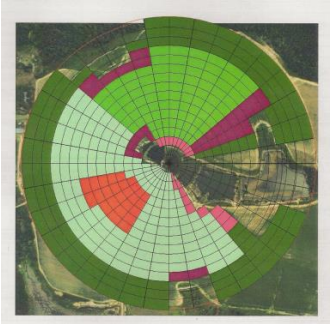
GROWER GROUP INNOVATION PROJECTS TRIAL RESULTS



Australian Government

Sugar Research and Development Corporation

March 2013

Published version 1 - March 2013

GGIP program Funded by:
Sugar Research and Development Corporation
www.srdc.gov.au

Australian Government
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GGIP program supported by:
Growers Group Services
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Welcome to the sixth edition of the Trial Results booklet from Sugar Research and Development Corporation funded Grower Group trials coordinated by Grower Group Services. The aim of this booklet is to provide growers with clear, concise information from trials carried out on-farm by leading growers.

The results are useful for making informed decisions about increasing profit from your farm business. All trials presented are experimentally sound. While some results have been statistically analysed, others are representative of the average results from trial replications.

All the results are made available in the Grower Group Innovation Project (GGIP) final report submitted between January and December 2012. These reports provide more background information and detail about the work that was conducted and are available on the Grower Group Services website, under the Grower Groups page, milestone archive www.growergroupservices.com.au

SRDC and Grower Group Services strongly recommend growers examine their individual farming operation and seek independent advice if necessary before adopting any of the practices outlined in this Trial booklet. Growers should consider their farming situation, climatic conditions and machinery before making on-farm changes based on the trial results presented here.

Research and improvement never stops. More trials are under way across the industry and Grower Group Services and SRDC look forward to bringing you more information in future years.

Che Trendell, Joe Muscat and Chris Aylward
Grower Group Services

www.growergroupservices.com.au

GGIP Trial Results Booklet

Compiled by:
Che Trendell, Chris Aylward, Joe Muscat
Group Grower Services

We would like to acknowledge the following SRDC funded Grower Group Innovation Projects for their contribution to this booklet:

Advance Burdekin Collective Research Ltd

Advanced Nutrient Solutions

Blackburn Harvesting Group

DAG (Driving Agricultural Goals) Grower Group

Herbert Cane Grub Management Group

Mackay Soybean Study Group

Maryborough Advanced Growers Group

Mt Catherine Cooperative

North Clarence Innovative Planting Group

NSW Farming Systems Group Inc

Plane Creek Sustainable Farmers Inc

Precise Pivot Management Grower Group

Silkwood Drainage Board

United Soybean Growers Group

TABLE OF CONTENTS PAGE

Introduction from SRDC ……..... 5

Fertiliser trials

Mill Mud Trial……. 6
Soil Specific Compost Trial…… 8

Planting technique trials

Skip Row Trial……..... 10

Weed Control Trials

Weedseeker Analysis Trial…….. 13
Weedseeker Design Issues……..... 16

Grub Control Trials

Grub Management Trials…… 18

Break crop trials

Fallow Option Trial……... 20
Cross Regional Soybean Variety Trial…… 23
Central Soybean Variety Trial……. 26
Central Soybean Variety Trial 2…..…… 30
Soybean Planting Systems Trial……..... 33
A6785 Planting Rate Trial……..... 36
Soybean Fact Sheet……..... 39

Photos of machinery modifications……..... 41

Contact details……... 47

Australian Government
Sugar Research and Development Corporation

Grower Group Innovation Projects (GGIP) help grower groups build their capability for innovation by conducting their own research projects in their own region. Through these projects the goal is to create more profitable and sustainable sugarcane farming systems in Australia.

The Sugar Research and Development Corporation (SRDC) encourages grower groups of any size, from any Australian sugarcane region, to submit an application to attract part or full funding from SRDC for their research and development project. Depending on the scope of the individual projects, SRDC will provide funding of up to $80,000 per project over a term of up to three years.

Over the past five years, SRDC has funded around 70 Grower Group Innovation Projects from Cairns in North Queensland to Harwood in Northern New South Wales. The projects cover a diverse range of topics from testing new cane varieties, to fighting pests, to finding the best sources of nitrogen and fibre on a cane farm.

For generations many growers have successfully designed their own innovative technology, performed research trials and created new farming methods to suit their own environment and farming system. We recognise growers have good ideas and GGIPs are a way for these to be tested on-farm by a grower group.

The projects outlined in this booklet have been chosen by an industry panel on their merit against a set of investment priorities determined by industry and government. The projects have been supported by growers who have given their time, energy and expertise to ensure these projects are completed and the outcomes shared with the industry. Their efforts are to be applauded and I wish to congratulate all involved.

GGIPs can address an assortment of topics which the grower groups believe are critical to improving the sugar cane farming system and this is what makes this work so invaluable and worthy of SRDC support.

This booklet will assist you in making the right choices for your farm business to ensure it remains profitable and sustainable in the long term.

Annette Sugden
Executive Director
Sugar Research and Development Corporation
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Phone: (07) 32100495

MILL MUD TRIAL

Trials undertaken by Mt Catherine Cooperative
Trials undertaken in Central region

Aim: Mt. Catherine Cooperative aims to determine if 50 t/ha of mill mud banded on the "grow zone":

1. Will provide enough phosphorus for the crop cycle
2. Needs to be incorporated to ensure early P access by plant cane
3. Will improve runoff water quality in ratoons relative to traditional application.

Results

Trial Site 1

Treatment	tc/ha	PRS	ts/ha
T1 Mud	87.5	15.07	13.19
T2 Mud + P	86	15.24	13.1
T3 Mud + Hoe	90.2	15.06	13.58
T4 Mud + Hoe + P	89.5	15.22	13.62
T5 No mud control	85	15.62	13.28

Trial Site 2

Treatment	tc/ha	ccs	ts/ha
T1 mud	57.4	15.4	8.8
T2 mud+P	69	15.0	10.3
T3 control	55.5	14.6	8.1

MILL MUD TRIAL – DISCUSSION

- In both trials, there was NO significant difference between any of the treatments when comparing tonnes cane per hectare, PRS or tonnes sugar per hectare. Analysis of variance tables were created for each variable using statistics software (Statistix 7.1). BSES assisted with statistical design of trial and Jo Stringer (BSES Biometrician) checked the input of harvest data, output of AOV tables and confirmed our conclusion.

Some mill mud degradation was also monitored over time within 1st Ratoons (dry matter, N, P & Ca)

	At Application 7/9/11	31/05/12 (8 mths)	6/9/12 (12 mths)
	kg/ha	kg/ha (% of original)	Kg/ha (% of original)
Dry Mud	16024	4465 (28)	2966 (19)
Nitrogen	154	49 (32)	35 (24)
Phosphorus	203	57 (28)	42 (22)
Calcium	416	120 (29)	90 (23)

MILL MUD DEGRADATION – DISCUSSION

- The mud was sitting in the paddock for about 12 months. It experienced a dry 2011 spring but over the period between application and final sampling received about 2000 mm. Although there appears to be a significant quantity of nutrients remaining in the mud residue after 12 months in the paddock, the bulk is expected to be in the soil. At sampling, there was some contamination of the mud with worm casts, soil, trash and roots. Even though the mud samples were dried and sieved before sending to the lab it's likely that there is still some contribution of nutrient from soil and worm casts.

GGIP Group: Mt Catherine Cooperative

Contact Person: John Fox – 0408 772 666

SOIL SPECIFIC COMPOST TRIAL

Machinery development and trials undertaken by DAG group
Trials undertaken in Maryborough region

Aim: Design and test a compost turner that will allow granular fertiliser to be added to a compost mix to better match compost to soil test requirements

Results

The yield results from the plant cane crop are shown in the table below.

Treatment	Cane Yield (t/ha)	CCS	Sugar Yield(t/ha)
Nil Starter fertilizer (control)	70.01	17.37	12.14a
Soil specific fertiliser	71.72	16.68	11.83ab
Soil specific Compost	76.03	17.42	13.23bc
Mill mud + fertiliser	83.54	16.97	14.18c
	p=0.07	*p=0.44*	*p=0.02*

SOIL SPECIFIC COMPOST TRIAL – DISCUSSION

- There was no significant difference between the treatments in cane yield and CCS.
- There was a significant difference in sugar yield (*p=0.02*) with the "soil specific mill mud" treatment producing significantly more sugar than the "nil starter fertiliser" and "soil specific fertilizer" treatments.
- The "soil specific compost treatment" produced significantly more sugar than the "nil starter fertiliser" treatment.

