was to have a treatment, with no stem recordings in that plot, for three seasons to <u>prove</u> an effective eradication was attained.

The herbicides that are current available will effectively suppress and limit the spread of this weed. After twelve years, I have concluded that none of the current commercially available herbicides when used in isolation has the potential to eradicate this weed.

When there is a report of a successfully eradication of SLN; it is essential that an agronomist experienced with identifying this weed; inspects the site and sends tissue samples of the remanent plants to Hanwen Wu at Wagga ARI for DNA validation. Growers should not dismiss reports of an eradication event; the early reporting and an early inspection of the site is an extremely valuable opportunity.

Finding a population of “kill-able” SLN would be a very important discovery; as it may provide information for the control other the other populations in the future. To date Hanwen has identified four distinctly different DNA populations of SLN in eastern Australia. With each DNA group the plant physiology is widely variable. At Ungarie there were 36 different plant types but they all shared the same DNA profile.

Table 1. The Annual Silverleaf Nightshade Stem Counts.

TREATMENTS	SLN STEMS/SAMPLE AREA AND DATE OF SAMPLING					
	12.11.01	29.10.02	7.11.03	29.10.04	10.11.05	27.11.06
1. Control	616	331	79	13	165	8
2. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (monthly)	62	49	161	2	24	3
3. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 750ml/ha Starane 200® + 1.0L/ha CSO® (berry)	34	40	49	1	53	4
4. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 2.0L/ha Roundup CT® + 2.0L/ha CSO® (berry)	78	82	55	1	70	3
5. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 1.0L/ha 2,4-D ester® + 1.0L/ha CSO® (berry)	88	90	112	1	81	6
6. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 600ml/ha Tordon 75D® (berry)	91	112	102	3	93	3
7. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 1.5L/ha Tordon 242® (berry)	45	98	60	3	69	7
8. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 4.0L/ha Atrazine 500® + 2.0L/ha CSO® (berry)	75	81	80	4	37	1
9. 4.0L/ha Atrazine 500® + 2.0L/ha CSO® (1st sucker) + 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (berry)	41	107	30	2	47	1
Date of Early Berry Formation/Spray Date	5.3.02	25.3.03	13.4.04	29.3.05	19.4.06*	2.4.07*

Note: CSO = Caltex Summer Oil®
The dates at the top of the column are both the observation date and sucker spraying date.
* Grazed bare between 1st stem spray date and early berry spray date.

Table 2. The Annual Silverleaf Nightshade Stem Counts.

TREATMENTS	SLN STEMS/SAMPLE AREA AND DATE OF SAMPLING					
	20.11.07	8.12.08	16.12.09	8.10.10	27.10.11	22.11.12
1. Control	89	217	182	429	486	420
2. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (monthly)	20	21	14	44	111	74
3. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 750ml/ha Starane 200® + 1.0L/ha CSO® (berry)	34	42	38	44	152	73
4. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 2.0L/ha Roundup CT® + 2.0L/ha CSO® (berry)	24	22	54	35	103	18
5. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 1.0L/ha 2,4-D ester® + 1.0L/ha CSO® (berry)	31	24	75	64	171	74
6. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 600ml/ha Tordon 75D® (berry)	36	13	21	33	255	49
7. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 1.5L/ha Tordon 242® (berry)	22	17	27	34	92	31
8. 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (1st sucker) + 4.0L/ha Atrazine 500® + 2.0L/ha CSO® (berry)	28	27	3	11	76	24
9. 4.0L/ha Atrazine 500® + 2.0L/ha CSO® (1st sucker) + 1.5L/ha 2,4-D amine® + 1.0L/ha CSO® (berry)	13	26	5	15	57	28
Date of Early Berry Formation/Spray Date	28.4.08*	25.2.09	26.3.10	7.3.11	16.3.12	25.3.13

Note: CSO = Caltex Summer Oil®

The dates at the top of the column are both the observation date and sucker spraying date.

* Grazed bare between 1st stem spray date and early berry spray date.

