

Pilot Exceeds All Expectations

Meet Paul Gregory

The *Project Uplift Farming Systems Initiative* is a project that will soon change the face of the sugarcane industry. The initiative is built around a research-based farming system developed on the back of the Sugar Yield Decline Joint Venture (SYDJV) and introduced into the market by MSF Sugar.

Established in 1993, the SYDJV brought together the research expertise of the Department of Primary Industries and Fisheries, the Department of Natural Resources, Mines and Water, BSES, and soil specialists Biological Crop Protection, and set out to investigate methods to improve the productivity of the Australian sugarcane industry. The findings of the research led to the creation of what has been termed the SRA Farming System – a system that uses legume crop rotation, green cane trash blanketing, minimum tillage and controlled traffic to minimise soil compaction, improve water retention and as a result, maximise crop productivity year on year.

While research indicates the farming system works, MSF Sugar set out to demonstrate just how effective it is and in 2015, partnered with sugarcane growers Paul Gregory and John Porta to run pilot projects on their farms. The 5 year pilot project required the conversion of 500ha of existing sugarcane crop to the SRA farming system.

Now 2 years in, the results of the pilot are staggering with initial expectations of all parties being exceeded. We spoke with Paul Gregory about his experience – these are his thoughts about the *Project Uplift Farming Systems Initiative*.

Paul Gregory's farm is located in the North Queensland township of Gordonvale, a well-known sugar community 25km south of Cairns and adjacent to MSF Sugar's Mulgrave Mill. The land was originally bought and cleared by Paul's family in 1950 and has now been in the hands of 2 generations, with his father using a horse called Noble to plant the land with its first crop of cane. By 1992 the family was farming 4,000t of cane, a figure that increased to 6,500t by 2012. Having grown the operation significantly since then, Paul now farms 23,000t of cane.

To achieve this significant level of growth, Paul acquired new farms and now operates five, four of which are part of the *Project Uplift Farming Systems Initiative* pilot. The farm not included is leased and was replanted shortly before the project commenced, so will stay in its current format to take advantage of the ratoons.

Controlled traffic farming (CTF) is the primary reason Paul agreed to participate in the pilot, and all four farms have now been converted to a 1.85m row spacing format. Under the project, Paul has a 5 year plan for full conversion of all fallows, with 500ha to be laser levelled and under controlled traffic by the end of the pilot.

While there was an initial capital investment in equipment, earthworks, and laser levelling to all blocks, the results have been well and truly worth it with harvest figures on the trial blocks producing twice the return in terms of dollars per hectare*. The crops were treated the same except for the timing of the harvest and the laser levelling treatment, which indicates that drainage has substantially improved and so has the health of the soil.

While 2016 was an exceptional year due to favourable weather conditions, laser levelling has increased yield in other ways

| 2016 Season Results | Tonnes of cane per hectare | Dollar return per hectare |
|---------------------|----------------------------|---------------------------|
| Lasered fields | 156 | \$3,800 |
| Unlasered fields | 107 | \$1,900 |

Figure 1 (above): Dollar returns per hectare comparing lasered and unlasered paddocks on Paul Gregory's farm for the 2016 season

"I can't wait for the 5 year pilot to be done when the full benefits of the project will be realised. The farm will be so efficient that triple bottom line sustainability will become a reality for us."

- Paul Gregory



Paul Gregory surveys his crop of plant cane in August 2016

*Results are for these farms and for the situation described. All farms are different and this will impact on individual results.



as it has opened-up land that was previously not available for planting. For example, one of Paul's paddocks was previously affected by high spring tides and not normally available for planting until August of each year. Following lasering in 2016, the paddock has been reclaimed and was able to be sprayed just 8 days after heavy January rain.

Aside from lasering and planting, a key component of the farming system is GPS guidance which is installed in the planting and harvesting equipment. While Paul admits to being hesitant about this at first, his initial concerns about technology were unfounded and by the end of the 2016 harvesting season, harvesting operations would cease if the GPS was out. Once used to the idea of driving GPS-guidance tractors, the benefits of being guided straight meant less dirt into the cane supply, minimal soil compaction, and quicker turnarounds at the end of the field. According to Paul, "the difference between GPS and manual steering is remarkable – trust the GPS, even if you feel like you're off centre".

When it came to planting, the farming system's soil preparation methods made all the difference with Paul's normal time to plant 40ha being around 8 weeks in perfect weather conditions. In 2016, he had 43ha ready and planted by the end of September – a new record for the farm at only 3.5 weeks after the winter rainfall events. Aside from the time saving this achieved, there was a significant impact on the bottom line with the tractor using around 4,000 litres less fuel than previous seasons (based on a consumption rate of 35 litres per hour).

Under the CTF model, Paul believes the ratoons will last better due to less compaction during the harvest period and less damage to the crop by the harvester. Following a wet weather harvest in 2016, he noted no major damage to the ratoon where in previous years, wet weather harvest had damaged ratoons so badly they could not be

used in the following season.

For this reason alone, Paul recommends controlled traffic over conventional farming with the lack of soil compaction and time savings achieved in soil preparation being the biggest successes of the pilot so far. As for the common concern that "weeds will get out of control" under wider row configuration, Paul didn't notice a difference in his crop with weed control spray use remaining steady compared to previous years.

One of the biggest challenges faced in making the change is working out what to do with existing gear. After upgrading to CTF, old machinery is suddenly obsolete which can be difficult to come to terms with, but Paul confirms that this pays off in the long-run.

For Paul the "whole project just clicked" and he's 100% sold on the farming system he now has in place. The system has eased the burden of his rapid farm growth and after only 2 years into the pilot, the efficiencies gained have removed financial constraints and improved his opportunities considerably.

As Paul states, "I can't wait for the 5 year pilot to be done when the full benefits of the project will be realised. The farm will be so efficient that triple bottom line sustainability will become a reality for us".

Paul's advice to growers who are reluctant to make a change is to simply look at the facts of the pilot, with greater efficiencies achieved across the board. In his words, "the figures speak for themselves".

| Season | Activity |
|--------|---|
| 2015 | Didn't laser but planted at 1.85 |
| 2016 | Every paddock that was planted was lasered |
| 2017 | All fallow crops were lasered and in beds in preparation for planting |

Figure 2: Converting to the SRA Farming System - summary of key activities

| Plant Cane (ex R/P) | Paul's Farms | Zone (Edmonton) ex Paul's Farms | Mulgrave |
|---------------------|--------------|---------------------------------|----------|
| TCH | 126 | 122 | 117 |
| CCS | 12.37 | 11.56 | 11.65 |
| TSH | 15.62 | 14.15 | 13.63 |

Figure 3: Productivity comparison's across the Mulgrave region

| Farm | Variety Class | Soil Group | Actual CCS | Cane Yield (t/ha) | Sugar Yield (t/ha) | Net Return (\$/ha) |
|-----------|---------------|-------------------------|------------|-------------------|--------------------|--------------------|
| Laser | Q208 PL | Poorly drained alluvial | 12.66 | 156.14 | 19.13 | 3,573 |
| Non-laser | Q208 PL | Poorly drained alluvial | 11.49 | 103.80 | 11.32 | 1,873 |

Figure 4: Productivity comparison's across Paul's farm



Harvesting an unlasered paddock in 2016



Harvesting 1.85m rows in 2016



3-row bed former, GPS guided



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