GGIP Group: DAG Group

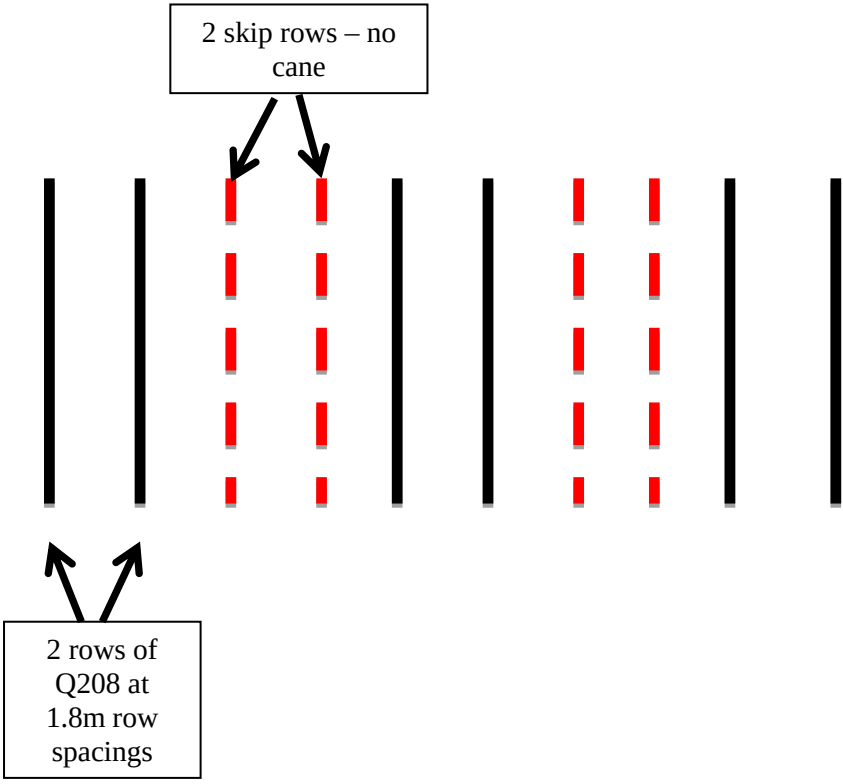
Contact Person: Glen Grohn – 0428 182 476

SKIP ROW TRIAL

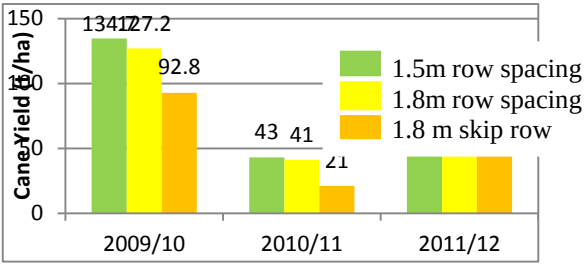
Trials undertaken by Blackburn Harvesting Group
Trials undertaken in Central region

Aim: Investigate 1.8m double skip row configuration in cane vs Conventional 1.5m system vs 1.8m Controlled traffic system

1.8m Double Skip Row Configuration

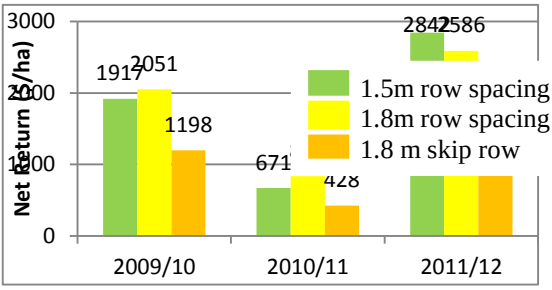


Results –Cane Yield for plant cane, first and second ratoon



Please note yields for 2010/11 are low due to extremely wet weather

Results – Net Return excluding land preparation, irrigation, fertiliser (other than nitrogen) and fixed costs (other than harvesting)



SKIP ROW TRIAL – DISCUSSION

- In the plant cane, the skip row trial produced less t/ha because half of the area is planted. However the tonnes produced in the skip row treatment is much more than half of that produced in the other two treatments.
- The net return of the skip row in $/ha when compared to the conventional 1.5m system is better than two thirds. The net return does not take into account the extra income from the break crop.
- In plant cane, the skip row has required more water as the rotational crop needs more water to grow compared to the cane at the first crop stage. Crop water use difference between the sugar cane and the peanuts is approximately 2 megalitres, this has been determined by crop agronomy notes produced by DPI & F.
- In first ratoon all yields were low due to extremely wet weather
- In first ratoon, the skip row produced the same tonnes as the conventional 1.5m row spacings. In these extremely wet conditions, the 1.8m controlled traffic system out performed both the skip row and conventional systems
- This trial will continue to be monitored over the crop cycle

GGIP Group: Blackburn Harvesting Group

Contact Person: Lee Blackburn – 0405 140 322

WEEDSEEKER ANALYSIS TRIAL

Trials undertaken by Advance Burdekin Collective Research Inc
Trials undertaken in Burdekin region

Aim: Develop a spray hood system utilising optical spot spray sensors (WeedSeeker) for the cane industry. Determine the cost benefit from the uptake of WeedSeeker technology

Results

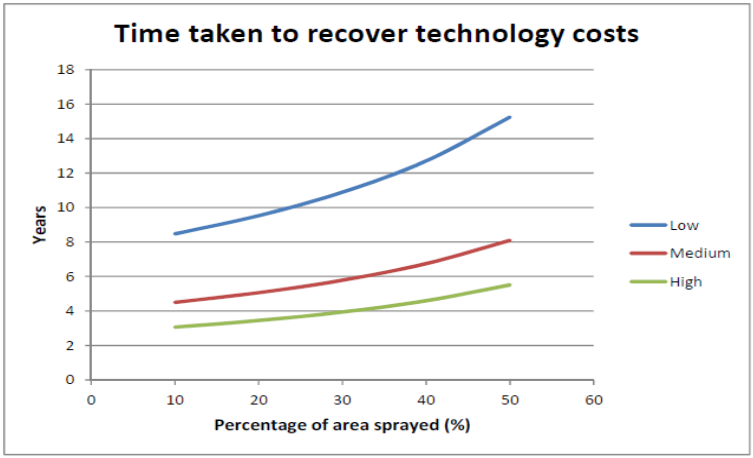
The following table demonstrates the amount of chemical used and savings made by using the precision technology

	Amount of Product Used (L/ha)		Amount saved (L/ha)
Chemical	**WeedSeeker**	**GC shield**	
RoundUp PowerMAX	0.9	1.5	0.6
Surpass 475	0.3	0.5	0.2
LI-700	0.03	0.04	0.01

.

This table shows the expected herbicide costs ($/ha) through spraying a reduced area.

	Herbicide cost ($/ha)		
% of inter-row area sprayed	Low	Medium	High
100	3.94	7.41	10.89
90	3.54	6.67	9.80
80	3.15	5.93	8.71
70	2.75	5.19	7.62
60	2.36	4.45	6.53
50	1.97	3.71	5.44
40	1.57	2.96	4.35
30	1.18	2.22	3.27
20	0.79	1.48	2.18
10	0.39	0.74	1.09



This Figure demonstrates the time taken to recover cost of WeedSeeker sensors and installation assuming 1000 hectares was sprayed annually.

WEEDSEEKER ANALYSIS TRIAL – DISCUSSION

- Our trial results showed that the WeedSeeker® sensor technology can work successfully in sugarcane crops.
- The WeedSeeker® technology did reduce herbicide usage and, just as importantly, it detected weeds and effectively sprayed them.
- Savings in herbicide usage will vary from field to field, depending on weed pressure. The fewer the weeds the more savings will be made.
- Despite problems with the crop deflectors, the trials consistently showed herbicide usage of less than 50% compared to the standard GC shield, which sprayed the entire target area.
- Apart from the obvious saving in herbicide costs, other significant benefits of reduced labour, through reduced fill-ups as one tank will cover at least twice or three times the area, and larger areas able to be sprayed per day providing timelier weed control, should also be realised.
- It is more likely that large farmers, or spray contractors, would be able to justify the cost to purchase the equipment. The longer payback period for a farmer with a small area may deter them from making the investment.

