



Sulla - the wonder legume

Sulla (*Hedysarum coronarium*) is an exciting new biennial forage legume suited to neutral – alkaline soils ideal for short pasture rotations in both mixed farming and livestock production systems.

Sulla has a high yield potential and is highly palatable with excellent forage and fodder quality and outstanding animal

performance. It also has the added advantage of potentially fixing high levels of nitrogen. Unlike lucerne, sulla is non bloating and has reputed anthelmintic qualities which may reduce worm burdens.

Background

Sulla is the most widely used perennial forage species in central & western temperate Mediterranean. Sulla has also been grown in New Zealand for the past 30 years.

Sulla is best suited to similar soil types to those ideal for lucerne; neutral to slightly alkaline with a pH range of 5.5 – 8.5 and of good drainage. Where soils are prone to water logging, this will reduce the life of the sulla stand.

Sulla is yet to be really tested in marginal areas. Preliminary plant breeding trials conducted in SA have indicated that it can produce in excess of 20 t/ha dry matter in a low rainfall environment (375mm).

With the favorable spring of 2005, Sulla reached yields of 21t/ ha of dry matter and this is in an area that has an average annual rainfall of 375mm.

At Mt Gambier in 2006, from January through to June with a total rainfall for this period of approximately 200mm, a second year stand of Sulla produced 20t/ ha of dry matter.

The amount of nitrogen fixed is directly related to the yield that is produced, so therefore the higher the yield the greater the amount of nitrogen fixed into the soil.

Moonbi and Wilpena will be the two varieties that Wrightson Seeds will be marketing. Both of these varieties were bred and selected in South Australia.

Moonbi

- Bred by SARDI – early maturing, semi-erect
- Grazing systems.
- Limited commercial availability in 2007
- Full commercial release & launch in 2008

Wilpena

- Bred by SARDI – mid flowering, more erect
- Dual purpose - fodder conservation & grazing systems
- Limited commercial availability in 2007
- Full commercial release & launch in 2008

Market Fit

Best opportunities

- Central & SE QLD
- NW, central and SW slopes and plains of NSW
- NW, Gippsland and West. Dist. of VIC
- Eastern and midlands of Tasmania

Cropping and mixed farming zones

Sulla is recommended as a specialist crop between crop rotations. Sulla is more productive than Persian or red clover and allows for shorter rotation than Lucerne.

Sulla can be sown as either a pure legume stand, or sown with other forage species such as: ryegrass, herbs and tall fescue. The key to success for sowing Sulla with companion species is to establish Sulla in the first season.

Moonbi is ideal for grazing, particularly for finishing lambs and/or vealers.

Wilpena is recommended for producers who are looking at intensive forage operations, either for feedlot (cut and carry) or conserved silage.

Agronomics –Yield & Establishment

Establishment is similar to that of other small seed legumes in that it is imperative to have a clean paddock, otherwise weed control could be difficult and very expensive.

Sulla should be Super Strike™ inoculated as it has a unique strain of rhizobia that is required to optimise production.

The paddock should be well drained with moderate fertility and a neutral to alkaline pH. The soil will need to be worked up into a fine, firm, weed free seed-bed prior to sowing. Trifluralin may be applied as pre-emergent herbicide (assuming no grass is sown with the Sulla) at the recommended label rate. Sulla can be sown in early autumn, late winter or early spring. Sulla may be sown at 10 kg/ha of coated seed preferable with a drill no deeper than 3mm. The seed bed should then be harrowed and rolled to ensure good seed:soil contact and moisture retention. A target establishment rate is 25 plants per m².

If a grower is looking at companion species, the key message will be that the sulla will need to be sown alone firstly and allowed to establish before any companion species are sown with the sulla. The annual and Italian type ryegrasses look very promising as do the forage cereals where the seedling vigour and growth rates for the first 6-8 weeks are excellent and give it the opportunity to compete with the sulla when it is potentially actively growing.

Herbs could be difficult and if looking at growing these with sulla, these might be the only species that may have to be sown with the sulla, especially as the sowing rates, seedling vigour and growth rates are not so great that it will out compete the sulla.

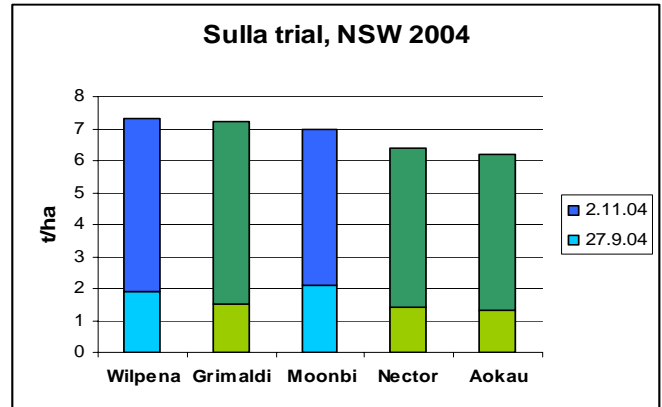
The same may apply to fescues as again the sowing rates, the seedling vigour and early growth rates are not going to shade out the sulla when it is at the seedling stage.

Overall, more trial work needs to be done to understand companion sowing with sulla, options for over sowing and what species perform the best with sulla as well as the sulla performance being maintained.

Sulla actively grows from spring through to early summer and autumn to early winter. Growth during the winter months will be very low due to cold soil temperatures and short day length. Sulla will go dormant over the summer months. This is irrespective of irrigation and or rainfall during those months. What the sulla will do is store the available moisture so that once conditions are right for the following autumn, growth rates will be very high due to good available moisture, good soil temperatures and ideal daylight hours

Generally, yields in the first year are less than the second year, primarily as the plant is channeling resources into establishment of a deep root system and are typically in the order of 10 – 15 t/ha. The key for optimal production is both in establishment and fodder management. It is recommended to be sown in the first year as a pure sward and lightly rotationally grazed. If the sulla is allowed to grow through to hay/ silage, then this may decrease the plant numbers in the second year.