The Second Herbicide Demonstration

Based on some promising results that Rex Stanton produced at the Narrandera trial site with 4.0.L/ha Grazon Extra® and 4.0 L/ha Tordon 75-D® in 2008/09, a second herbicide demonstration to evaluated high rate herbicide applications was established at the Ungarie site in October 2010, and next to the existing demonstration.

At the initial SLN planning meeting in March 2000, for the design of the first demonstration, nobody had identified the need for these high rate herbicide treatments as it was considered to be too expensive. The label or registered broadacre rate of 15.0 L/ha of Tordon 75-D® was disregarded for inclusion the demonstration as it was considered impractical at $540.00/ha in 2000, and there was no plant-back data available. Grazon® DS was not registered for SLN in 2000 and still is not registered for that purpose.

The second site was a pastoral area that was sown to Aurora lucerne and Angel Strand medic (SU tolerant variety) on 7th April 2009. This demonstration adjoined the original and it shared the “Control” data. The treatments were unreplicated and the plots were about 500m² in size. The stem numbers for the “Control” plot shown in table.3 is the same stem data for the “Control treatment” in the first demonstration shown in table.2; however that data was multiplied by 2.5; to give context to the results (as seen in table 3.) for comparison against the five herbicide treatments in this demonstration, as all stems in the plot area were counted.

The site (excluding the “Control” plot) was initially sprayed at first stem emergence on 8th October 2010. Plots: 3 to 6 were treated with 1.50.L/ha 2,4-D amine 500® and Broadcoat® oil. Plot.2 was treated with Glean® and Uptake® oil. The principle products for treatments 2 to 5 were applied at early berry formation on 7th March 2011. The Graslans® (plot 6) arrived latter and was spread on the 7th April 2011.

Table 3. Annual Silverleaf Nightshade Stem Counts.

TREATMENTS	SLN Stems/plot The dates at the top of the column are the observation dates.			
	27.10.11	22.11.12		
1. Control	1,215	1,050		
2. 20 g/ha Glean® + 0.5 L/ha Uptake Oil® Sprayed - 8.10.10, 7.3.11, 27.11.11, 16.3.12 & 22.11.12	307	86		
3. 4.0 L/ha Grazon Extra® + 0.5 L/ha Uptake Oil® Sprayed - 7.3.11	79	68		
4. 4.0 L/ha Tordon 75-D® + 0.5 L/ha Uptake Oil® Sprayed - 7.3.11	88	98		
5. 15.0 L/ha Tordon 75-D® + 0.5 L/ha Uptake Oil® Sprayed - 7.3.11	6	19		
6. 1.5 g/m² Graslans™ Spread - 13.12.11	237	40		

Discussion

The summer of 2010/11 was very wet with 574mm of rain recorded by the 22ndMarch 2011. The first treatments were applied 25thMarch 2011, the plants were in good condition for the foliar absorption of the herbicides and the translocation of the pesticide into the rhizomes.

It was a very dry winter following the applications, between 1stApril and 1stOctober 2011 there was 128mm from 41 rain events; and 70mm of that rain fell in August and September. There was no expectation of the products eradicating 100% of SLN in the first spring of 2011. There should have been useful soil reserves of residual herbicide for root-up-take in the 2011/12 summer.

The 2011/12 summer was also wet with 475mm falling between 1stNovember and 30thMarch 2012, summer conditions were conducive for the growth of SLN and the root-up-take of herbicides. There were high hopes that in November 2012 that some plots would be free from SLN stems.

Unfortunately none of the plots were free from SLN in November 2012; the “Control” area produced 1,050 stems which suggest the autumn conditions were adequate for herbicide root-up-take. The stems in the treated plots were greatly reduced in number (see table 3), but those surviving stems appeared to be in good health and evenly distributed through plots 2 to 5. The products did not achieve their objective of eradication.

Plot.6 was treated with tebuthiuron, the active ingredient of Graslans™ and 80% of SLN stems counted in 2012 were observed to be within 2 metres of the plot edges. It is possible that many of those stems were suckers encroaching from colonies outside the Graslans™ plot. All the stems inside the boundary of the Graslans™ plot were very yellow, stunted and appeared to be dying. The tebuthiuron was very effective in the eradication 100% of the lucerne and strand medic plants.