GGIP Group: Advance Burdekin Collective Research Inc

Contact Person: Joe Linton – 0409 635 434

WEEDSEEKER DESIGN ISSUES

Trials undertaken by Advance Burdekin Collective Research Inc
Trials undertaken in Burdekin region

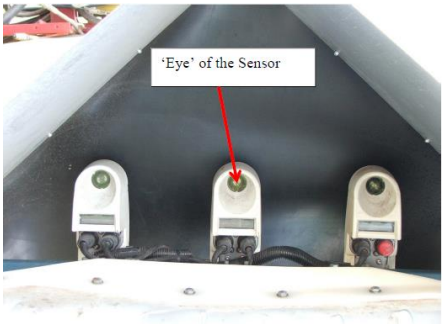
Aim: Develop a spray hood system utilising optical spot spray sensors (WeedSeeker) for the cane industry.

Design issues

A 4 row boom spray was modified by adding hoods and 4 WeedSeeker® sensors beneath each hood. Crop Optics Australia provided advice on the number and positioning of sensors. The early designs of the spray rig encountered significant problems.

Problem 1: WeedSeeker® sensors were being turned on without weeds being detected. Spray mist, inside the hood, was covering the sensor 'eye' causing it to turn on and spray.

This was resolved by relocating the sensors outside the shield. In doing so, the sensors were positioned higher and the number per inter-row was reduced from four to three.



The 'eye' of the sensor needed to be protected from spray mist. The sensors are now located outside the spray chamber.

Problem 2: Cane leaves were pushed under the hood rather than away from it. As a result, herbicide damage was clearly evident on cane. While this may be acceptable when using products like paraquat, using glyphosate was seen as too risky.

Figure 4. Cane leaves caught by crop deflectors, caused the sensors to spray herbicide unnecessarily. Even with this design flaw, reduced chemical use was recorded

Weeds kill was just as effective using the WeekSeeker technology (right) compared to the GC shields (left).

GGIP Group: Advance Burdekin Collective Research Inc

Contact Person: Joe Linton – 0409 635 434

GRUB MANAGEMENT TRIAL

Trials undertaken by Herbert Cane Grub Management Group
Trials undertaken in Herbert region

Aim: Provision of advice on district-wide grub trends to group members to assist with grub management decisions; and testing of a farm-level monitoring and prediction service that could be used to make field-by-field decisions, by interested growers

Results

- Aerial surveys conducted each year before harvest commences, ground truthing of suspected damage identified from the air, collecting damage data from every grower and then entering all information into a GIS data base allowed for the production of district wide grub damage maps. These maps are useful tools to visually show growers the extent of damage within an area. The project identified GIS mapping as a very useful tool to assist in future grub predictions across a district and at farm level.
- Results from this project, as well as other Grubplan projects indicate that insecticide application has a major influence on grub numbers found across districts. It has been observed that areas treated for grubs can have significant impacts on grub populations in following years.
- During the project the following factors were also found to influence damage levels: general grub numbers, presence of cane grub diseases like *Adelina*, farm management practices, soil types, proximity to specific vegetation types, cane variety and crop age.
- With the awareness of increasing grub damage growers took the option of treating extensive areas of both plant cane and ratoons with liquid imidacloprid; with product use increasing by approximately 180% from 2011 to 2012 calendar years. This extra treatment provided excellent protection in all areas where growers elected to treat, however individuals who did not treat suffered severe damage to the 2012 crop.

GRUB MANAGEMENT TRIAL – DISCUSSION

The group identified the following outcomes/benefits of the project:

- A monitoring and a warning system established for grub populations and damage in the Herbert
- A good working relationship established between growers, service providers and researchers
- A planned approach to grub management and the application of insecticides
- An appreciation of how farming systems, as well as weather reacts and influences grub management
- Aerial surveying, collection of all forms of grub related data and GIS mapping are now tools in the grub management planning strategy for the Herbert
- The success of the Herbert project has led the growers to agree that more funding is required to continue this line of pest management

GGIP Group: Herbert Cane Grub Management Group

Contact Person: Geoff Morley – (07) 4777 4253

FALLOW OPTION TRIAL

Trials undertaken by Plane Creek Sustainable Farmers Inc
Trials undertaken in Central region

Aim: compare Leichhardt and Stuart soybean to Crystal and Emerald Mungbean to investigate Nitrogen contribution and soil health

Howland Site	plants /ha	fresh weight t/ha	dry weight t/ha	N content % dry weight	Nitrogen kg/ha
Leichhardt soybean	151,340	23.9	6.9	3.401	235.5
Crystal mungbean	329,705	11.7	4.1	1.766	72.3
Stuart soybean	no harvest possible – poor emergence				
Emerald mungbean	318,895	11.2	3.9	1.7	66.9
Walpole Site	**plants /ha**	**fresh weight t/ha**	**dry weight t/ha**	**N content % dry weight**	**Nitrogen kg/ha**
Leichhardt soybean	162,150	25.7	7.4	1.722	128
Crystal mungbean	367,540	11.0	3.8	1.52	58
Stuart soybean	no harvest possible - poor emergence				
Emerald mungbean	335,110	12.1	4.2	1.52	64

FALLOW OPTION TRIAL – DISCUSSION

- The Leichhardt soybean provided significantly more nitrogen to the system than the mungbean crops, as expected.
- Under favourable seasonal conditions, double cropping of mungbeans is possible, providing a more flexible cropping option where a second crop will provide useful additional nitrogen.
- In both trials, extended periods of wet weather coinciding with flowering and pod set prevented control of insect pests, which reduced the grain yield to below that which would be economic for harvest.
- Pest impact on the soybean pods was much lower than the mungbeans, where virtual total pod destruction occurred.
- The short season nature of the mungbean crop would in some seasons (early cessation of wet) allow an autumn crop to be planted and harvested prior to the next cane planting window.

FALLOW OPTION TRIAL – SOIL HEALTH RESULTS

- Results from monitoring the important pathogenic parasitic nematode populations from the winter crops to summer crops at Howland's site show *Pratylenchus* nematodes have increased in the two continuous cane treatments but were reduced in the legume crops Leichhardt soybean and crystal mungbean.
- Overall beneficial nematode counts appear to have declined in the continuous cane treatments while there were fluctuations in counts for the break crops depending on nematode species. Mungbeans appeared to have a very positive influence on Bacterivore counts. Further monitoring needs to be completed before hard conclusions can be drawn.

- Parasitic nematode counts at the Walpole site highlighted the impact of sugarcane on nematode populations.
    - The bare fallow treatment for the 2009 winter season showed no parasitic nematodes present, however several months later *Pratylenchus* numbers had increased rapidly following the planting of sugarcane variety KQ228.
    - *Pratylenchus* numbers also increased under the continuous cane treatment (RB76-5418).
- Beneficial nematode numbers were maintained or improved under the summer legume crops, while a rapid decline occurred in the plant cane KQ228. This rapid decline in beneficials combined with the increase in parasitic *Pratylenchus* number is likely to result in root system stress in the plant crop.

