

Project Catalyst Report

Biofertilizer trial to reduce N inputs on sandy soil

Grower Information

| | |
|----------------------------|--|
| Grower Name: | Sergio Fighera |
| Entity Name: | Fighera S & S |
| Trial Farm No/Name: | Bio-fertilizer to reduce nutrient inputs F# 0685A |
| Mill Area: | Victoria |
| Total Farm Area ha: | 150ha |
| No. Years Farming: | 30 years |
| Trial Subdistrict: | Bambaroo |
| Area under Cane ha: | 137.23 ha |

Background Information

Aim:

To reduce chemical cost and nutrient loss to water runoff. To improve soil health and farm management. Bio fertilizer helps improve nutrient uptake by the plant and improves overall soil health to sustain agricultural practices. By foliar spraying on micro nutrients can we improve overall productivity while still maintaining sustainable soils.

Background: (Rationale for why this might work)

By reducing the amount of chemical fertiliser applied we can re-gain our soil health and bio-diversity. By creating his own bio-fertilizer Serge can reduce fertiliser cost. Bio-fertilizer are considered a good soil conditioner and will hopefully improve soil microbe diversity, improve soil health and provide trace element minerals. Bio- fertilisers are microbe/trace element brews that can be used either by foliar spray for an instant pickup in nutrients or used as a soil drench as a soil conditioner.

Potential Water Quality Benefit:

Bio-fertilisers promote soil health which in turns improves water holding capacity to the field. Other benefits from bio-fertiliser is a better uptake of nutrient by the plant, this has the potential to reduce nutrient losses from the block. Also a reduction in chemical fertilisers will reduce losses to water ways.

Expected Outcome of Trial:

That the additional use of the bio- fertilisers will improve yield and CCS, improve ratoon life and create a healthy soil system.

Service provider contact: Megan Zahmel 0447 317 102

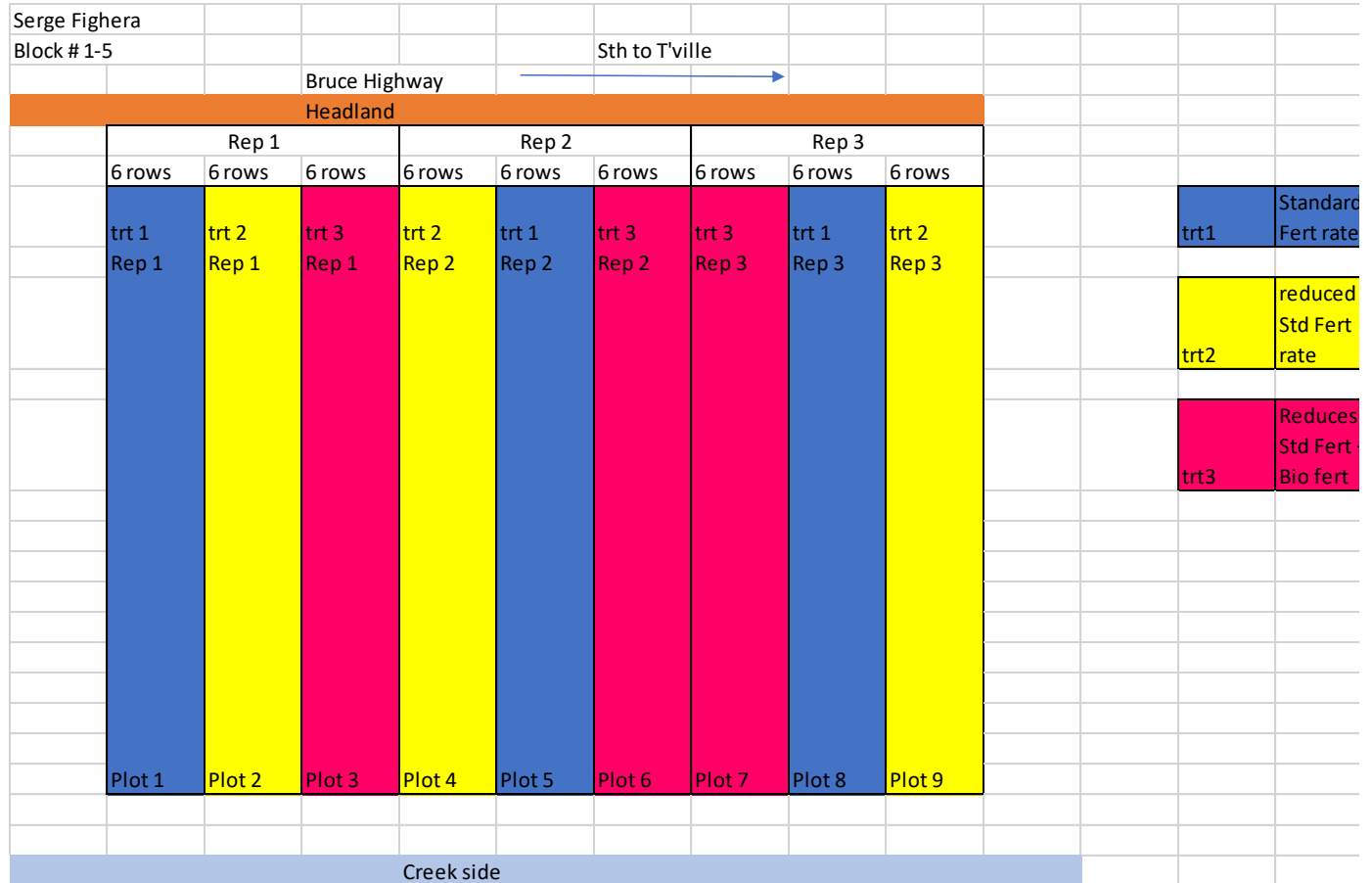
Where did this idea come from: Sergio Fighera. RegenAG and Kym Kruse

| Plan - Project Activities | | |
|----------------------------------|---|--|
| | Date : (mth/year to be undertaken) | Activities :(breakdown of each activity for each stage) |
| Stage 1 | Establish trial | Baseline nutrient & pachymetra soil samples taken. – 08/05/2017 Trial plan designed Baseline chromatography sample taken & GPS'd – 09/05/2017 Planted Variety SRA3 – 19/07/2017 Sidedressed with treatments – 08/09/2017 |
| Stage 2 | Sampling 2017/2018 | <ul style="list-style-type: none"> • 1st application of bio-fert brew used as a foliar spray – 08/09/2017 • 2nd application of bio-fert brew foliar sprayed -10/10/2017 • 1st set of 3rd leaf testing – 31/10/2017 • 4th stalk count – 31/10/2017 • Chromatography sampling – 1/11/2017 • 2nd set of 3rd leaf testing – 23/05/2018 • Leaf Silica samples -23/05/2018 • Chromatography samples – 23/05/2018 • Trial Harvest for Final yield and CCS – 4/09/2018 • Re-apply products & bioferts -Nov 2018 |
| Stage 3 | Sampling 2019 | <ul style="list-style-type: none"> • 3rd leaf sampling – 4th April 2019 • Harvest & CCS results – 2019 season |
| Stage 4 | | |
| Stage 5 | | |
| Stage 6 | | |

Project Trial site details

| | |
|------------------------------------|---------------------------|
| Trial Crop: | Sugarcane |
| Variety: | SRA3 |
| Rat/Plt: | Plant 2017 |
| Trial Block No/Name: | #1-5 |
| Trial Block Size Ha: | 4 ha |
| Trial Block Position (GPS): | Refer to google earth map |
| Soil Type: | Sand |

Block History, Trial Design:



Treatments:

