

# Innovative developments set to revolutionise pasture crop rotation benefits.

## At a glance

- Sub-clover nitrogen fixation capacity needs attention.
- Summer sowing of new generation pastures doubling productivity.
  - ✓ Pasture sowing doesn't compete with winter cropping program
  - ✓ Better first year pasture performance – more N fixed
  - ✓ Better weed competition in comparison conventional late sowing times
  - ✓ Better livestock production from legume-based pastures

A recent field survey of paddock or background rhizobium strain for sub-clover has highlighted the need for new strategies to optimise nitrogen benefits for crop-pasture rotations.

Australian based inoculant developer ALOSCA Technologies has been working with growers and research agencies to develop new and more convenient methods to apply legume inoculants to new and existing pastures legumes. The ALOSCA dry granule formulation can either be shallow sown with seed or fertiliser during pasture sowing or surface applied to existing pastures. The granular formulation offers protection to the rhizobia and this has allowed innovative pasture establishment technologies such as summer sowing of hardseeded annual legumes to be successful.

Many sub-clover paddocks have not had inoculant applied for many years. Often these paddocks have poor nitrogen fixation with inspection of roots revealing low nodule numbers. The nodules on these plants may also be very pale in colour, rather than the normal healthy pink.

A recent survey funded by Meat and Livestock Australia, Australian Wool Innovations looking at sub-clover background rhizobium supports what producers have been casually observing for some time. While sub-clover seedbank and or non-inoculated sown populations are forming some nodules in most instances, there is considerable variation in their ability to produce prolific nodule colonies. The survey reported that of the 237 sites sampled throughout the Central West and Riverina of NSW only 8% of the sites returned nodulation measurements that were considered to be adequate.

An improved Group C strain for sub-clover, WSM1325, was released in 2006, however many producers have not taken advantage of the development. The WSM1325 strain offers improved nitrogen fixation and nodulation initiation in acidic soils over earlier Group C strains and will effectively nodulate a broader range of trifoliolate clovers including the commonly grown Balansa & Persian clovers.



Above: Sub-Clover growth comparison from the glasshouse. New lower soil pH tolerant strains can provide a production edge over background/paddock strains. Control (no inoculation) vs. the paddock type (6N8) vs. the new commercial strains WSM409 & WSM1325 showing the production benefit.

Summer sowing is a recently developed technique to enable growers to establish pasture using seed harvested on farm. Hardseeded pasture legumes such as arrowleaf clover, bladder clover, gland clover, French serradella and biserrula, can all be harvested on-farm using a conventional cereal header at relatively low cost. The seed, which undergoes virtually no scarification during harvest can then be sown in January/February. High summer temperatures then break down the hard seed coat enabling seedlings to germinate on early autumn rain. This means pastures are able to capitalise on the higher early autumn temperatures producing more herbage than conventionally late autumn sown pastures. Harvesting seed on-farm dramatically reduces seed cost and enables farmers to sow at high seeding rates which has significant benefit in reducing weed competition in the establishing pasture.

The summer sowing method was originally developed in WA where it is steadily gaining momentum. In WA the practice is limited to the use of only two species being French Serradella and Bladder Clover. In NSW Dr Belinda Hackney, the principal overseer and developer of the technique for NSW conditions, has identified that in addition to the WA species, Biserrula and Gland clovers as well as Arrowleaf clover are well suited to the technique, probably because the higher humidity levels in summer assist breakdown rates of the hardseed.

**Beckom Farmer Mike O'Hare** has pioneered the Summer Sowing method on his property with great success and now enjoys multiple operational and bottom line benefits of the technique.