GGIP Group: Plane Creek Sustainable Farmers Inc

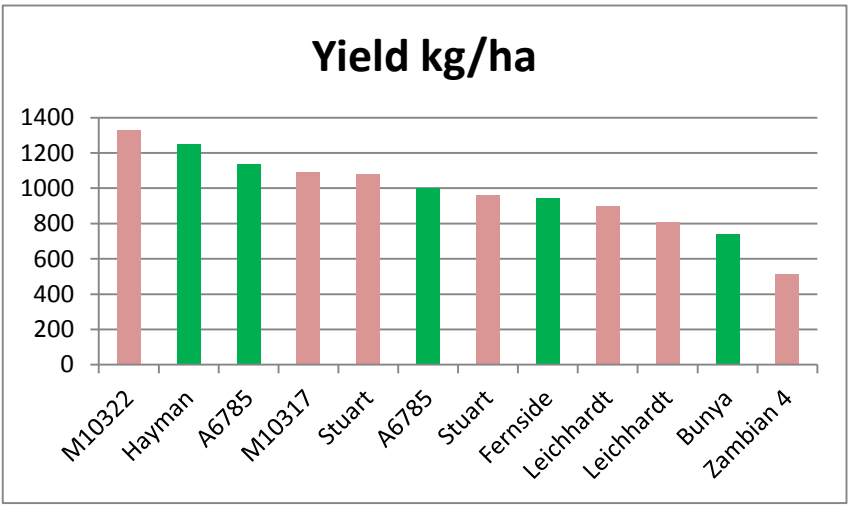
Contact Person: Robert Sluggett – 0459 688 844

CROSS REGIONAL SOYBEAN VARIETY TRIAL

Trials undertaken by The United Soybean Growers Group
Trials undertaken in Central, Burdekin and Herbert regions

Aim: compare existing, new and overseas soybean varieties focusing on general adaptability, biomass production, seed production, crop agronomy and marketing potential for 3 cane growing regions

Mackay Results



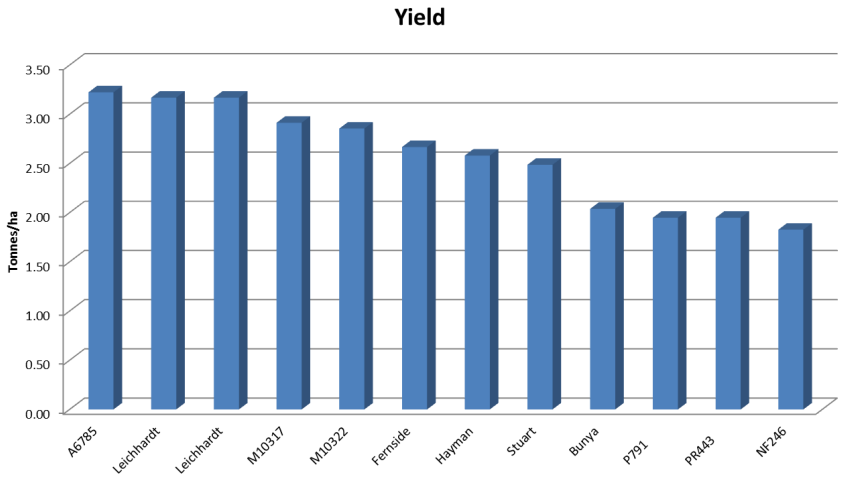
Grain Yield at harvest – Green bars early harvested varieties

MACKAY SOYBEAN VARIETY TRIAL – DISCUSSION

M10322, Hayman, A6785 and M10317 all matured earlier and had higher mean yields than the standards Leichhardt and Stuart. Grain color for each of the promising varieties was exceptional. All of the promising new varieties gave biomass yields above 6 tonne dry matter per hectare and nitrogen inputs

of over 200kg/ha, making them highly suited to green manuring also (Zambia 4 was not sampled due to the small number of plants in each plot). The yield of Bunya was disappointing, given its very early maturity and grain quality. Zambia 4 has a purple hilum and would be restricted to the crushing market only.
No significant lodging occurred, with only Leichhardt and Stuart recording minor sprawling with little impact on harvestability.
Grain yields at harvest were lower than anticipated, based on crop size, pod set and commercial yields achieved in the field beside the trial block. This result is believed to be a result of extremely high grain loss at harvest

Burdekin Results



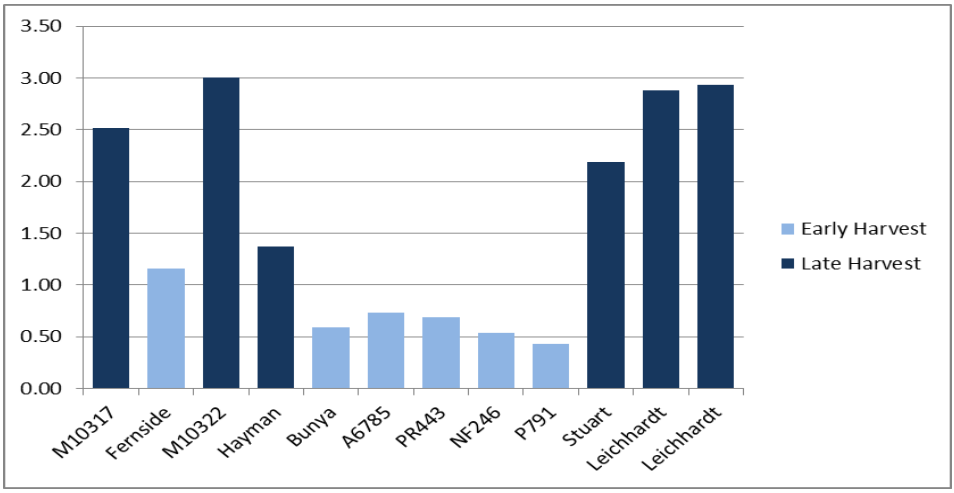
BURDEKIN SOYBEAN VARIETY TRIAL – DISCUSSION

A6785 showed better than average establishment, was one of the fastest maturing varieties, showed good plant height, low lodging, and performed the best yield out of all varieties beating the traditional standards.

The Bunya variety also showed promise. Although it yielded 36% less grain than the A6785, it showed good ground clearance allowing better harvestability, good establishment, was not prone to lodging and definitely matured the fastest of all varieties. This variety was ready to come off at least 3-4 weeks before the other varieties and was actually shedding well before harvest which may have had an effect on final yield. Due to Bunya being a

shorter, more compact variety it could show better yield potential if plant population was increased to 2 or 3 rows per bed.

Herbert Results



HERBERT SOYBEAN VARIETY TRIAL – DISCUSSION

Both M10317 and M10322 had comparable seed yields to Leichardt, with Stuart also producing good yields. Amongst the earlier maturing varieties, Fernside yielded the highest quantity of seed. This may give growers an alternative that will allow them to harvest a crop of Soybeans earlier to allow them to plant their sugarcane crop in a timelier manner. It is planned that all three of these alternative varieties will be planted into the 2012/13 trial for further assessment.

For growers in the wet tropics, biomass for weed suppression and as a part of a green manure crop are seen as critical components of a Soybean crop, even more so than seed yield. When combining these key criteria, M10322 is shaping up as a credible alternative to Leichardt in the Herbert. Trials planned for 2012/13 will be valuable in confirming and fine-tuning these results.

GGIP Group: The United Soybean Growers Group

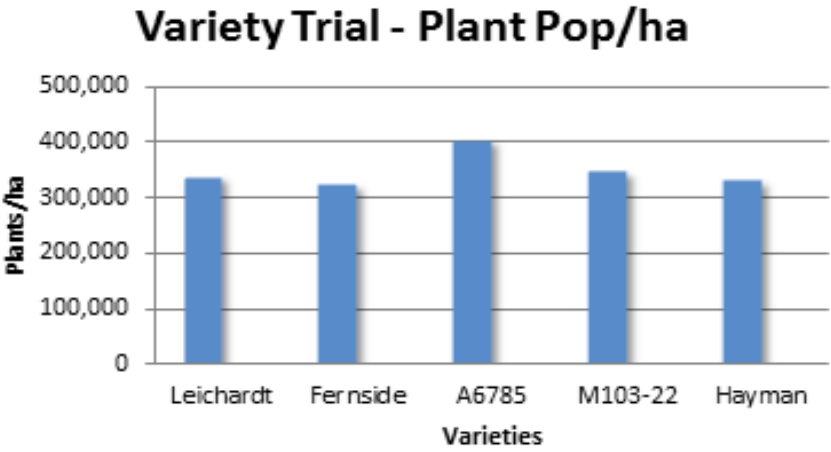
Contact Person: Adam Royle – 0417 610 446