Trt 1 – 6ES fert rate

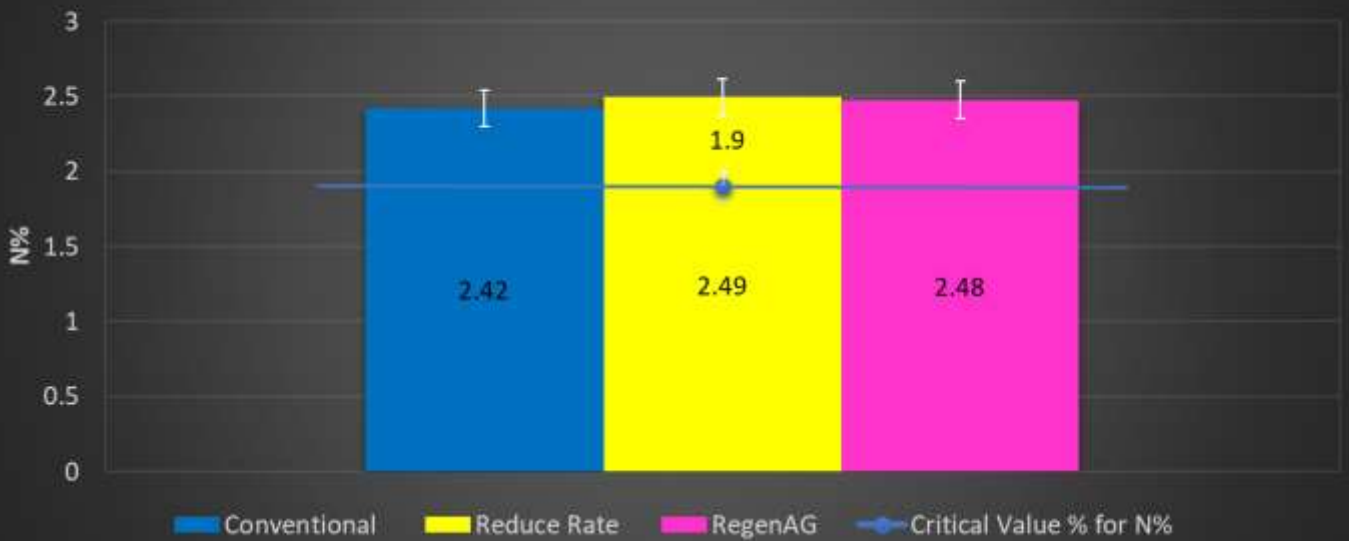
Trt 2 – 6ES fert rate reduced by 30%

Trt 3 – 6ES fert rate reduced by 30% + RegenAG biofertilizer

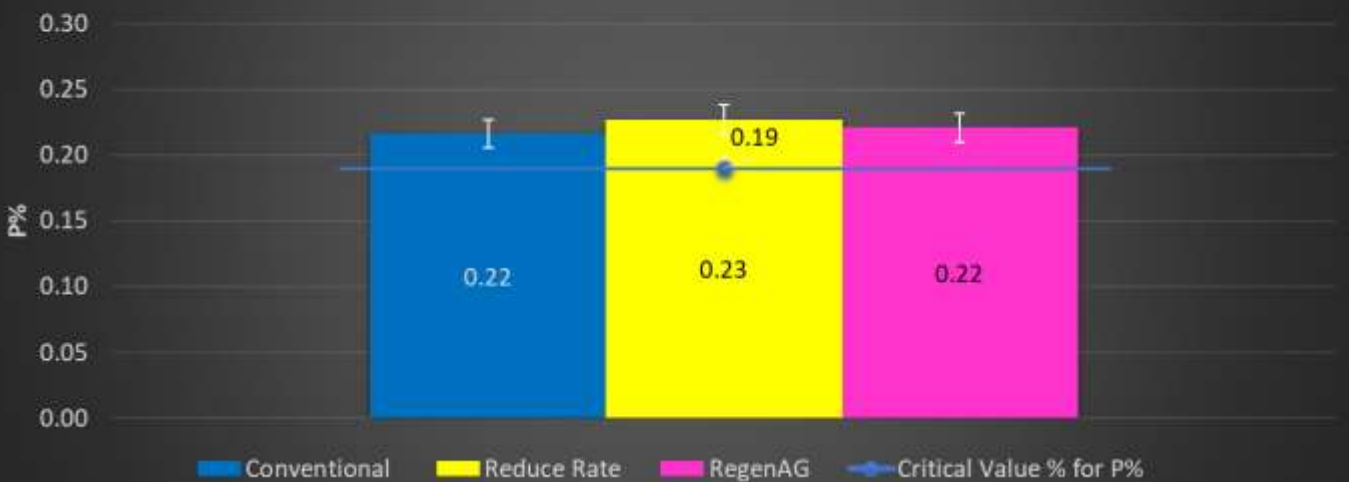
Results:

3rd leaf samples taken 31st of October 2017

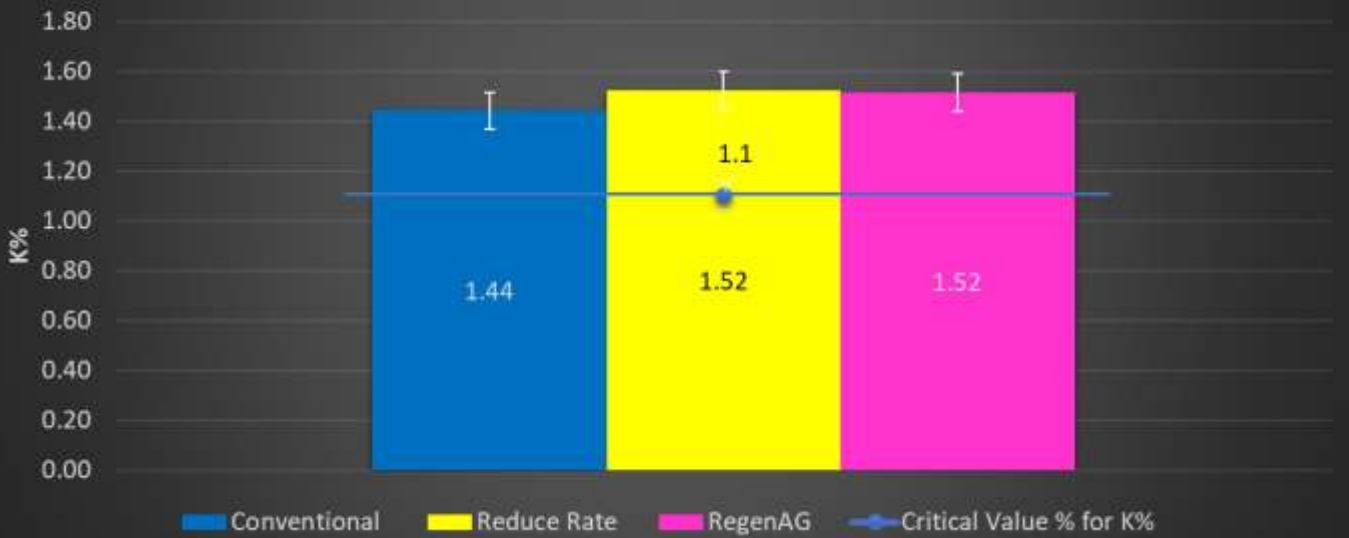
1st Nov 2017 3rd leaf results averaged for N% - S.Fighera.



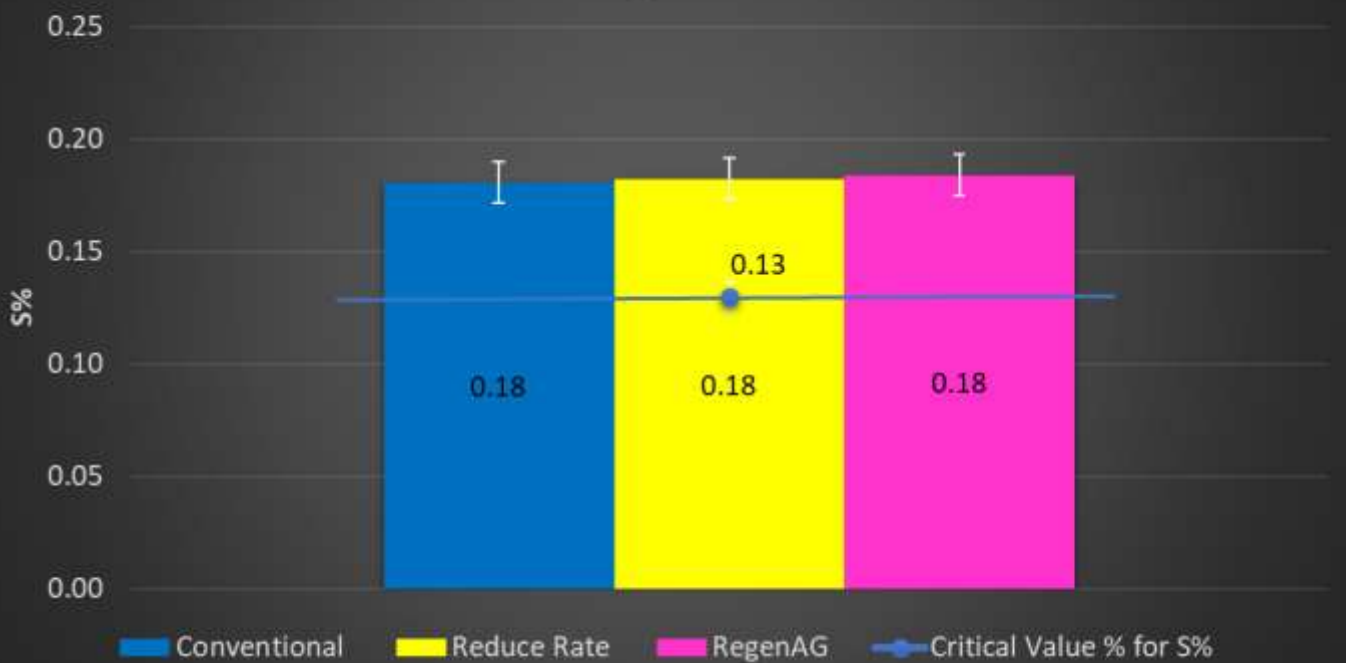
1st Nov 2017 3rd leaf results averaged for P% - S.Fighera.



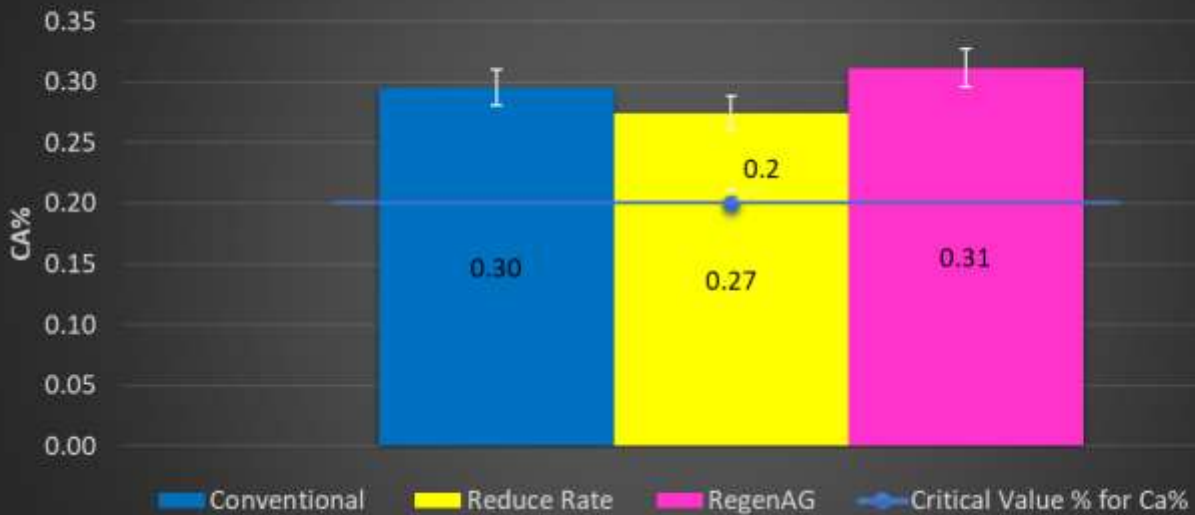
1st Nov 2017 3rd leaf results averaged for K% - S.Fighera.