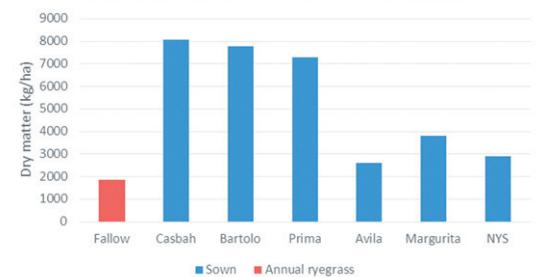
## Case study – Mike O'Hare, Beckom NSW

- Mixed crop and livestock
- 2000 ha – half to crop each year
- Traditionally sub clover base – but all gone due to drought, false breaks etc
- First new legumes sown 2009 – direct header harvest own seed (header + suction for biserrula; header only for all others)
- Started with 5-8 ha each of biserrula, bladder clover, gland clover and French serradella
- Now has ~ 900ha biserrula and ~900 ha of bladder/gland clover mix in various stages of rotation and aiming for 1000 ha of each.
- Lucerne mixes were the mainstay of pasture phase but now has transitioned to the cheaper, more reliable and more flexible annual legumes.

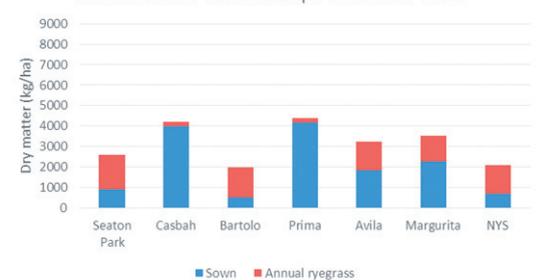
*Mike comments "The combination of higher seeding rates with seed produced on-farm and earlier establishment from summer sowing with the granular inoculant gives a much better pasture in year one. Pastures established in this way are more competitive against weeds, give more*

*production overall, and give a good seedbank for future regeneration after a cropping phase. The other major advantage of summer sowing is that it's all out of the way well before it can interfere with the winter cropping program"*

Summer sown: Greenethorpe 2 October 2014



Conventional: Greenethorpe 2 October 2014



Comparison of spring dry weights for Summer Sown vs. Conventional sowing time. Casbah Biserrula, Bartolo bladder clover and Prima gland clover returning a massive dry weight production benefit. Note also the complete suppression of annual ryegrass content with the summer sown measurements.

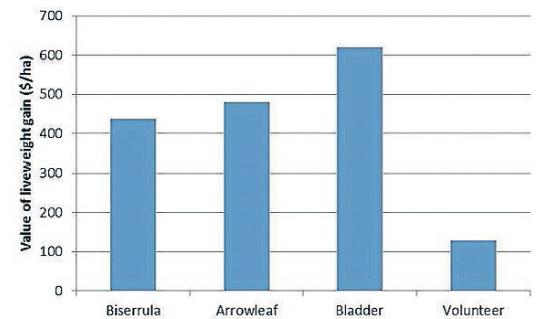


Table. Value of live weight gains under the summer sow system with the newer species sown earlier vastly out performing volunteer pasture.

## For more information contact

Belinda Hackney, Local Land Services,

Forbes NSW Tel: (02) 6850 1623,

Chris Poole ALOSCA Technologies (WA)

Tel: 0429 815 638 or Office (08) 6305 0123

Visit ALOSCAs website: [www.alosca.com.au](http://www.alosca.com.au)

# ALOSCA

## Dry granular legume inoculants

### Streamline your legume seed inoculation with ALOSCA dry granular legume inoculants

- ✓ Rhizobia is encapsulated in the dry granule and remains viable for extended periods, particularly during suboptimal seedbed conditions
- ✓ Buffers Rhizobium from crop protection seed dressings that normally harm legume inoculants
- ✓ Highly protective inoculant formulation well suited to shallow sown small seeded species which are typically prone to soil surface drying post seeding



## Streamline your on-farm seeding program

- ✓ **Easy** Replaces slurry legume inoculation, simple preparation no limitations for time to sow\*\*
- ✓ **Flexible** Apply mixed with seed or fertiliser, sow dry or to moisture with/without seed dressings
- ✓ **Effective** Reliable nodulation with moist or dry seeding. Inoculant viability maintained during unfavourable seedbed conditions

\*\* when mixed with fertiliser, ALOSCA inoculants should be sown within 4 weeks

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TECHNOLOGIES

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Enquiries & orders contact ALOSCA Technologies Pty Ltd  
PH: (08) 6305 0123 | Fax: (08) 6305 0112 or  
email: [rhills@alosca.com.au](mailto:rhills@alosca.com.au)