

Cropping solutions for sugarcane farming systems of the Burdekin

GRDC Project Code DAQ00174

Project summary

The 'Cropping solutions for sugarcane farming systems of the Burdekin' project investigated cropping opportunities within the sugar dominant farming systems of the Burdekin.

The project was designed to assess the impact and interaction that delayed planting has on sugarcane productivity both with and without different sequences of break crops (grain legumes, maize). This project objective was to assess both short (3-9 months) and longer (15-18 month) break cropping situations.

Through a rigorous agronomy trial program, this project developed locally relevant agronomic packages for soybeans and mungbeans in tropical cane systems and investigated the profitability and productivity implications of longer fallows within the cane system. The project assessed agronomic management strategies (tillage, nitrogen, herbicides, varieties) for grains and developed information packages for grains (collation of relevant existing and project developed information and practices) including how to best transition in and out of sugarcane to allow successful break crop during the fallow period; and increase the skills and capacity of growers and local agribusiness to enable successful break crop management and production.

Background

The sugarcane farming system in Australia is changing rapidly, with a key feature being the inclusion of break crops (often grain legumes) between sugarcane crop cycles. The successful inclusion of break crops in regions such as Mackay and Bundaberg has delivered improved cane and sugar yield, maintained similar cane production across the mill areas and reduced nitrogen (N) fertiliser requirements.

In the Burdekin system potential also exists to deliver significant cash profits from break crop harvests of between \$1000-2500/ha for the wet season fallow alone. The adoption of break crops during the wet season would generate significant economic activity at a regional level with up to \$2400/ha being spent on the growing of these crops compared to minimal expenditure on bare fallow fields. With an average of 15,000-17,000ha of fallow land across each wet season, this could result in a potential injection of up to \$40 million in additional agricultural expenditure benefiting local agribusiness and with potential gross margins of \$1000-2500/ha farm profitability could be increased by a further \$40 million.

Outcomes

Mungbean area increased from 500ha in 2011 to around 5000ha planted in 2015/16, while sunflower plantings increased to 300ha and soybeans approximately 1500ha. This expansion of crop area brings significant regional economic benefits: additional income from grain sales, marketing, seed cleaning and grading, transport, crop checking, sale of crop protection products, machinery purchases and contracting.

To date, the large rotation experiment shows that well managed legume rotations in the cane system result in increased sugar yield. Whilst the trial has not concluded, sugar yields following the long rotations (soybeans, maize, mungbeans) have surpassed

Level 4
East Building
4 National Circuit
Barton ACT 2600

PO BOX 5367
KINGSTON ACT 2604

T +61 2 6166 4500
F +61 2 6166 4599

grdc@grdc.com.au
www.grdc.com.au

Your GRDC working with you

those from traditionally managed fallow periods.

Additionally, the grower has had the income from the three grain crops to supplement his sugar income. Input costs in this system, particularly herbicides, have also been reduced. Adopting permanent beds and controlling weeds at the start of the crop cycle, and then rotating between grass and broadleaf crops allows cheap selective herbicides to be effectively used. The excellent weed control from using these strategies has also contributed to the high sugar yields.

Environmental

Growing grain legumes over the summer wet season and providing ground cover is an important tool to reduce sediment loss and prevent leaching runoff of residual nitrate in the soil profile. The grain legumes also prevent denitrification, an important greenhouse gas. Planting grain legumes into the sugar system has significant soil health benefits, allowing growers to reduce nitrogen applications into their cane cycle. Starting the crop cycle prior to planting grain legumes, preparatory weed management sprays with cheap knockdown herbicides, like glyphosate, and then using selective herbicides (where required) like haloxyfop have reduced the overall herbicide use across a crop cycle.

Social

Expansions of areas sown to grain crops has resulted in the employment of additional staff by agribusiness; as has the emergence of a grains processing facility (Blue Ribbon Seeds) and later Sunrice. These complementary crops have also offered growers opportunities to improve their cash flow, diversify their income streams and the multiplier effect of employment through increased transport, machinery, crop checking, sales of crop protection products.

An Integrated Pest Management workshop and Certified Mungbean Agronomy course educated growers and advisors about the need to spray strategically with soft chemistry. This may have health benefits for growers who have been using older, far more toxic chemistry.

Future market opportunities

Blue Ribbon Seeds commissioned a grain handling plant mid 2012 in the Burdekin, which is grading and bagging mungbeans, soybeans and rice for containerised export out of Townsville.

NQ Tropical Seeds (Salveti Farming) established a full fat soybean processing plant near Walkamin (Atherton Tablelands) in late 2013. They are producing a very high quality product where demand exceeds supply.

The emergence of these new markets has meant that Burdekin growers now have more options for marketing their harvested crops. Previously all grain was freighted south to receival points (commonly Brisbane/Kingaroy/Toowoomba). This tyranny of distance meant, in many cases, much of the profit from the harvested crops was being spent on road transport. This factor will enhance the uptake of grain growing across the Burdekin and northern coastal region.

Conclusions

Major conclusions to emerge during the course of the project were:

1. Grain legumes provide an ideal fit within the sugar crop cycle of the Burdekin, and the local climate offers numerous options for planting a range of grain crops, including legumes like soybeans, mungbeans and maize. The tropical, frost free climate allows wide planting windows and the ability to grow two crops per year of mungbeans, soybeans, maize and rice. This has significant agronomic and economic advantages.

2. The large rotation trial demonstrated that returns to growers from the long fallow system where three grain crops have been planted and harvested are superior than more typical cane dominated systems.
3. Rotations with both single and multiple crops of grain legumes have had positive impacts on following cane yields. Whilst the crop cycle is not complete, the substantial responses in sugar yield from these rotations suggests that this may be an ideal system for grower sustainability and profitability.

Attachments:

- Andrew Cross Case Study FINAL
- Agronomy Field Walk Oct 2012
- Expt 1 Field Walk Oct 2012V2
- Project Newsletter #1