CENTRAL SOYBEAN VARIETY TRIAL 1

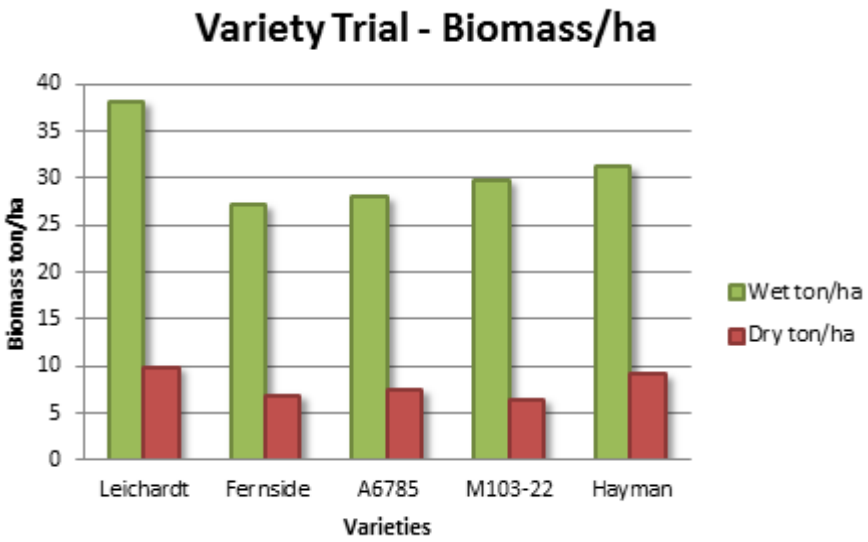
Trials undertaken by Mackay
Soybean Study Group
Trials undertaken in Central region

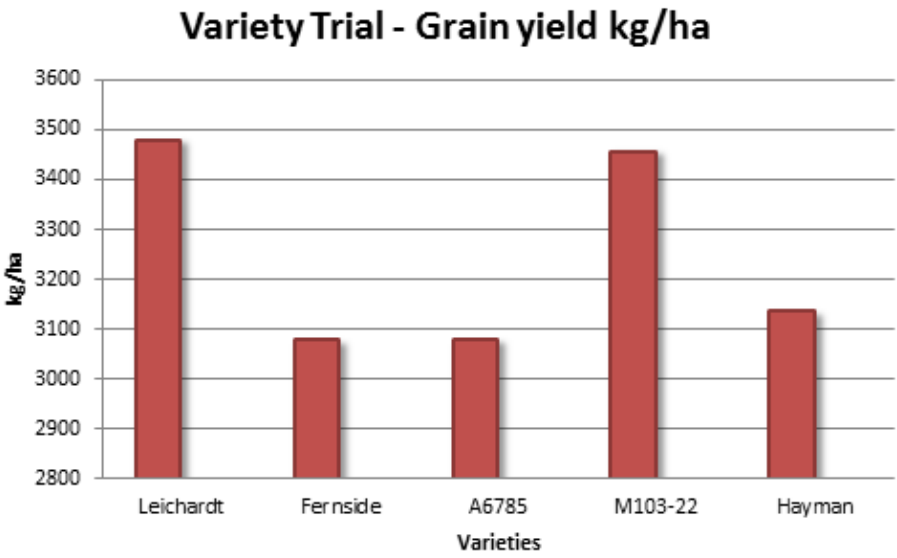
Aim: Compare 6 different soybean varieties in regards to dry matter produced, grain production and nutrient analysis in Mackay

Results

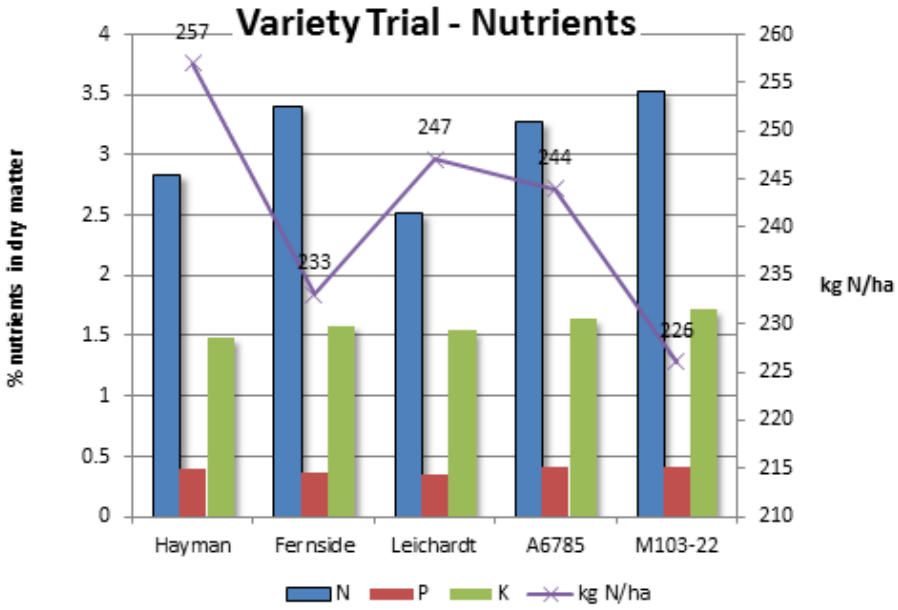


The following two graphs provide a comparison for biomass and grain yield.


Variety Trial - Biomass/ha
Biomass ton/ha
40
35
30
25
20
15
10
5
0
Leichardt
Fernside
A6785
M103-22
Hayman
Varieties
Wet ton/ha
Dry ton/ha


Variety Trial - Grain yield kg/ha
kg/ha
3600
3500
3400
3300
3200
3100
3000
2900
2800
Leichardt
Fernside
A6785
M103-22
Hayman
Varieties

The following graph shows the % of nutrients available in each variety's dry matter as well as the kg/ha of nitrogen available.



SOYBEAN VARIETY TRIAL – DISCUSSION

- Grain yield across all varieties was quite consistent and demonstrated that given good crop establishment, yields above three tonne per hectare are possible in the Central region. The above graphs also demonstrate that grain yield/ha and biomass/ha is going to be different depending on variety, so careful variety selection at planting (considering your target Green or Grain) will give best results, although the new Hayman may be a good bet each way as it demonstrated good grain yield and biomass in the trial.

- M103-22 has been the stand out performer across both variety trials, being the second highest yield with very low levels of purple stain, so grading higher than the other white hilum varieties and showing some insect resistance, along with being easy to harvest because it has a nice erect habit and even leaf drop. One down side was its low biomass and low N per hectare. So this would again suggest that careful variety selection when choosing between Green or Grain is very important.
- The other new variety, Hayman, showed mixed results; it had good biomass and good Nitrogen per hectare, but because of purple stain in the grain sample, was downgraded to full fat, even though it is a white hilum and had the largest seed size of any of the varieties in the two trials.

GGIP Group: Mackay Soybean Study Group

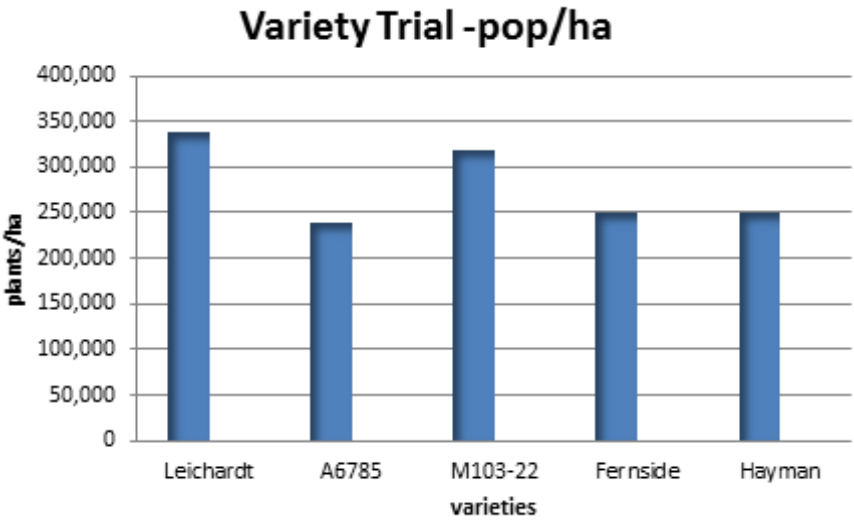
Contact Person: Simon Mattsson – 0417 862 979