In the second year, Sulla production increases and may yield as much as 20 t/ha.



Grazing Management

Sulla is best managed with rotational grazing. Grazing intervals will vary from 35 to 85 days depending on moisture, day length and soil temperature.

It is advisable that in the establishment year, Sulla should be lightly grazed to ensure good root establishment and plant density for the second year. It is not recommended to cut Sulla for silage or hay in the first year.

Avoid grazing when soil is wet especially with cattle so as to minimize hoof damage and pugging. Allow regrowth of at least 15-30cm (6-10 inches) before regrazing

Sulla will respond to regular applications of phosphorus and sulphur. It is advisable to conduct a spring plant tissue analysis to determine if trace elements are limiting, in particular molybdenum, zinc and boron.

Fodder Conservation

Sulla can be successfully ensiled or made into hay, resulting in high quality, highly digestible feed. Where sulla is the main component, lactic acid content may increase, reducing the ammonia concentration and lowers pH resulting in better silage.

For optimum quality, sulla should be cut prior to peak flowering with a mower conditioner. Unlike some varieties of Lucerne, Sulla has minimal leaf loss during conservation.

Feed Quality

The feed quality of sulla is comparable to that of Lucerne, consistently producing fodder with high digestibility, protein and water soluble carbohydrates. Sulla is usually around 16% dry matter. Feed tests conducted during 2006 of green forage material revealed the following attributes:

NDF	20-30%
ADF	17-25%
Lignin (as % of total NDF)	<20%
Crude protein	19-26%
Rumen degradable protein(%of CP)	70%
Digestibility	79 -85%
Metabolisable energy (MJ/ kg DM)	10.6-13.1

The relative feed value is double that of ryegrass, meaning in a balanced ration animal production is anticipated to be increased.

Nitrogen Fixation

Sulla is a legume, which inherently means that it will fixate nitrogen, though this is dependant on a number of nutritional and environmental factors. Further research is required to determine the rate and amount of nitrogen that can be fixed by sulla.



However, if we are to assume that the nitrogen fixation equation that has been adopted and used on a range of legumes for many years also applies to a sulla crop, then the rate of fixation would be between 22 – 25 kg/t DM.

Sulla would produce:

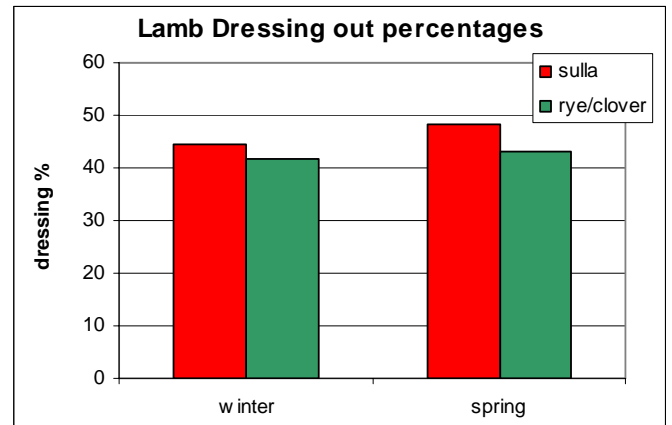
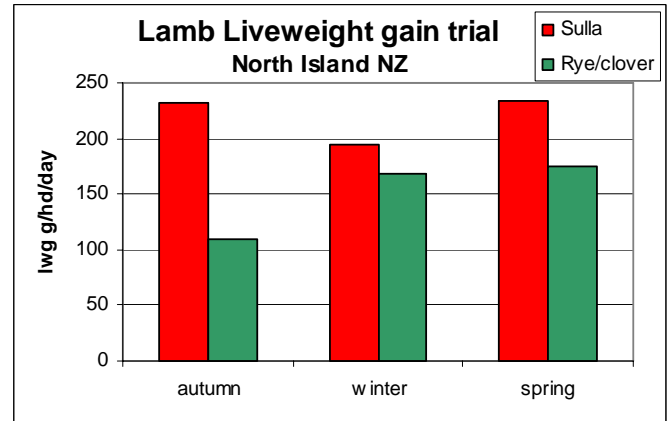
- Approximately 220kg N/ha in the first year (assuming a 10 t DM/ha crop) and,
- Approximately 440kg N/ha in the second year(assuming a 20 t DM/ha crop).

Therefore the predicted total nitrogen yield over the two year phase would be in the order of 660 kg N/ha, which would be invaluable to a mixed farming operation in the current economic environment.

Animal performance

Though Sulla is high in protein it produces condensed tannins which assist in the prevention of bloating in cattle. It is well

documented that pasture species which produce high levels of protein causing bloat in cattle. The results of a trial run in the north island of New Zealand indicated that lambs grazed on Sulla had greater liveweight gain and dressing percentages than those grazed on perennial ryegrass and clover.



Sulla is known to produce a by-pass protein effect through the combination of tannins and rumen by-protein (around 30%) which was demonstrated in trials in New Zealand to result in increased live weight gains, in the order of 10%.

Also, Sulla is reported to have anthelmintic qualities which may reduce worm burdens and gastrointestinal nematodes as well as reducing faecal egg counts and larval establishment. This in turn improves animal health and well being and improves live weight gains.

For more information on Moonbi, Wilpena or Aokau please contact Wrightson Seeds on FREECALL 1800 619 910 or alternatively contact your local Wrightson Seeds representative.