

Project Catalyst Final Report

Fallow Cover Crops

Grower Information

Grower Name:	Michael and Darren Reinaudo
Entity Name:	REINAUDO NL & VJ
Trial Farm No/Name:	Fallow crops
Mill Area:	Victoria
Total Farm Area ha:	2000 ha
No. Years Farming:	50 plus years of family farming
Trial Subdistrict:	Ingham
Area under Cane ha:	1066.19 ha in Bambaroo, Lannercost and Ingham area

Background Information

Aim: By having cover crops during the fallow period we are hoping to add organic sources of nutrients to the soil profile which in turn will help produced a good plant cane crop which will follow through for a full crop cycle.

Background: (Rationale for why this might work)

By having a cover crop that provides an organic source of nutrients back to the soil profile the grower is hoping to grow a good full plant cane crop. The cover crop will provide enough nutrients to the soil profile and this will hopefully let the grower reduce his chemical fertiliser application in the plant cane crop. Other benefits of having a cover crop are to help reduce erosion during the fallow period and improve soil health in general.

Potential Water Quality Benefit:

Reduce runoff of nutrients and sediment into waterways by having a cover crop.

Expected Outcome of Trial:

That the grower will be able to significantly reduce his chemical fertiliser application for plant cane

Service provider contact: Megan Zahmel 0447 317 102

Where did this idea come from: Michael Reinaudo

Plan - Project Activities	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	Establish trial	<p>Have baseline nutrient soil samples taken. -4th of Jan 2017</p> <p>Trial plan designed</p> <p><i>Planting dates for each legume species are different due to wet weather and the ability to get onto the block</i></p> <p>Black stallion cowpea planted on the 6th of Jan 2017</p> <p>Sun Hemp planted on the 26th of Jan 2017</p> <p>Ebony cowpea planted on the 28th of Jan 2017</p>
Stage 2	Sampling	<p>Crop biomass at three months – 24th of April 2017</p> <p>Legume plant nutrients – 24th April 2017</p> <p>Soil bulk density test – 24th of April 2017</p> <p>Nematode samples – 28th April 2017</p> <p>Weed pressure monitoring Jan – May 2017</p>
Stage 3	Plant Cane establishment	<p>Plant cane in 2017 season – Unfortunaley the planting contractor planted three different varieties of cane across the trial. This made the trial unworkable as no data could be compared after this had happened.</p>
Stage 4	Sampling	
Stage 5		
Stage 6		

Project Trial site details

Trial Crop:	Sun hemp Black stallion cowpea Ebony cowpea Plant cane
Variety: Rat/Plt:	Fallow Plant Cane
Trial Block No/Name:	Farm # 0127A B# 9-1 & 9-2
Trial Block Size Ha:	4 ha
Trial Block Position (GPS):	Refer to google maps
Soil Type:	Alluvial

Block History, Trial Design:

9 rows	9 rows	9 rows	9 rows	9 rows	9 rows	9 rows	9 rows	9 rows
Ebony	Black Stallion	Sunhemp	Ebony	Ebony	Sunhemp	Black Stallion	Sunhemp	Black Stallion
Rep 1	Rep 1	Rep 2	Rep 3	Rep 2	Rep 3	Rep 2	Rep 1	Rep 3
1	2	3	1	1	3	2	3	2