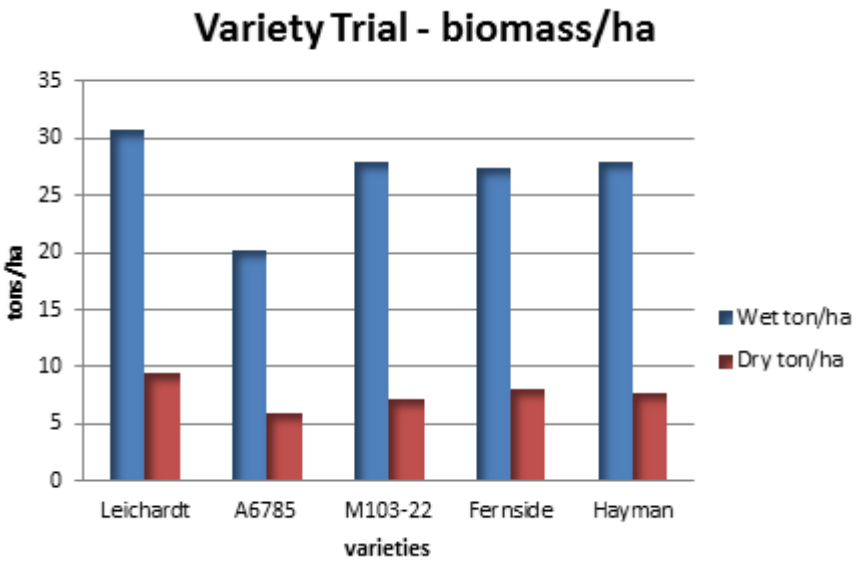
CENTRAL SOYBEAN VARIETY TRIAL 2

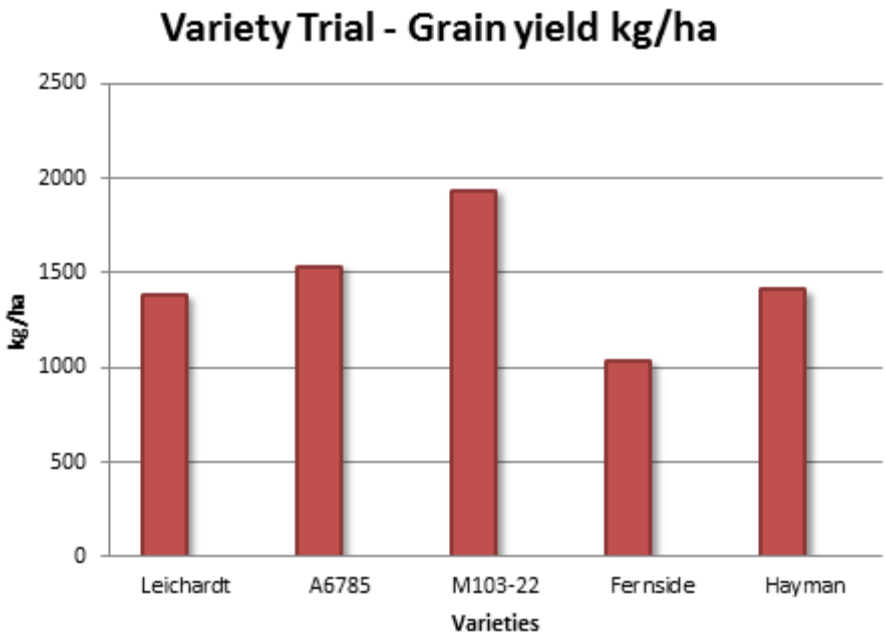
Trials undertaken by Mackay Soybean Study Group
Trials undertaken in Central region

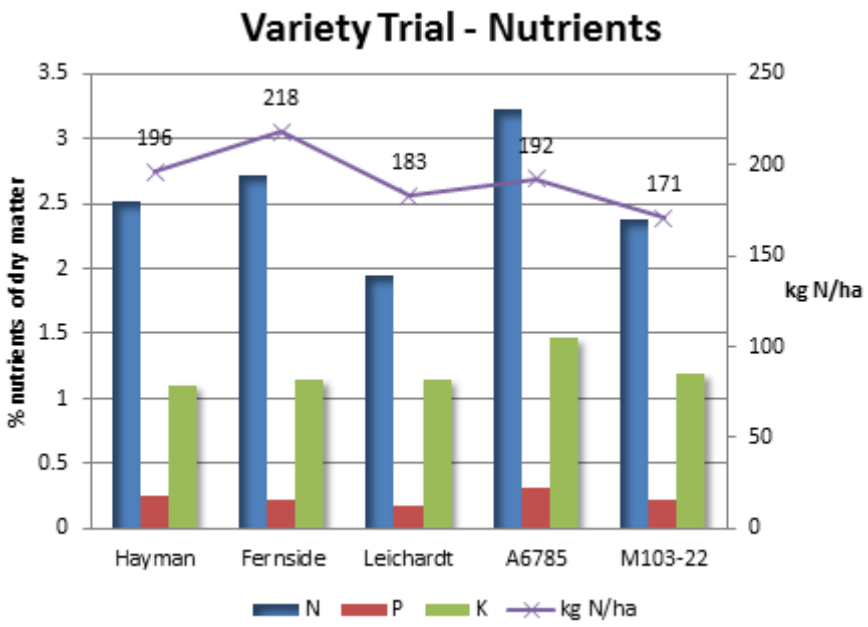
Aim: Compare 5 different soybean varieties in regards to dry matter produced, grain production and nutrient analysis in Mackay

Results




Variety Trial - biomass/ha
35
30
25
20
15
10
5
0
tons/ha
Leichardt
A6785
M103-22
Fernside
Hayman
varieties
Wet ton/ha
Dry ton/ha


Variety Trial - Grain yield kg/ha
2500
2000
1500
1000
500
0
kg/ha
Leichardt
A6785
M103-22
Fernside
Hayman
Varieties



SOYBEAN VARIETY TRIAL 2 – DISCUSSION

- Plant populations in this trial were patchy across all varieties; this was due to the high levels of cane trash that was present at planting. This cane trash prevented some of the seed from being covered by soil. The uneven plant strike made getting overall plant populations difficult and reduced yields across all varieties. This explains most of the difference in yield between the two different variety trials.

GGIP Group: Mackay Soybean Study Group

Contact Person: Simon Mattsson – 0417 862 979

SOYBEAN PLANTING SYSTEMS TRIAL

Trials undertaken by Mackay
Soybean Study Group
Trials undertaken in Central region

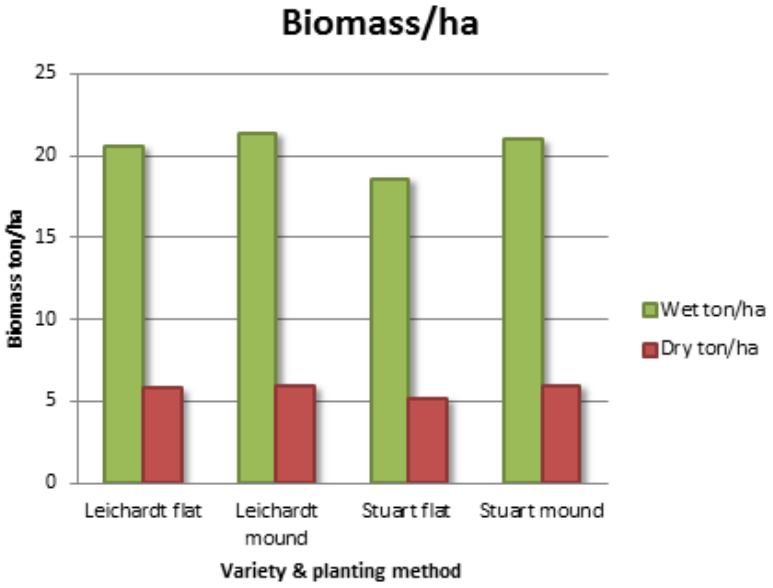
Aim: Compare planting Stuart and Leichhardt soybean in mounds vs conventional flat planting

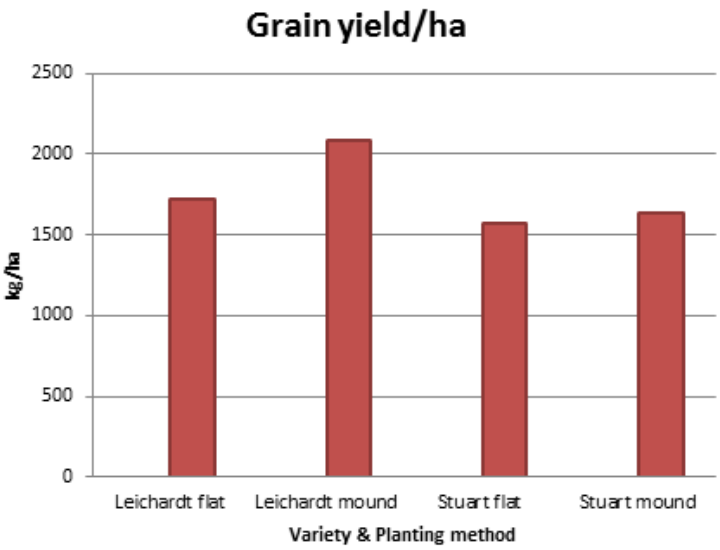
Results

Below is the achieved plant population for Flat verses Mound trial

The uneven and low plant population across all treatments may have compromised some of the potential results. The low populations were

caused by wet cloddy conditions at planting, not allowing for proper soil seed contact.