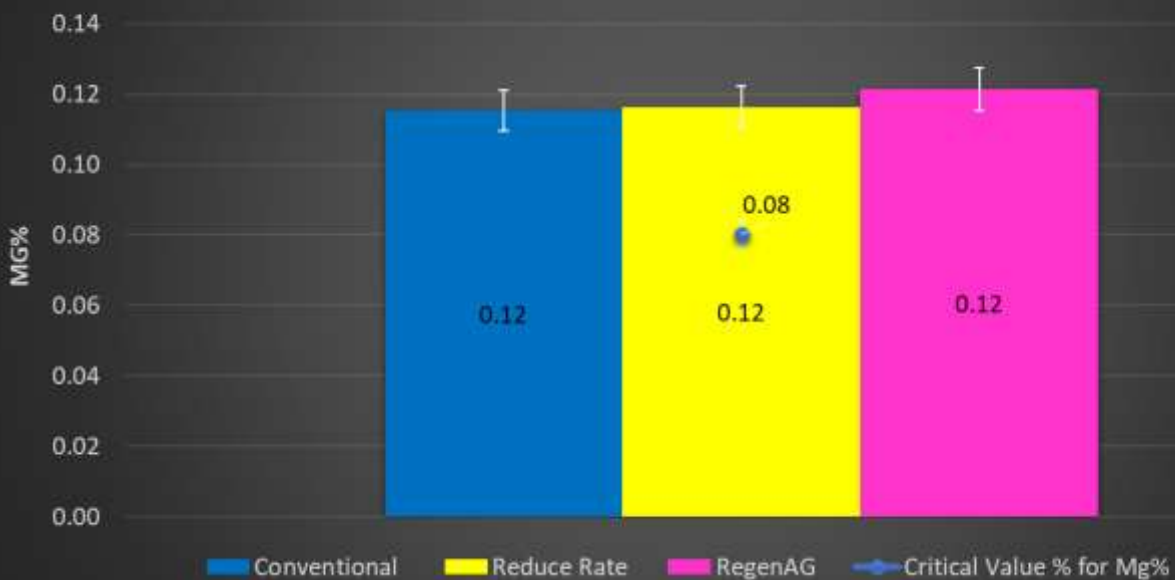
1st Nov 2017 3rd leaf results averaged for S% - S.Fighera.



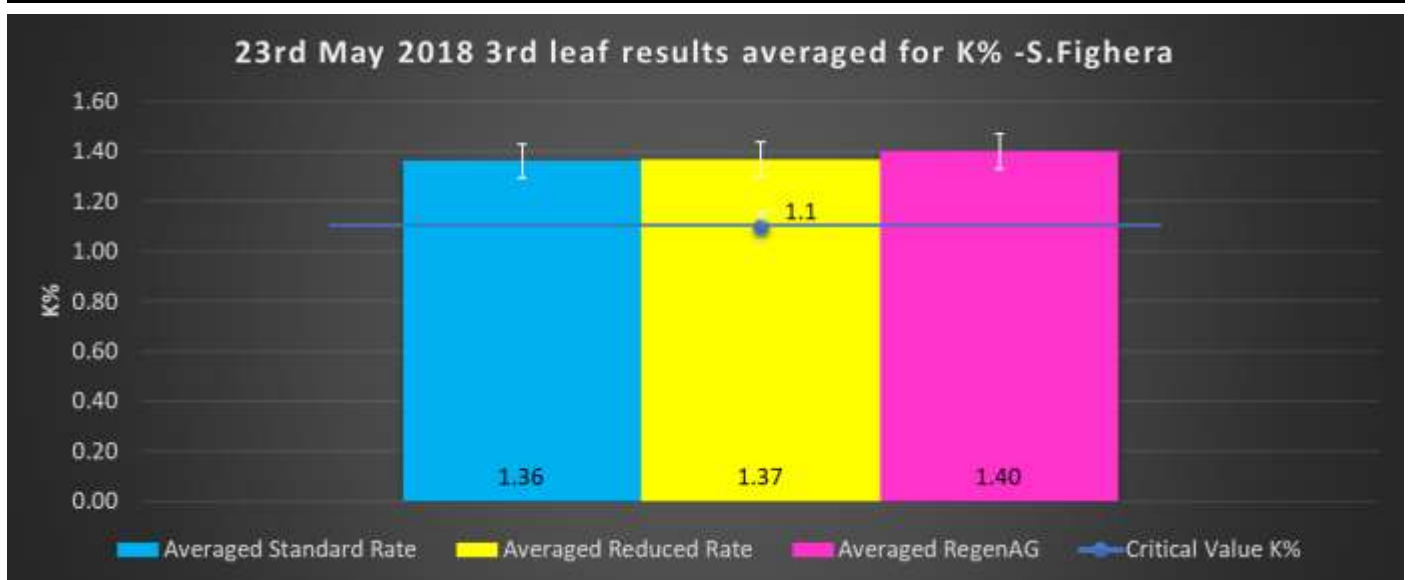
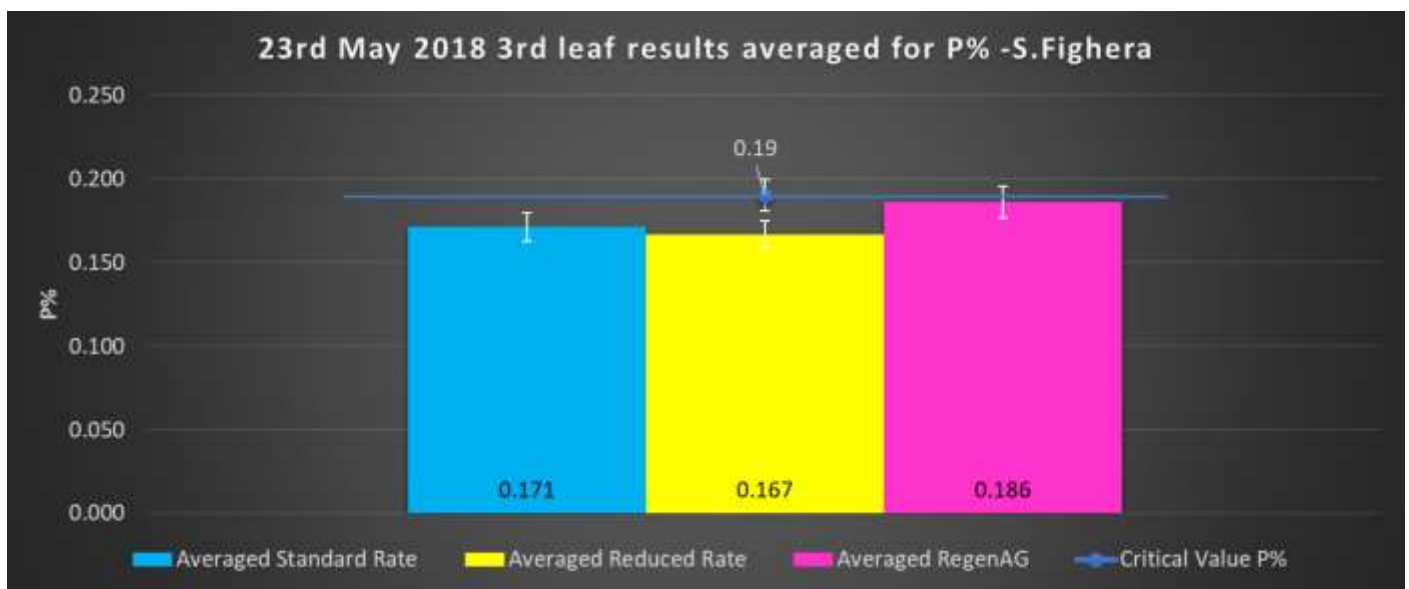
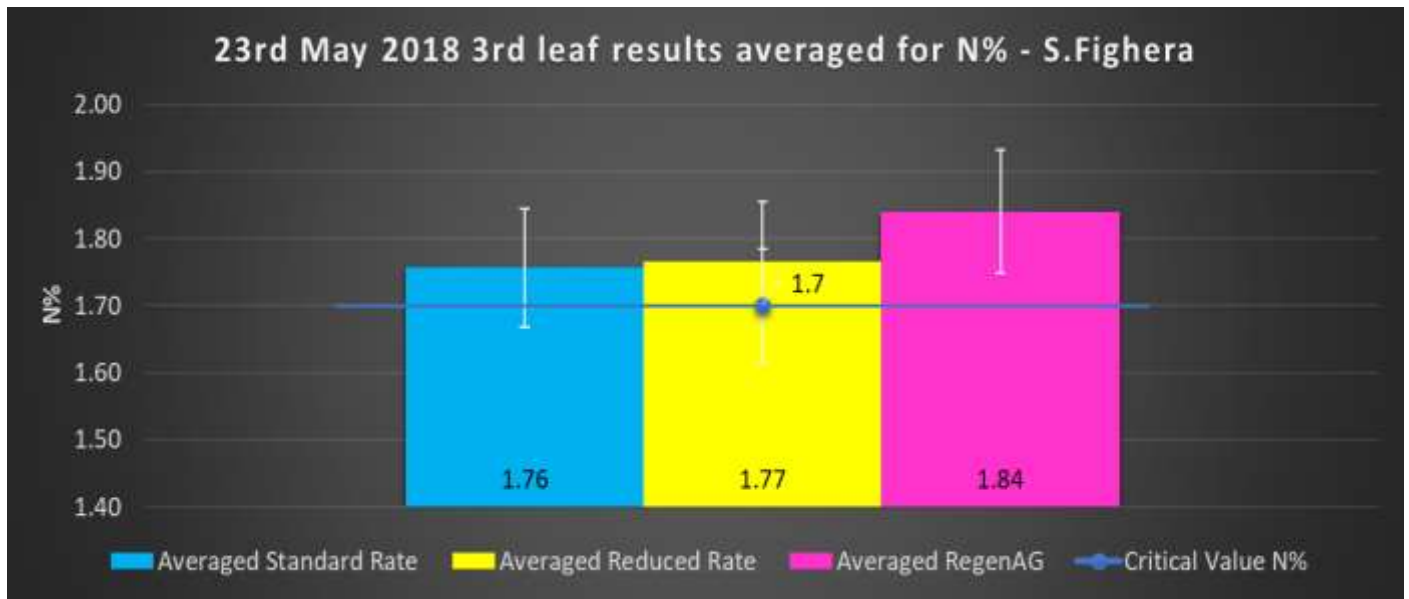
1st Nov 2017 3rd leaf results averaged for Ca% - S.Fighera