Chlorsulfuron eg Glean® was vigorously reported by an Ungarie farmer as successfully controlling SLN in his wheat paddocks, so it was included in the demonstration. The chlorsulfuron was very effective with killing the SLN stems after each application, but not the actual colonies. The stems recorded in the plot in 2012, were reduced in number (see table 3), but the remaining stems appeared in good health, prior to re-treatment later that day.

In other summer fallow trials chlorsulfuron was found to be very effective against established quena plants and seedlings; and preventing any subsequent emergences of quena seedlings. Chlorsulfuron merits research in the future for summer fallow applications against other solanaceae species such as quena, Western nightshade, Buffalo burr and Datura/thornapples.

The strand medic (SU tolerant variety-Angel) endured the chlorsulfuron applications (100 g Glean®/ha in total-over three years) although forage production was notable reduced in both March of 2012 & 2013. Very few of the lucerne plants endured the five chlorsulfuron applications.

The summer of 2012/13 was also wetter than usual. While there was only 187mm over the November-March period, 120mm fell in February and March 2013; so there was sufficient moisture available to enable the SLN to take-up any remaining herbicide residues.

The 10thApril 2013 was the last field day at the site, with 28 farmers, 9 Agribusiness attending, and Hanwen & Rex. Plots 2-5 contained over 100 stems in April and they all appeared to be rather vigorous. There was general agreement amongst the group attending that the products have failed to eradicate the SLN. In contrast, plot.6 the Graslans™ treatment contained about two dozen SLN stems in the plot (all very yellow and stunted) and 70% of those stems were within a metre of the edges of the plot.

Tebuthiuron merits further evaluation. While tebuthiuron would not be an economic solution to treat a general paddock infestation ($150.00/ha), it may have potential application for the treatment of new infestations or small well-defined patches.

Alleopathic Management Initiative:

Several years ago I received correspondence that alleged; South Australian farmers had successfully employed five species of eucalypts to eliminate SLN and other weedy forbs from beneath their branches. The first four species planted at the Ungarie site were the Gimlet- *E.salubris*, Swamp Mallet- *E.spathulata*, Dundas Blackbutt- *E.dundasii* and Dundas Mahogany- *E.brockwayii*. Bland Shire Council provided the initial funds for purchase of 120 eucalypt seedlings, the planting and the boundary fencing in June 2003.

Unfortunately several tree seedlings expired due to the drought or were taken by hares in 2004. Bland Shire Council funded tree guards in 2005. New tube stock was ordered for replanting but unfortunately these species were not available until the following year.

With MLA project funds we were able to replace the trees that were lost in 2004, with new tube stock in the winter of 2007. In the winter of 2008 we planted interesting eucalypt species the Blue Mallet- *E.gardneri*, along with Western grey box and Bimble box trees for comparison purposes. Many of the trees planted in 2003 are now over 6 metres tall and have begun to provide some tantalising signs of displacing the SLN and other forbs, particularly saffron thistles, Paterson's curse and spiny emex from around their base.

The five eucalypts of interest are all indigenous to a low rainfall region (250-300mm) between Lake Grace, Merredin, Kalgoorlie and Lake Dundas in Western Australia. Each species has its own individual appeal to farmers - some species are short-lived, they range in height from 5-20m, they have various shapes and suit a diverse range of soil types.

The Ungarie site received over 200mm of rain during the 2007/08 summer period. Summer weed species including SLN grow vigorously everywhere, well not quite everywhere. There were very few SLN stems within three metres of the trunks of the eucalypt planted in 2003. The replacement trees planted in 2007 grow quickly and most were two metres tall by late February, and they were also free from forbs for within a metre of their trunks, in fact the nearby plants were mainly grass species. Something that was only farm folklore now looks to have a real potential for development into a new bio-herbicide.

With the MLA project funding; Rex has been able validate the alleopathic properties of the first four eucalypt species, in preventing the germination of SLN seeds. All four of the candidate eucalypts reduced the germination to less than 5% and retarded the root development of the seedlings that managed to germinate.

