

The Third Trifoliate

NSW Soybean Expansion Project NEWSLETTER



Edition #1 – July 2022

NSW Northern Slopes & Tablelands soybean benchmarking

A new NSW DPI-GRDC funded project “*Expansion of soybean production in the high rainfall zone of northern NSW*” aims to improve and expand soybean production through development and demonstration activities to address regional constraints.

To engage with soybean growers and agronomists, and to understand some of the constraints facing soybean production on the northern slopes and tablelands of NSW, a crop benchmarking process started in the 2021-22 season. The NSW DPI project team checked 21 soybean crops across 10 soybean producers between BafLOUR’s Peak and Delungra in the western parts of the northern slopes to Glen Innes on the northern tablelands.

It was a fantastic opportunity to meet new and experienced soybean growers and learn about their farming systems. Discussions centred on farming systems, time of sowing, benefits of soybean in the farming system, and any issues regarding variety choice, nutrition, weed control, and management of insects and diseases.

Thanks again to the soybean growers that welcomed us onto their farms. The first edition of this newsletter is a summary of the growers and crops that we visited, and some general observations of constraints that are facing growers. These constraints will form the basis for extension activities that will be conducted in this region in the 2022-23 soybean season.

As always, please contact the project team if you have soybean enquiries or ideas about how we can help to grow your industry.

Thank you,

A handwritten signature in black ink, appearing to read 'Nathan Ensbey', is shown on a light-colored background.

Nathan Ensbey

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Soybean Benchmarking | April 2022



Scott Guest

Location: Balfour's Peak

Farming system: double cropping
narrow row (30 cm)

Variety: Richmond

Time of sowing: Early November 2021



David Fontane

Location: Balfour's Peak, Nth of Delungra

Farming system: Double cropping
narrow row (30 cm)

Varieties: New Bunya & Richmond

Time of sowing: Early November 2021



Nathan Anderson

Location: Balfour's Peak, Nth of Delungra

Farming system: double cropping
wide row (70 cm)

Varieties: Richmond, Soya 791, Gwydir

Time of sowing: 14th December 2021



Andrew Adams

Location: Delungra

Farming system: double cropping
narrow row (30 cm)

Variety: Richmond

Time of sowing: December 2021

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Soybean Benchmarking | April 2022



Brad & Kyeron Schwark

Location: Oakwood

Farming system: Double cropping,
minimum till, wide row (75 cm),
controlled traffic

Varieties: Gwydir & Richmond

Time of sowing: 4th November 2021



Vern & Geoff Younger

Location: Oakwood

Farming system: Double cropping,
minimum till, wide row (75 cm)

Variety: Richmond

Time of sowing: 19th December 2021



Phillip Penberthy

Location: Long Plain, east of Inverell

Farming system: double cropping
wide row (90 cm)

Variety: PBA Maxx

Time of sowing: December 2021

McGregor Gourley Agronomist, Alice Jorgensen



Stuart Penberthy

Location: Long Plain, east of Inverell

Farming system: double cropping wide
row (90 cm)

Variety: PBA Maxx

Time of sowing: December 2021

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Soybean Benchmarking | April 2022



John Frazier

Location: Inverness

Farming system: Pasture improvement/
opportunity crop, narrow row (30 cm)

Variety: Richmond

Time of sowing: December 2021



John & Bonnie Hamel

Location: Glen Innes

Farming system: Pasture improvement/
opportunity crop, narrow row (30 cm)

Variety: Cowrie

Time of sowing: 17th October 2021

Observations | April 2022

These observations are a combination from this benchmarking exercise, previous trips in the 2021-22 season, and discussions with leading agronomists and growers in the region.

Topics include: 1) Farming systems 2) Insect management 3) Weed control and 4) Diseases.

1. Farming systems

- Adopting controlled traffic and minimum tillage farming systems resulted in excellent soybean establishment for most growers. The use of row crop/precision planters is better suited to this region as there is less soil disturbance and greater conservation of soil moisture at planting. Some tyne planters and air seeders were producing variable results.
- Growers in this region are successfully including soybean in a double cropping rotation with winter cereals. More work needs to be done to quantify the amount of residual N from a soybean crop and its value in the soybean gross margin analysis along with the value that soybean crops provide to soil health and to weed/pest control in double cropping systems.