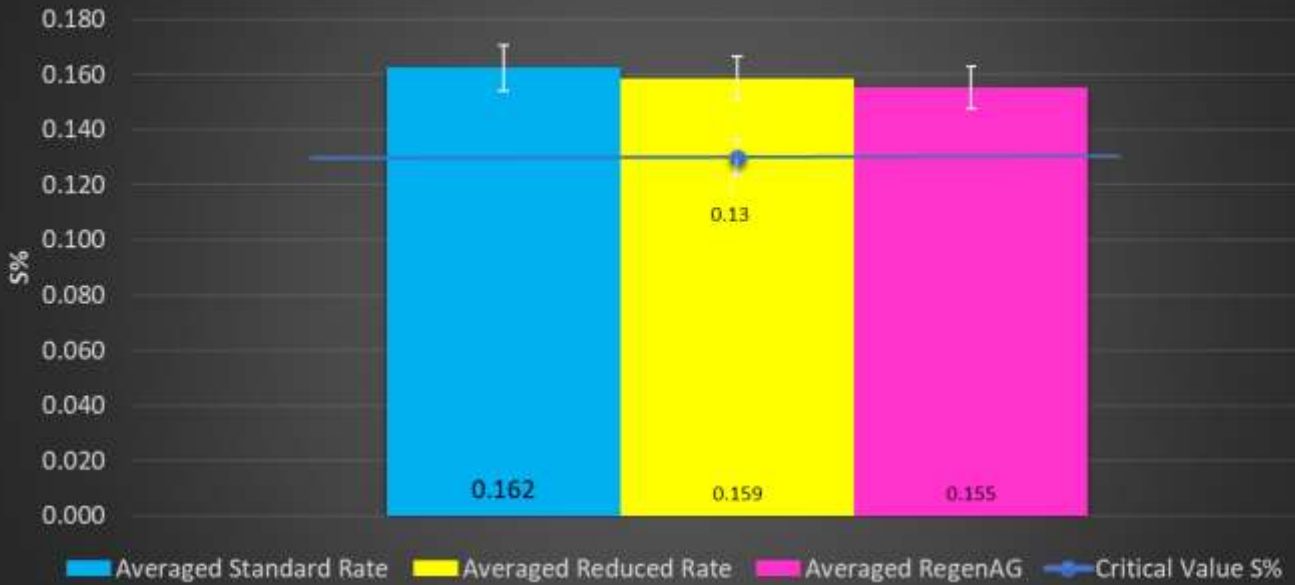
1st Nov 2017 3rd leaf results averaged for Mg% - S.Fighera



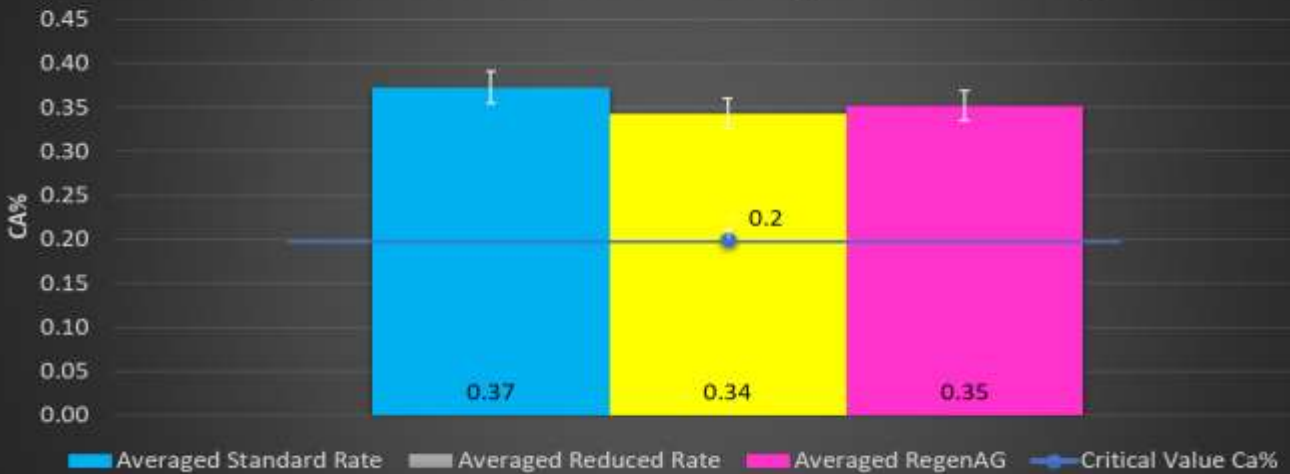
3rd leaf Samples Taken on 23rd May 2018



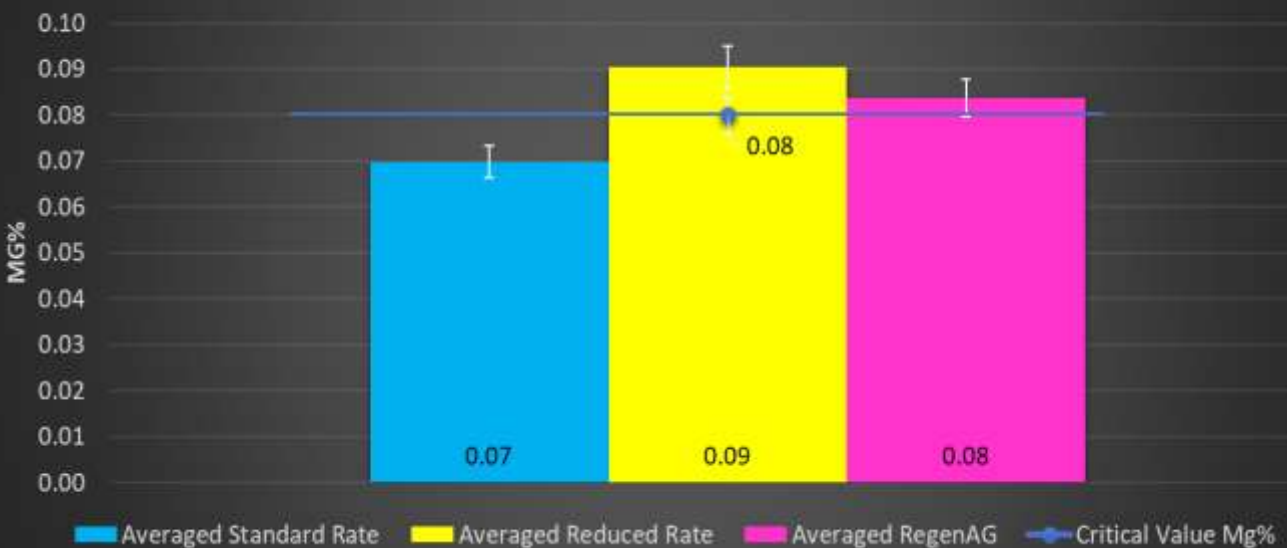
23rd May 2018 3rd leaf results averaged for S% -S.Fighera