Rex evaluated an extract from Yellow box and another extract made from capeweed as controls. Neither of these two extracts showed any effect on retarding the germination or development of SLN seedlings

This is the first glimmer of hope in years, to find a silver bullet for SLN and potentially other intractable forbs such as prairie ground cherry, lippia, St John wort, fireweed and blue heliotrope. Ideally, it was hope that with the re-newel of MLA funding, Rex could expand the evaluation of the extract (this time including the Blue mallet) and identify the effective particulants molecules and bottle them for field trials.

Unfortunately MLA decided not to refund the project in 2010. Malcolm has indicated that he is happy to retain the tree site on his property, but the hope to develop a bio-herbicide has now been put on the back-burner.

The current restructure of NSW DPI will remove our future involvement in SLN control works. Growers will have to seek-out and lobby organisations like CWFS and the local council Noxious Weeds network for assistance with acquiring research funding for SLN control.

Summer Active Perennial Grasses

Eradicating SLN using only herbicides appears to be very doubtful. It is therefore time to consider how to co-exist with the problem weed; at least for the next few years. It is necessary to identify options and implement cost-effective strategies that prevent the spread of the weed and suppress the infestations. The options should not be a drain on the farms cash reserves or a strain on ones mental health.

SLN survived a decade of drought by accessing the moisture stored deep in the soil. To weaken this weed we need to reduce the supply of deep soil moisture reserve available; and summer active perennial grasses with an appropriate herbicide regime may help to greatly reduce the SLN infestations and increase livestock profits.

An exerted increase in the competition for the deep stored soil moisture may be a more effective tool against this weed than herbicides. Not all plant species exert they same level of competition. To date lucerne, phalaris and many native grasses have failed to exert a reduction in SLN infestations.

Many of the exotic tropical grasses such as Digitgrass, Fingergrass, Bambatsi panic and Rhodes grasses are very deep rooted plants may have promising potential against SLN. The root systems of these grasses have been measured to reach as deep as 1.8m. These grasses when grown with annual legumes can have high quality forage with 18-22% crude protein contents and 8-10 ME.

A small plot of Premier digitgrass on Racecourse Farm at West Wyalong 2001-03 had produced 70 to 100kg/ha of fodder per day over the summer months; when storm events produced 50mm of rain per month. In northern New South Wales, digitgrass had a peak daily forage growth rate of 140kg/ha of fodder per day (Dry.Wt), totalling 16 tonne/ha for the summer period.

The faster a summer grass can convert that moisture in the soil profile into forage, the greater the reduction in summer weed establishment. Farmers that wean lambs in late spring may also appreciate the fresh green feed supply. It is also worth remembering that 1,000kg of high quality fodder roughly equates into 75 kg of lamb, and at $4.00 a kilogram this is an attractive incentive to evaluate the summer grasses.

Once established these summer grasses are very durable. The main area for local research is with improving the establishment practices in southern NSW. We have had three attempts at establishing a range of perennial grasses at the Ungarie site. Species for evaluation were digitgrass, Bambatsi panic, consol lovegrass, cotton panic, windmill grass, wallaby grass, Rhodes grass, redgrass, cocksfoot and phalaris. These grasses were sown with a strand medic.

Unfortunately a dry summer beat us once and twice now the grasses have been washed out by thunderstorms, the last time we had over 120mm two days after sowing. Surprisingly the thunder storms did not affect the establishment of the strand medic.

I established a small patch of Premier digitgrass (2x2m) (using hand raised seedlings) in the Gulgong BMP plot (2,4-D treatment). That small patch has survived for five years. After the first season there were no more SLN stems found amongst the digitgrass plants. These grasses will grow and persist in the south-west, and they have some exiting potential. We need to establish a large paddock grass demonstration site.

In April 2013 it was noted that there were several volunteer digitgrass seedlings growing around the Gulgong BMP plot. Just to the east of Weethalle in 2013, a lot of new Bambatsi seedlings were observed to be growing on the edge of the road. We need some local research with improving the establishment practices for these grasses in southern NSW.

Ends///…