SOYBEAN PLANTING SYSTEMS TRIAL – DISCUSSION

- Even though population was below target across all treatments, and the mound treatments had a lower population than the flat treatments, the mound treatments still had both a higher biomass and grain yield than the flat treatments. The results were consistent for both varieties, so even though plant populations were below target, we feel that the results demonstrate that mound planting does have a clear advantage, and would most likely give best results whether you were targeting Green or Grain. Purple Stain was not a problem in this trial as both varieties only had very low levels.
- A drawback to mound planting was where the crop yielded well it tended to lay down, if the crop was laying below the top of the mound in the wheel track the harvester was unable to retrieve it so it was left behind. This could potentially cause considerable crop loss at harvest, but can be combated with some forward planning. Firstly if the crop is only for green manure it is not an issue, secondly if the block has good natural drainage consider planting flat as good yields can still be achieved and thirdly if you have to mound plant consider planting a more erect variety such as A6785 or the new M103-22 or Hayman.

GGIP Group: Mackay Soybean Study Group

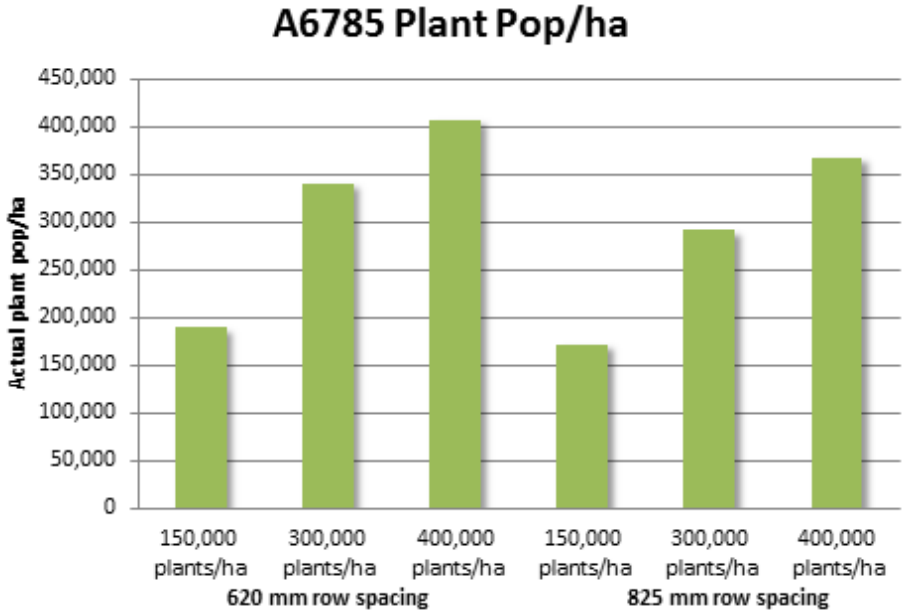
Contact Person: Simon Mattsson – 0417 862 979

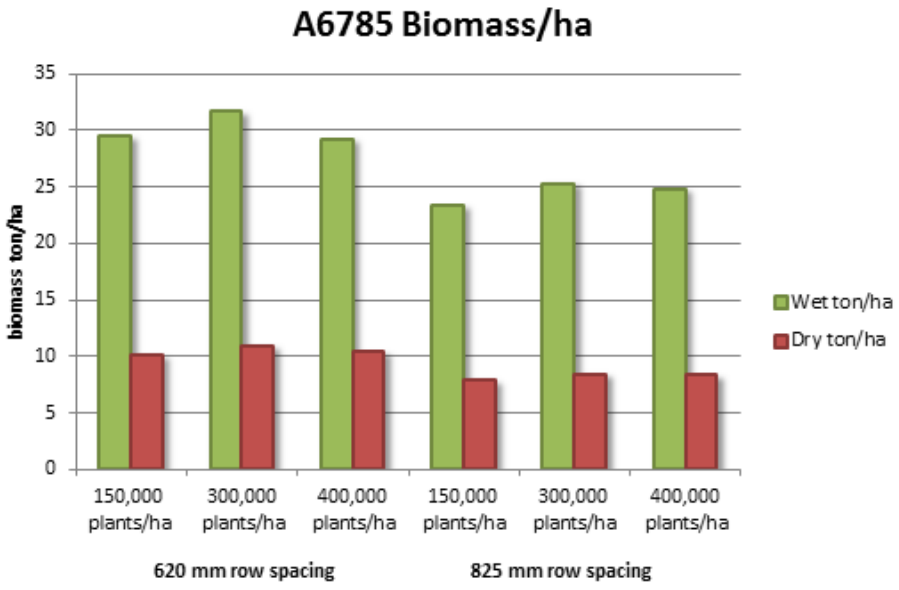
A6785 SOYBEAN PLANTING RATE TRIAL

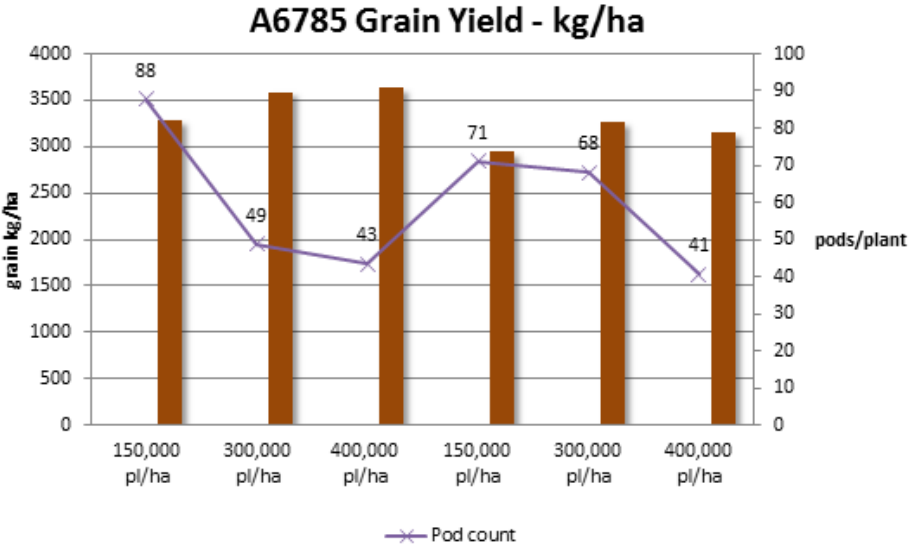
Trials undertaken by Mackay Soybean Study Group
Trials undertaken in Central region

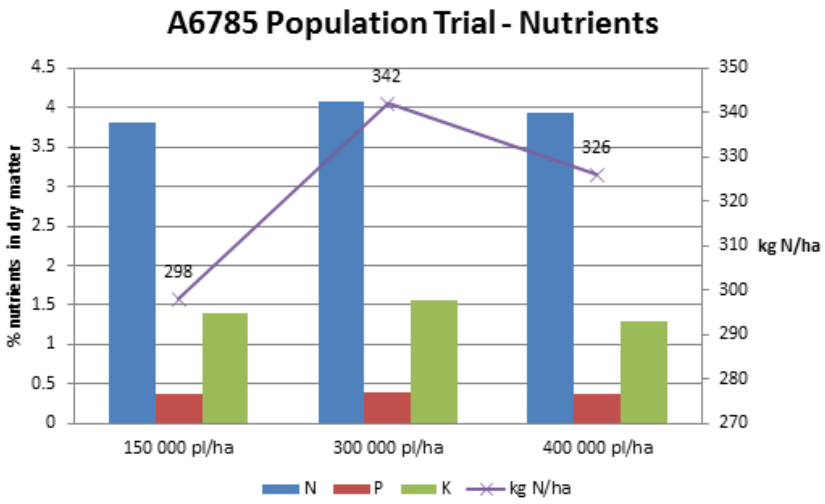
Aim: Compare planting A6785 soybean at different planting rates and row spacings to examine the effect on biomass, grain yield and nutrients