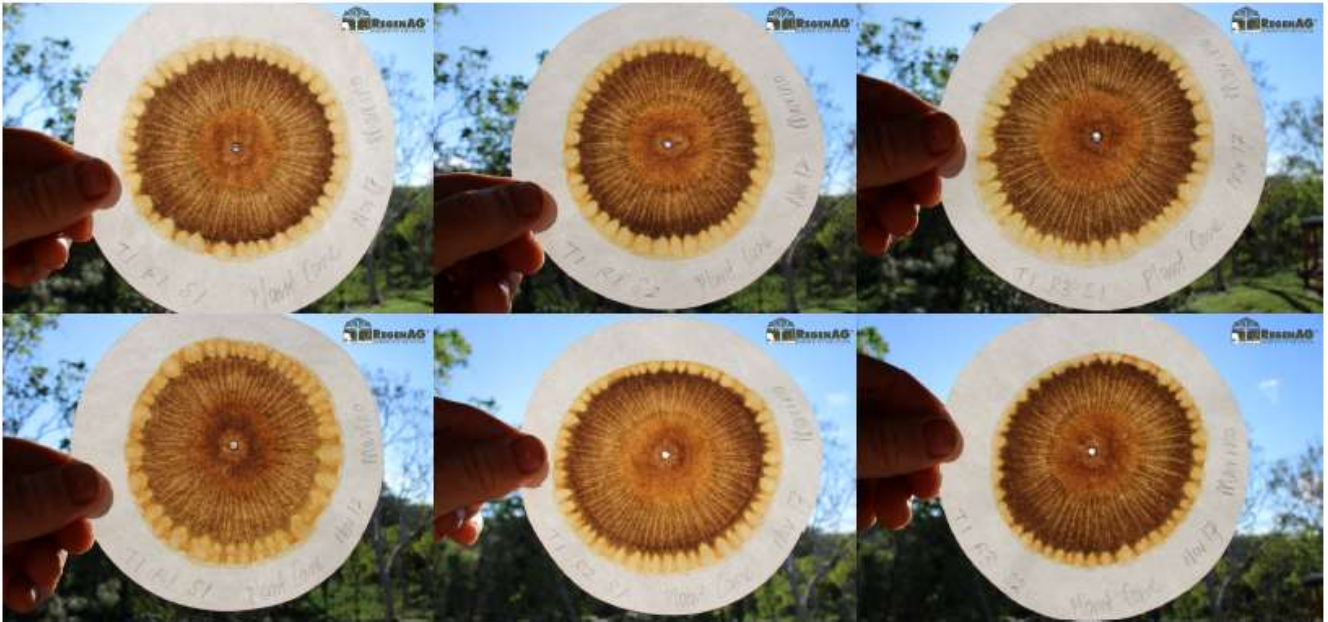
23rd May 2018 3rd leaf results averaged for Ca% -S.Fighera



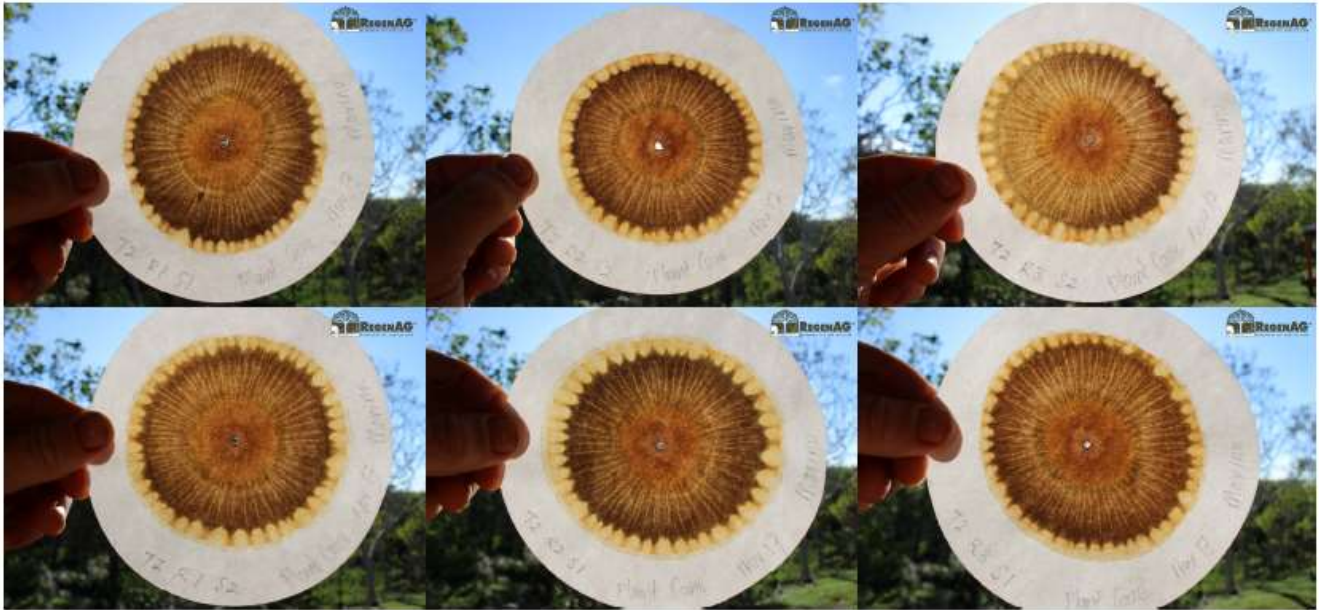
23rd May 2018 3rd leaf results averaged for Mg% -S.Fighera