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- Further work is required in the region to optimise plant population, row spacings, and time of sowing. Numerous growers in the region are trying to plant earlier in spring with some Cowrie crops being successfully planted in October in the Glenn Innes region and yielding over 3 t/ha when harvested in March. Crops of Gwydir and Richmond were planted in early November in Oakwood and yielded over 3 t/ha. Early planting reduces the risk of frost damage prior to harvest.
- Inoculation failures were observed at a couple of sites. It is extremely important to use the correct type of inoculant (Group H) and manage it correctly. Best practice inoculant application at planting will be a topic at our pre-season meetings in August-September 2022.

2. Insect management

The 2021-22 soybean season experienced high insect pressure, especially from green vegetable bugs (GVB). Observations included:

- High populations of GVB in this area (and other parts of NSW) this season. Populations of GVB may be building up during winter in broadleaf weeds (in particular, turnip weed, wild radish, thistles), early mungbean and winter pulse crops and pose a serious threat to soybean grain quality and yield.
- Several cases of broad-spectrum insecticides being used pre-flowering to control soybean loopers and *Helicoverpa*, which is not an ideal strategy for IPM as it wipes out many beneficial insects early in the crop cycle. Biological control options and selective insecticides exist for both soybean looper and *Helicoverpa* that preserve beneficial insects in the crop, and should be used as a first option in an effective IPM system.
- Some instances where the insecticide Skope® (Acetamiprid 218 g/L + Emamectin 32.5 g/L) was not effective on GVB's due to poor canopy penetration from aerial application and high pest numbers.
- Shield® (Clothianidin 200 g/L) is available for soybean growers to use as a first option against pod suckers at early pod fill (Check label constraints including DO NOT SPRAY DURING FLOWERING).
- Shield® (Clothianidin 200 g/L) was not considered for soybean crops in this region due to reported efficacy issues in cotton systems in the past.
- Potential to use early sown trap crops for pod suckers. (e.g., a crop sown in October may attract the first populations of GVB and allow an option for early control).
- Aerial application (planes) may be reducing efficacy of some insecticides due to lack of canopy penetration. Ground rigs were not always possible due to wet weather.
- Resistance to Steward is a concern if it is being used more than once in a crop cycle (CHECK THE LABEL: 1 application per crop).
- Further training on best practice Integrated Pest Management (IPM) will be held during the 2022-23 soybean season.



3. Weed control

Weed control was challenging due to the prolonged wet weather in the 2021-22 season. The following observations were made:

- Most soybean crops had good control of grass weeds.
- In some instances, broadleaf control was a challenge due to wet weather and advanced weed growth before control.
- Using crop rotation as an opportunity to clean up broad leaf weeds, for example Starane® (Fluroxypyr 333 g/L), in cereal crops has worked well.
- Weed control was more effective where growers used a combination of broadleaf and grass pre-emergence such as Valor® (Flumioxazin 500 g/kg), Dual Gold® (S-Metolachlor 960 g/L) or Spinnaker® (Imazethapyr 700 g/kg).
- Calculating correct plant population and even plant establishment contributes to controlling weeds. Patchy establishment in crops made weed control more difficult all season.
- Some weed control failures were observed when trying to mix too many herbicides in one pass. The efficacy of some herbicides (e.g., glyphosate) is reduced when mixed with other herbicides.
- It is important to understand the modes of action of herbicides. Tank mixing herbicides that have incompatible modes of action produces a poor result. Better results can be obtained with separate passes.

4. Diseases

- Fungal diseases Sclerotinia, Downy mildew, and botrytis grey mould were observed.
- Of most concern was two crops with severe infection of Sclerotinia (a fungus that can survive in infected stubble and soil for decades). Sclerotes (the black resting bodies of this fungus) can also be transmitted in grain harvested from infected crops.
- Downy mildew is not considered a major disease in soybean crops in Australia and has rarely been observed to cause significantly yield loss. Varieties from the Australian Soybean Breeding program have moderate to low susceptibility to this disease.
- Crops with wide rows and lower populations had less diseases observed due to better light and wind penetration into the crop canopy.
- Cold and wet conditions around harvest time in this region could cause severe soybean leaf rust (*Phakopsora pachyrhizi*) damage. This issue can be managed by selecting a resistant variety such as Gwydir or by manipulating time of sowing, plant population and row spacing. The only other control option is a fungicide application of Folicur® (Tebuconazole 430 g/L).
- No symptoms of charcoal rot (*Macrophomina phaseolina*) were observed in the crops likely due to the wet season although this disease is a concern in Australia in hot, dry conditions.
- If soybean production increases in this area an emphasis on disease management needs to be made as inoculum levels could increase significantly.

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Contact the project team



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