Results




A6785 Biomass/ha
biomass ton/ha
35
30
25
20
15
10
5
0
150,000 plants/ha
300,000 plants/ha
400,000 plants/ha
150,000 plants/ha
300,000 plants/ha
400,000 plants/ha
620 mm row spacing
825 mm row spacing
Wet ton/ha
Dry ton/ha


A6785 Grain Yield - kg/ha
grain kg/ha
4000
3500
3000
2500
2000
1500
1000
500
0
100
90
80
70
60
50
40
30
20
10
0
pods/plant
88
49
43
71
68
41
150,000 pl/ha
300,000 pl/ha
400,000 pl/ha
150,000 pl/ha
300,000 pl/ha
400,000 pl/ha
Pod count



A6785 PLANTING RATE TRIAL– DISCUSSION

- The trials showed that A6785 could compensate for a lower population. There is a lower result for the 825mm row spacing however when you refer to the plant population/hectare chart you will see that populations were slightly below target and this is probably what caused the lower biomass and grain yield result. We also counted pods per plant in this trial to see if that was how the plant compensated for different plant populations and it would appear from the charts that is exactly what occurred with a definite trend towards more pods per plant in the lower plant populations.
- This trial was very well managed with good plant populations and the results show that given a good plant establishment and crop management, overall yields can be acceptable. This trial demonstrated that careful in crop management will pay dividends, with yields of close to or above 3.5 tonnes per hectare achieved.

GGIP Group: Mackay Soybean Study Group

Contact Person: Simon Mattsson – 0417 862 979

Following is a fact sheet compiled by the Mackay Soybean Study group to assist Central region growers considering planting soybean fallow crops, which they have allowed us to include in this booklet

SOYBEANS the FACTS

FOR GROWING SUCCESSFUL CROPS IN THE CENTRAL REGION

Pre-planting

- Soil sampling is essential for pH (5.5-7 ideal) & nutrient status for both the soy crop & following cane crop. Soys, whether for green or grain, like some P (40kg/ha) and K (70 kg/ha) for establishment and early vigour at the growing vegetative stage.
- If the block has any drainage issues, planting into a preformed mound will give the best result. The old cane mound will do if the planter can plant through the trash; spray out of ratoons with Round Up is preferable to burning the trash.
- Order seed early, aim for 300,000 plants/ha (approx 60kg/ha dependent on seed size). Leichardt is 1st choice for a green crop; Stuart & A6785 are the best white hilum varieties for grain (higher price).

Planting

- Correct inoculation is essential for nitrogen fixation in the soybean and for nitrogen to be available in the following cane crop.
- For successful establishment, plant into good moisture, between 20 – 40 mm deep.
- Soy has an ability to compensate for a lower plant population, down to 150,000 plants/ha

Crop Management

- Herbicide application is essential for weed control; Spinnaker applied early (pre- emergent) gave the best results. The addition of Round Up or Paraquat was necessary if there were emerged weeds.
- From flowering, monitor your insect numbers weekly; heavy pressure will reduce your crop's ability to fix nitrogen, reduce yield and quality. Beneficial insects also have an impact on reducing pest numbers.
- Irrigation is important at critical stages – plant establishment, flowering and pod fill.

Harvest & Marketing

- Make a decision whether to go green or grain, once your crop is established.
- If growing a green crop, spray out at mid pod fill stage with Round Up; only incorporate in when preparing ground for cane planting.
- In a grain crop, desiccation with Reglone 7- 10 days before harvest is important for grain quality & ease of harvest.

A contract for the sale of your soybeans is necessary.

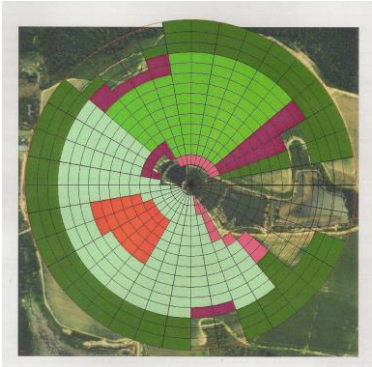
GGIP Group: Mackay Soybean Study Group

Contact Person: Simon Mattsson – 0417 862 979

MAXIMISING CENTRE PIVOT EFFICIENCIES

Aim: Make centre pivots even more efficient by being able to control sections of sprinklers to apply different amounts of irrigation along the pivot boom to better match individual blocks water requirements to application amounts.

Background: Centre pivot irrigators are proven to be the most efficient irrigation system. But in the cane industry with long ratoon cycles, and a six month harvest season, a pivot applying the same amount of water over the entire area (and length of pivot) becomes a management issue. With a pivot length of 700 metres, it is common for more than 1 block to be under the pivot at once. While 1 or more blocks may require irrigation, other blocks may not need water due to age of crop or blocks about to be harvested, or blocks planted to legume fallows which have different water requirements.



GGIP Group: Precise Pivot Management Grower Group (Mackay)

Contact Person: John Fox 0408 772 666

COMPOST TURNER PROTOTYPE

Aim: Design and test a compost turner that will allow granular fertiliser to be added to a compost mix to better match compost to soil test requirements.

Background: the group wanted to build an innovative compost mixer specific for cane farming enterprises, which would address limitations of current mixers. The new attributes include a tight turning circle, ability to be towed quickly on road between farms, must be able to mix at higher speeds than commercial mixers, a 1 tonne macro nutrient box and a smaller micro nutrient box, hydraulic drive instead of PTO drive, this will be required due to the complex nature of the end tow mechanism.

GGIP Group: DAG Group

Contact Person: Glen Grohn – 0428 182 476

PRECISION MILL MUD APPLICATOR

Aim: To construct an innovative mill mud spreader capable of accurately applying mill mud in a narrow band between 2m dual rows.

Outcome: The group successfully built a spreader to apply mill mud in a band which lead to an increase in the area that a load of mill mud would treat thereby making mill mud amendment cheaper per hectare in comparison to a broadcast application. Cane trials found no difference in sugar or cane yield between banded and broadcast application; and a saving of $6.63 per tonne of mud banded rather than spread

GGIP Group: Maryborough Advanced Growers Group

Contact Person: Jeff Atkinson – 0428 212 792

FROM POWERHAUL TO PLANTER

Aim: To produce an efficient billet planter for a controlled traffic, dual row cane system that provided minimal working hours and labour, thus reducing costs, and having minimal impact on the farming environment.

Outcome: The self-propelled dual row cane planter which was developed during the project provides a safe, cost efficient, comfortable, productive, and user friendly planting system. Approximately 60% of the design materials were sourced from recycled materials to reduce cost.

GGIP Group: North Clarence Innovative Planting Group (NSW)

Contact Person: Chris Shannon – 0417 452 602

SUB-SURFACE COMPOST APPLICATOR

Aim: To develop an applicator that will allow multi-row subsurface application of cane specific compost, capable of working in cultivated and zero till conditions in a controlled traffic farming system.

Background: Surface application of precision type mill mud applicators exists, however the group believe that surface application of any product will have a short life cycle and must take the next logical step of being applied sub-surface. The challenge exists for the subsurface application of compost which will reduce losses of nutrients.

GGIP Group: Advanced Nutrient Solutions (Mackay)

Contact Person: Barbara Walker – 0448 591 042

INVESTIGATING DIFFERENT SEDIMENT TRAP DESIGNS

Aim: Develop ideas toward the best practice of controlling sediment flow within a wet tropics sugar cane farm drainage system; encourage group members to include sediment trapping in their farm drainage system; and contribute to the sustainability of sugar cane growing in the Great Barrier Reef Catchment Area.

Background: The group identified different sediment trap designs, installed them and conducted a monitoring routine (using rising stage samplers, manual sampling and dry trap inspection) to gain a better understanding of the effectiveness of different trap designs in different situations.

GGIP Group: Silkwood Drainage Board (Tully)

Contact Person: Ian Brooks – 0428 652 339

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