Chromatography samples taken. On the 31/10/2017

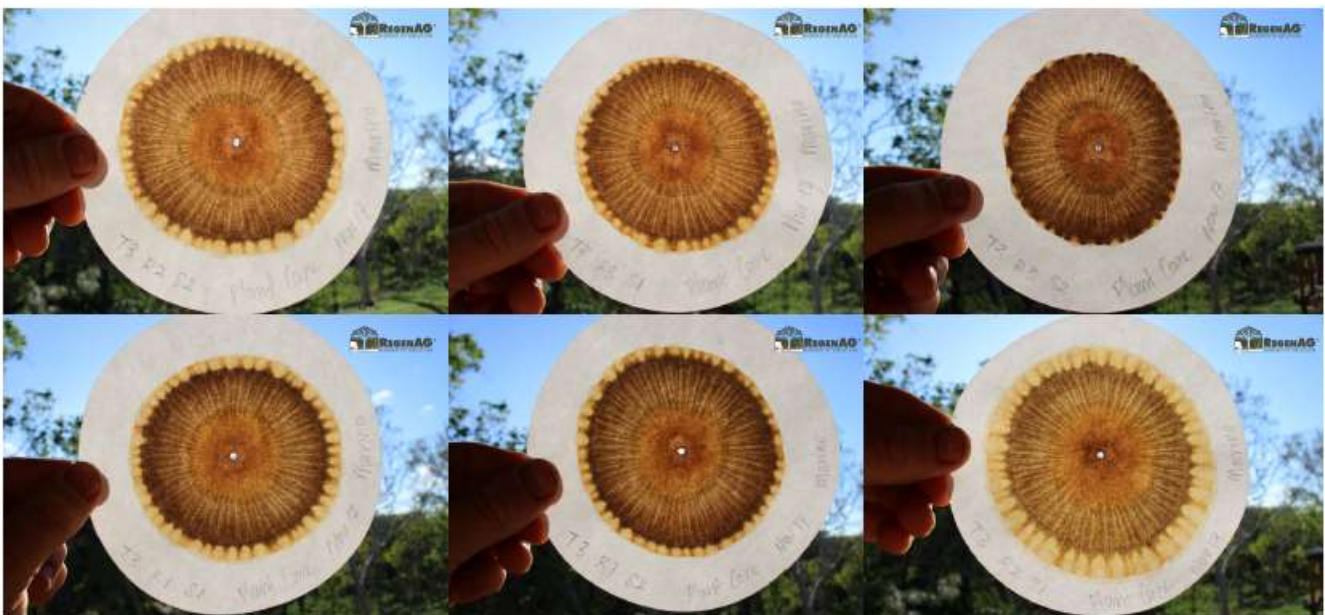


Treatment # 1 - Standard Rate



Treatment # 2 - Reduced Standard Rate

Fighera Cane Trial 2017/18



Treatment # 3 - Reduced Rate + RegenAG

Chromatography samples taken on 23rd May 2018



#1-5 P1 S1

#1-5 P5 S1

#1-5 P8 S1

STANDARD FERTILISER RATE

#1-5 P1 S2

#1-5 P5 S2

#1-5 P8 S2



#1-5 P2 S1

#1-5 P4 S1

#1-5 P9 S1

REDUCED STANDARD FERTILISER RATE

#1-5 P2 S2

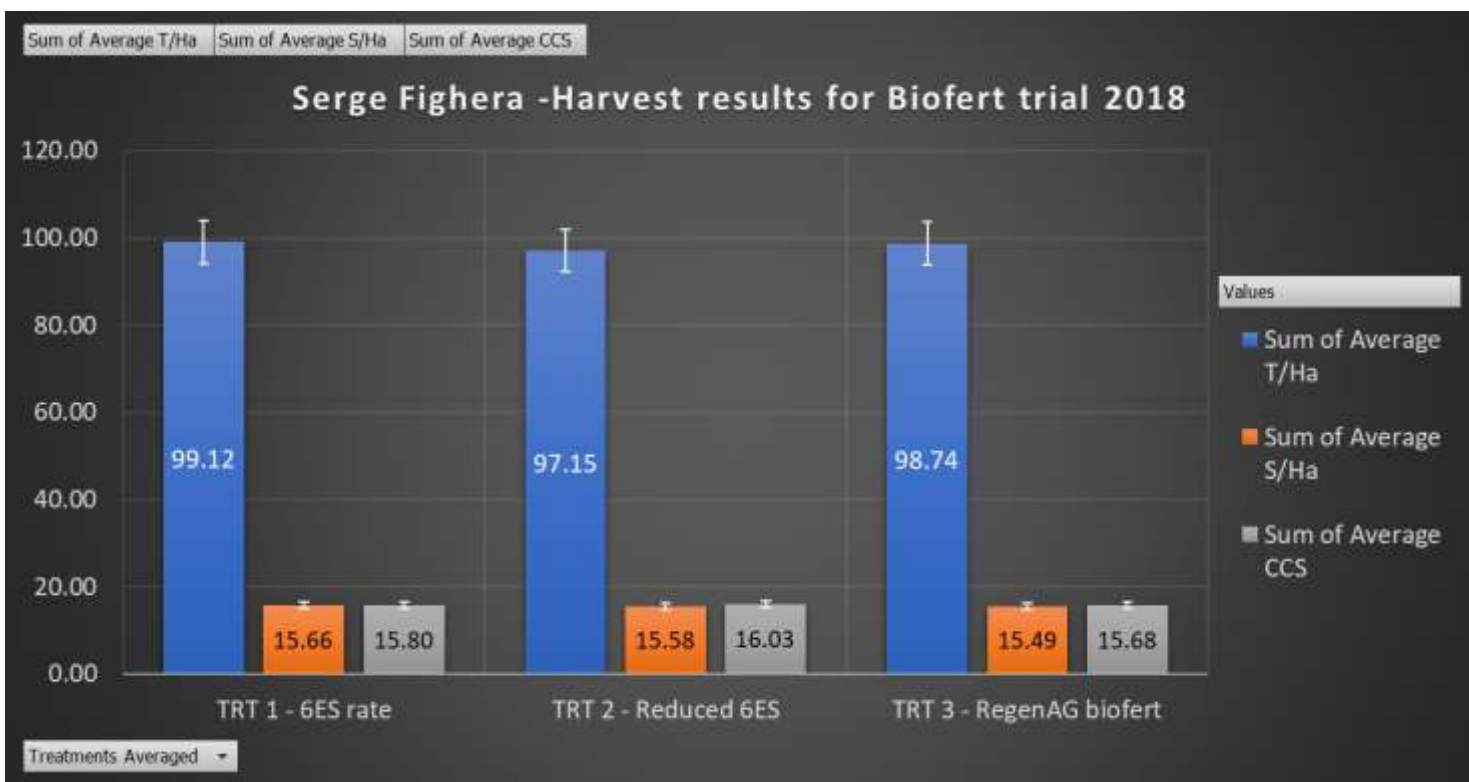
#1-5 P4 S2

#1-5 P9 S2





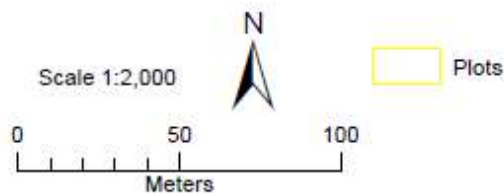
2018 Harvest results



Plot Areas for S.Fighera's Biofert trial



**FARM 0654A
Block 11-5
BioFert Trial**



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Produced 06/01/2017

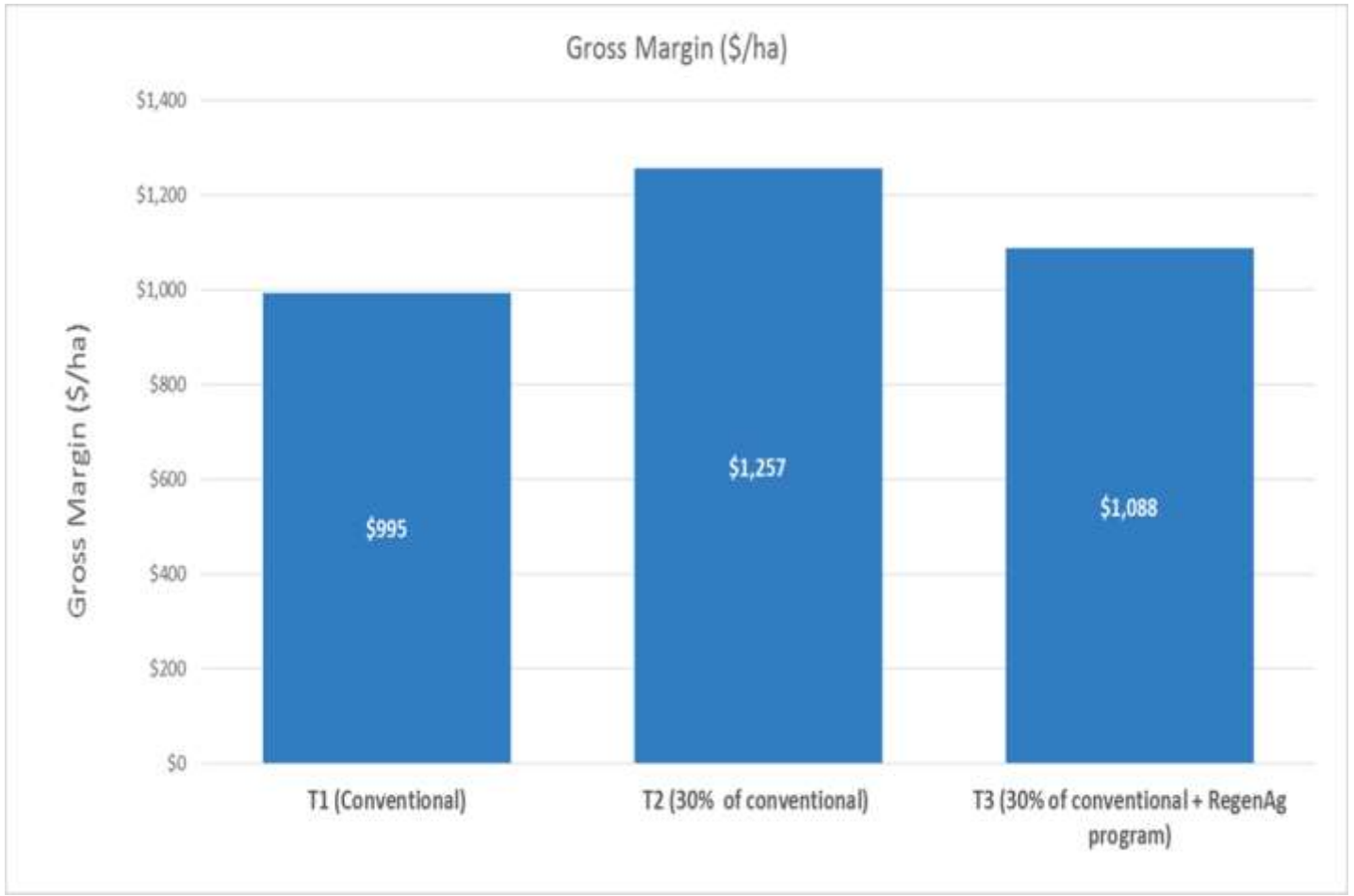


Economic results for 2018. 1st year of trial



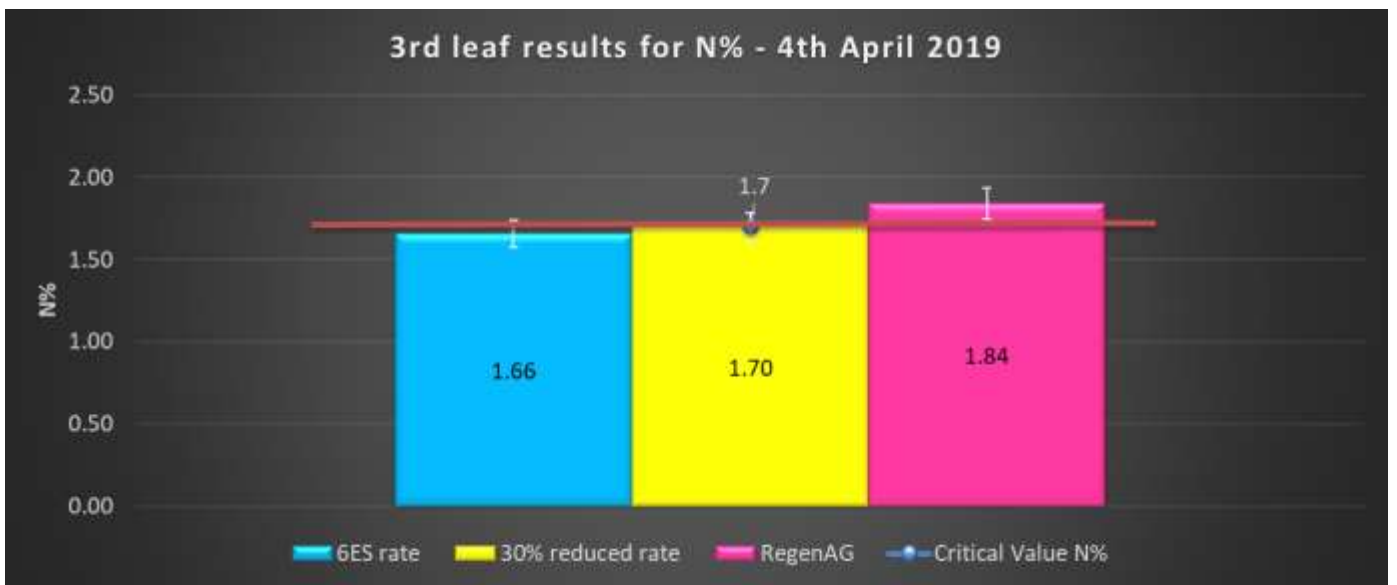
Gross Margin analysis 2018

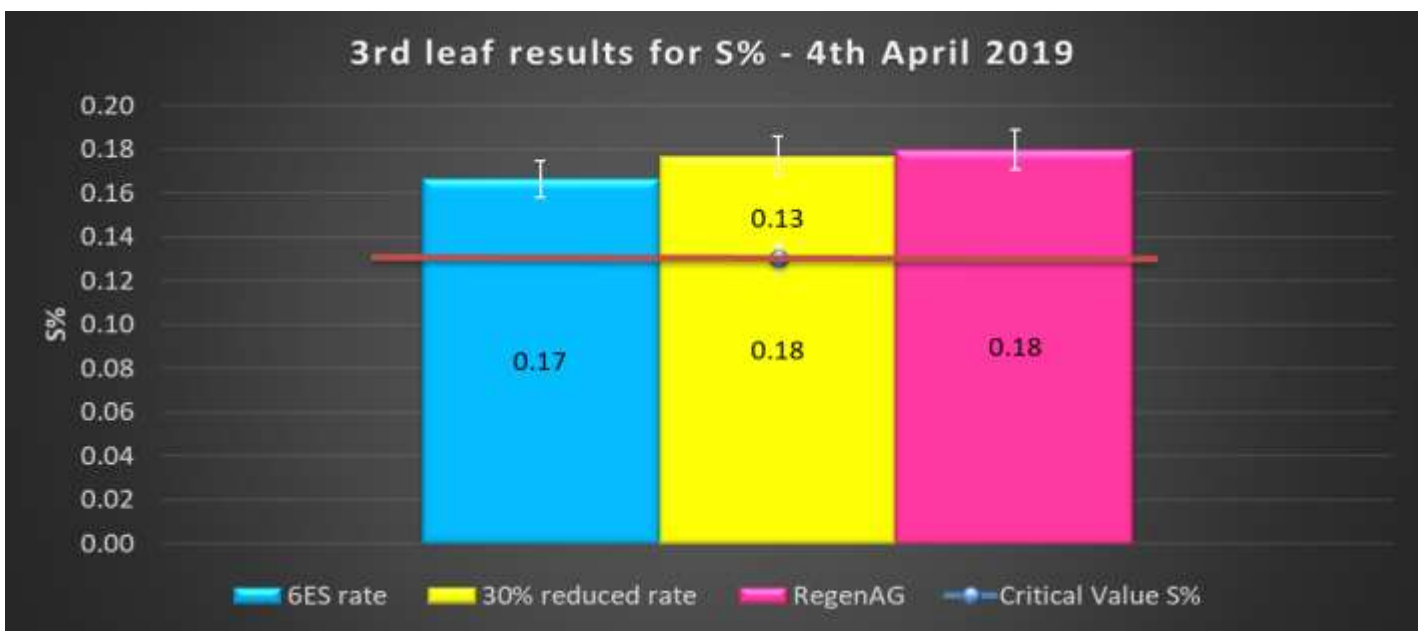
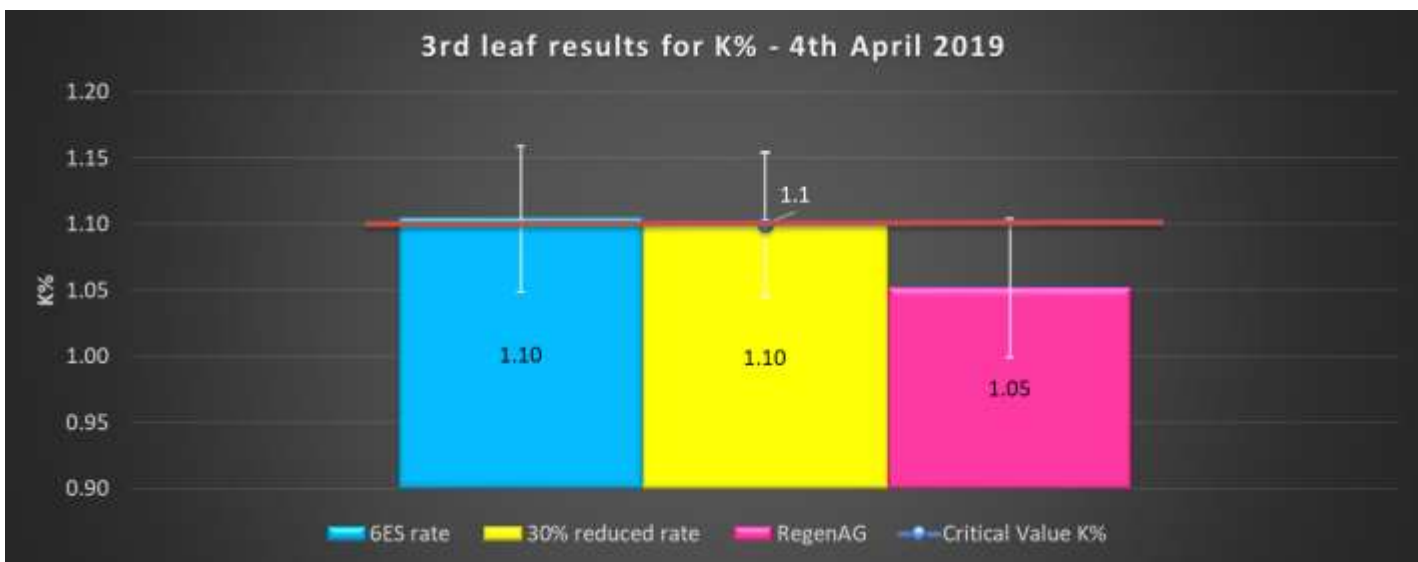
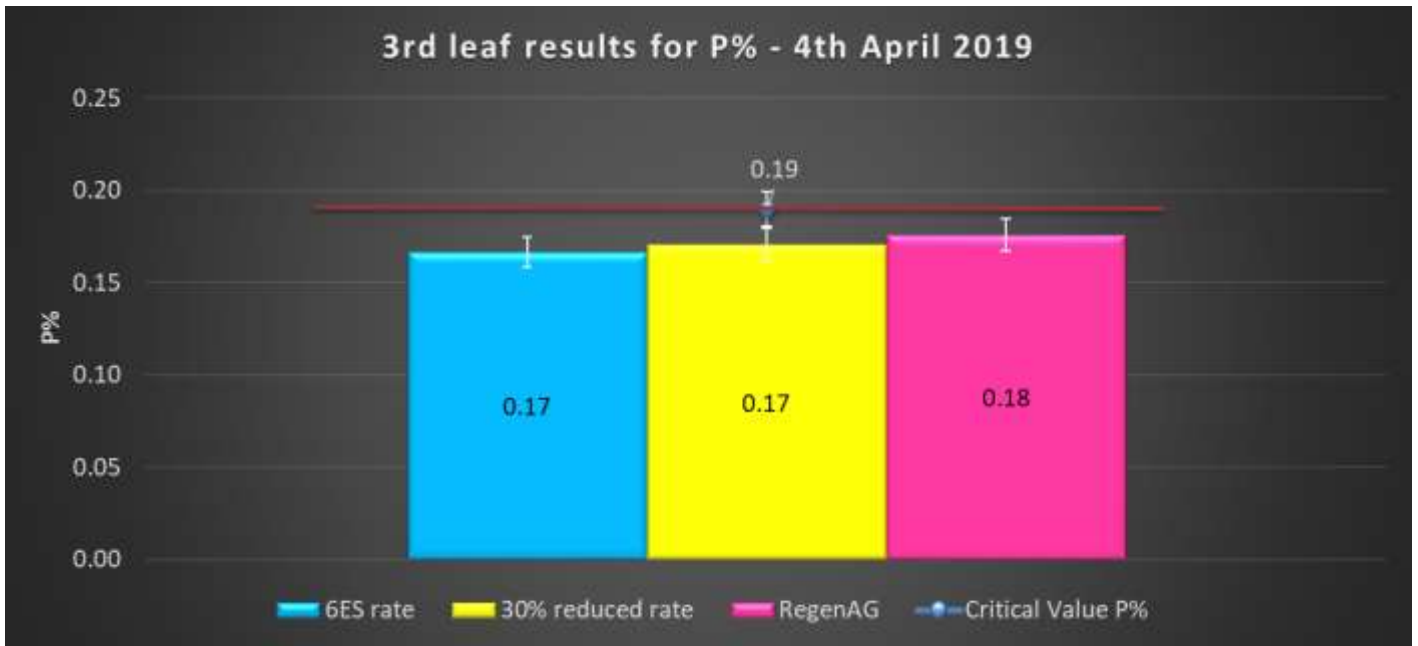
| Treatment → | T1 (Conventional) | T2 (30% of conventional) | T3 (30% of conventional + RegenAg program) |
|--|-------------------|--------------------------|--|
| Cane yield (t/ha) | 99.1 | 97.1 | 98.7 |
| CCS | 15.8 | 16.0 | 15.7 |
| Sugar yield (t/ha) | 15.7 | 15.6 | 15.5 |
| Revenue/ t cane | \$45 | \$46 | \$45 |
| Gross revenue (\$/t) | \$4,498 | \$4,494 | \$4,438 |
| Harvesting costs (\$/t) | \$763 | \$748 | \$760 |
| Levies (\$/t) | \$84 | \$83 | \$84 |
| Fertiliser & Application costs (\$/ha) | \$884 | \$636 | \$470 |
| RegenAg Program (\$/ha) | \$0 | \$0 | \$285 |
| Land Preparation (\$/ha) | \$95 | \$95 | \$95 |
| Planting (\$/Ha) | \$705 | \$705 | \$705 |
| Fallow Cost | \$791 | \$791 | \$791 |
| Weed Control (\$/ha) | \$119 | \$119 | \$119 |
| Insect & Disease Control (\$/ha) | \$62 | \$62 | \$42 |
| Insect Control (\$/ha) | \$58 | \$58 | \$42 |
| Disease control (\$/ha) | \$4 | \$4 | \$0 |
| Total Variable Costs (\$/ha) | \$2,655 | \$2,406 | \$2,506 |
| Gross margin (\$/ha) | \$995 | \$1,257 | \$1,088 |



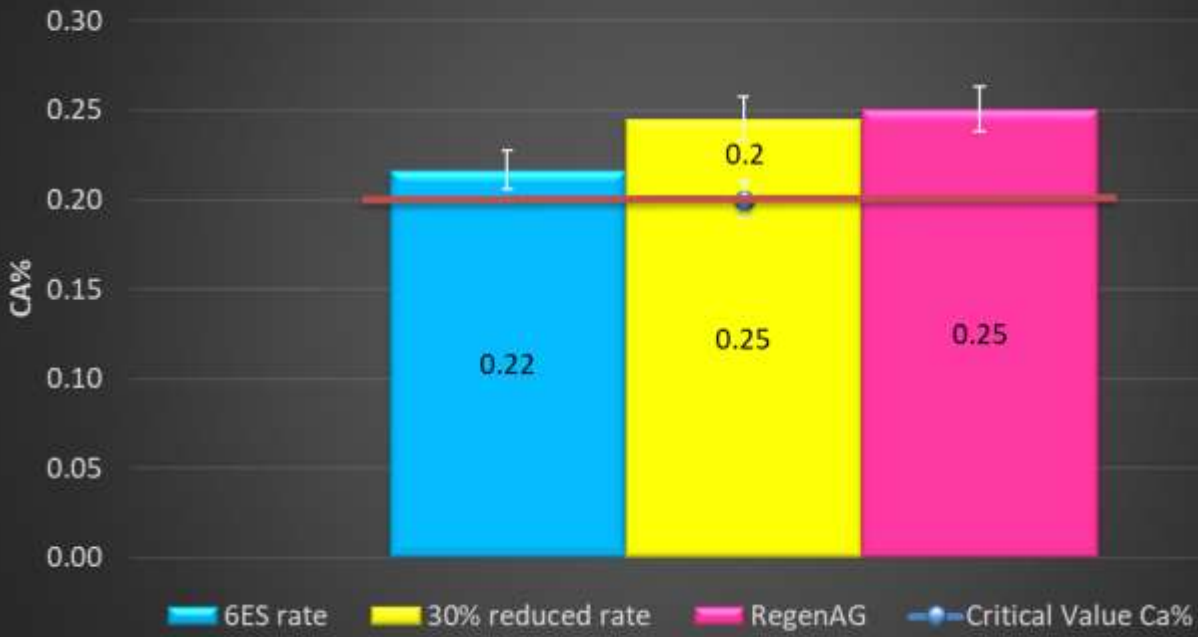
2019 Season Results

3rd leaf results for April 2019

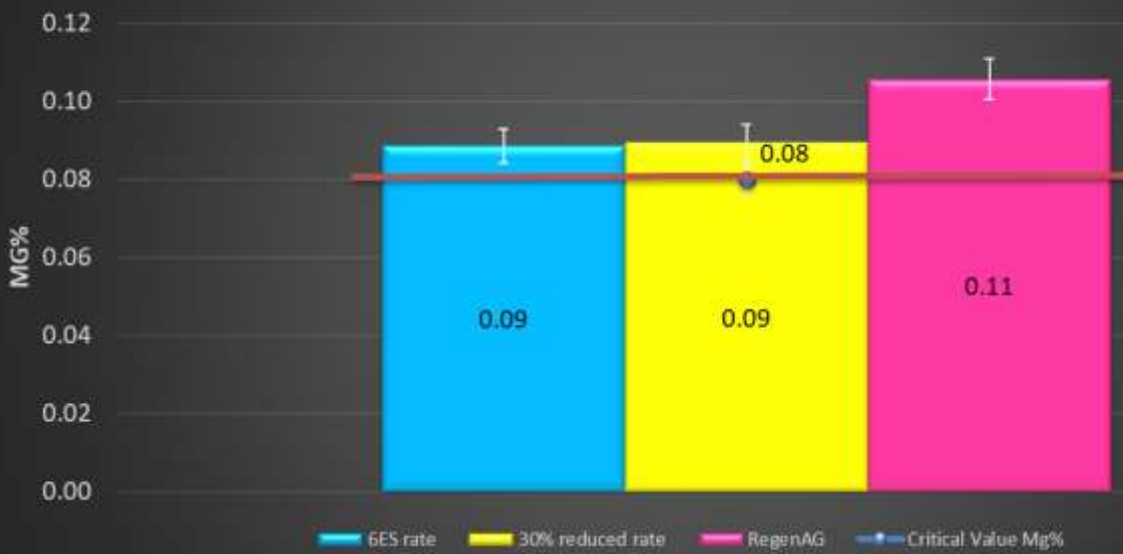




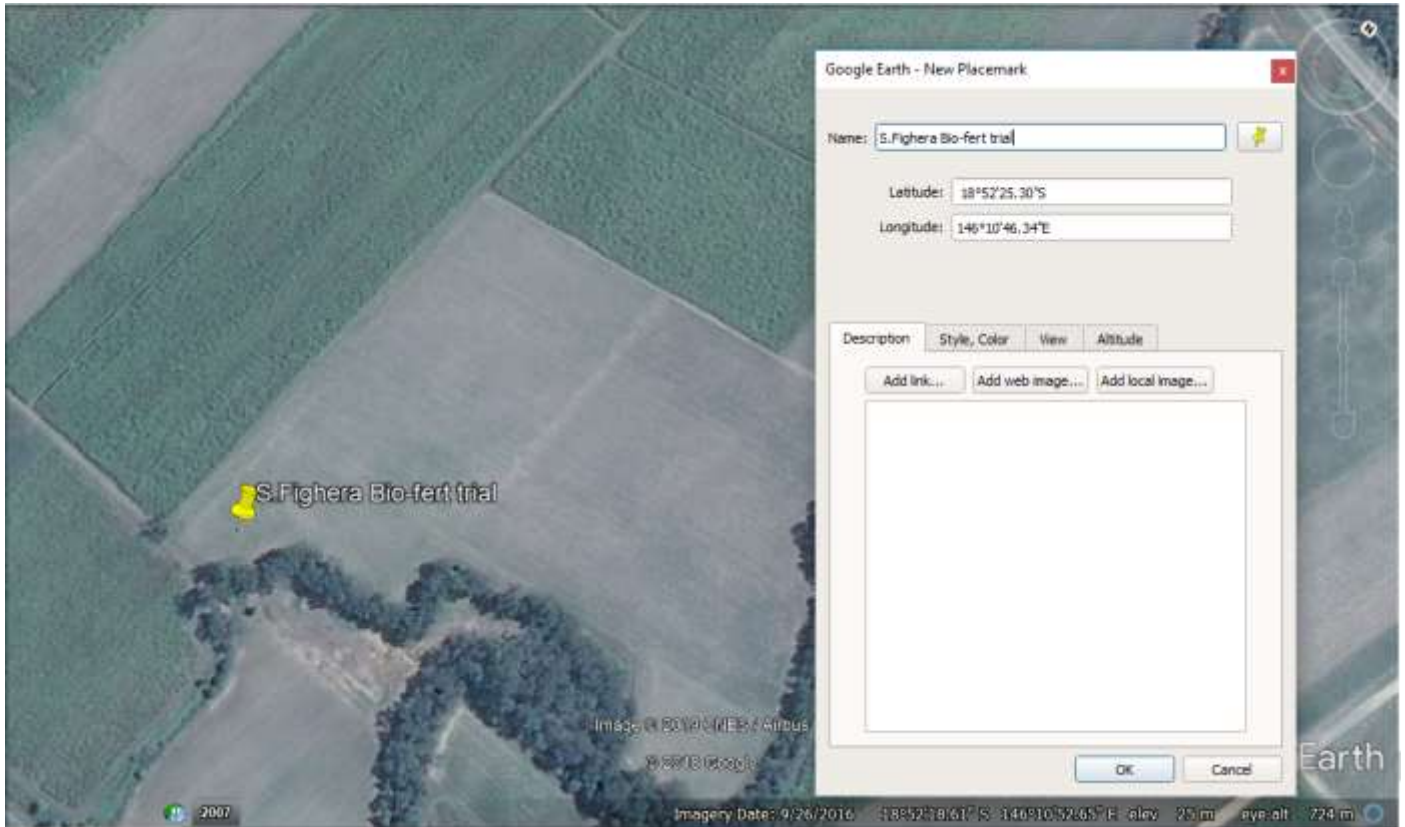
3rd leaf results for Ca% - 4th April 2019



3rd leaf results for Mg% - 4th April 2019



Google Earth Map of Trial



Conclusions and comments

Trial is still in progress. At this stage there have been no statistical differences between results, though bio-fertiliser treatments are expected to improve with ratoons.

Advantages of this Practice Change:

Economical this process will save you buying as much chemical fertiliser. The bio-ferts can rejuvenate soil health and make plant resilient to pest and disease.

Disadvantages of this Practice Change:

The extra time it takes to make the bio-fert must be taken into consideration and timing of the applications is also important.

Will you be using this practice in the future:

Yes especially on problem blocks. Eg. Low zinc and copper blocks

% of farm you would be confident to use this practice :

Plant blocks and blocks with problems like low zinc and copper. A good year with weather would do more blocks.