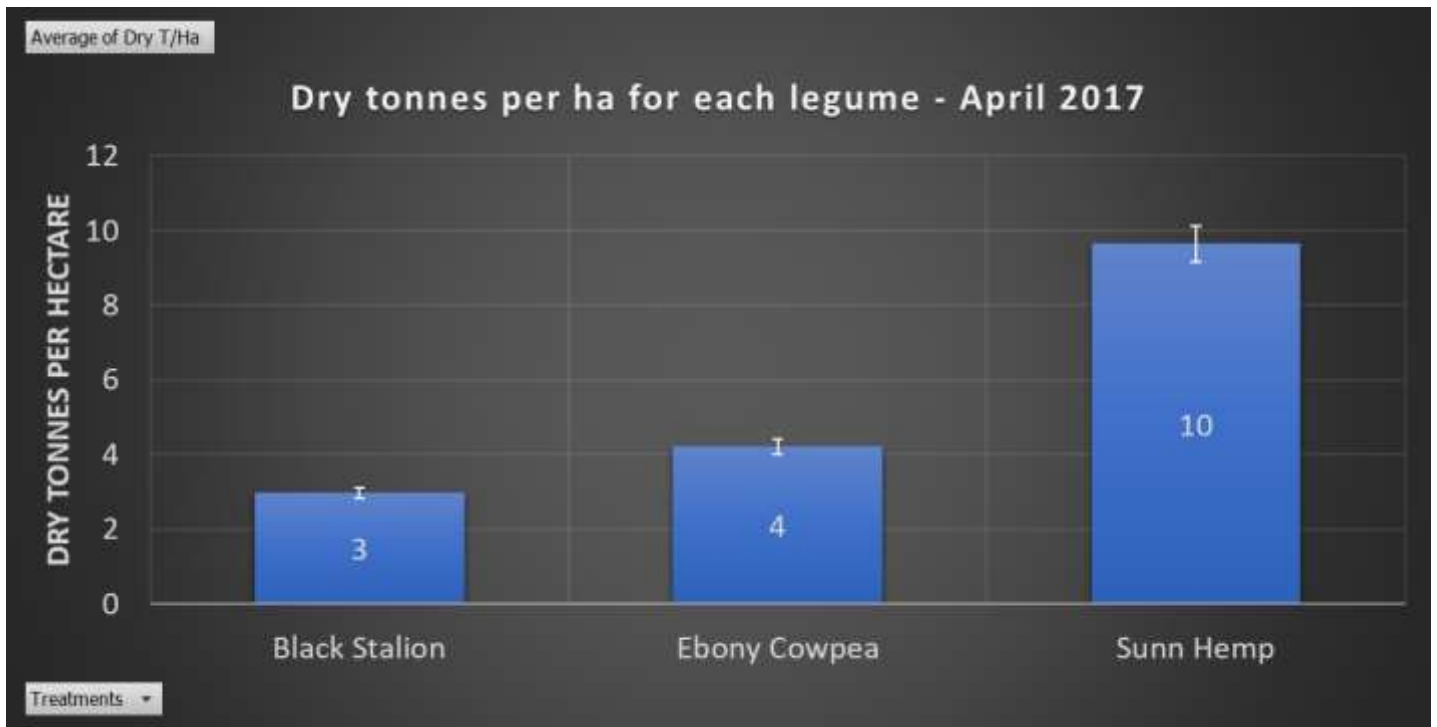
Block History

Treatments:

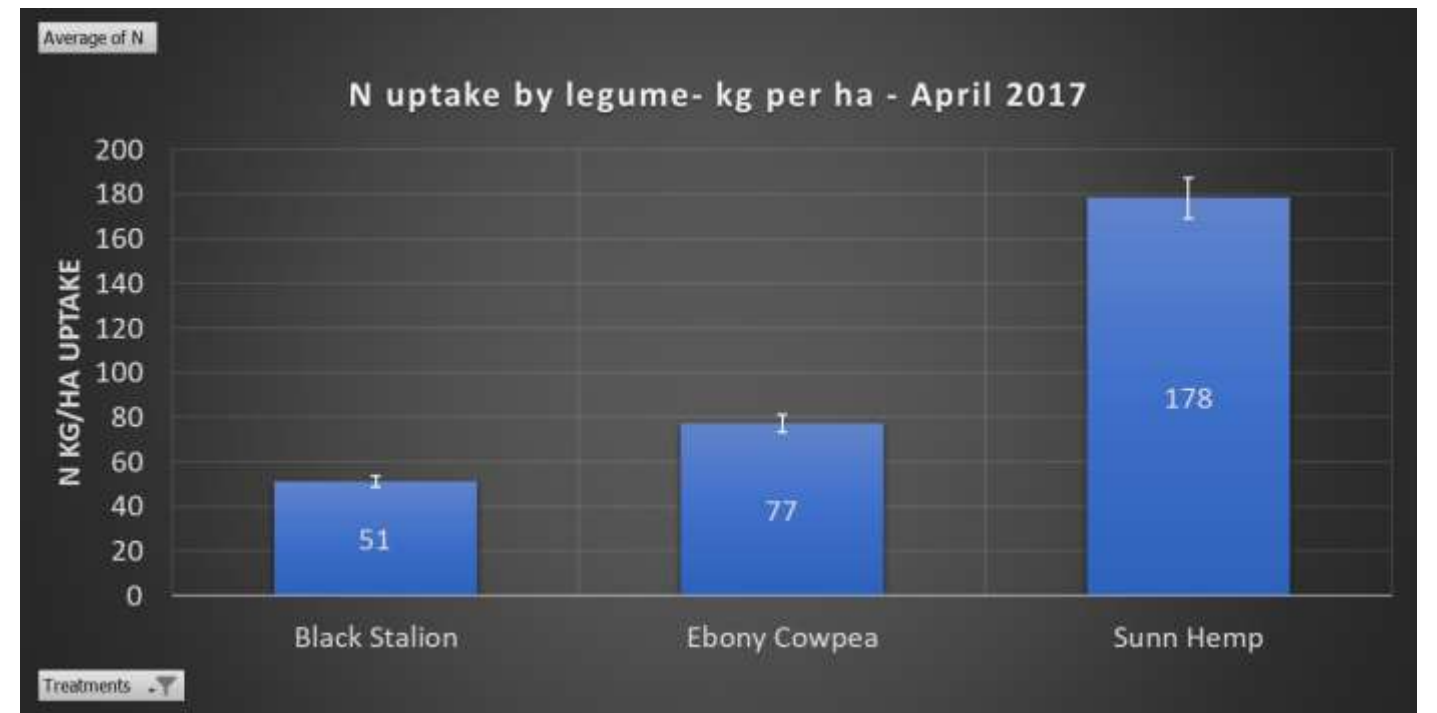
- Ebony cowpea – Trt 1
- Black stallion cowpea – Trt 2
- Sun Hemp – Trt 3

Results:

Legume biomass results

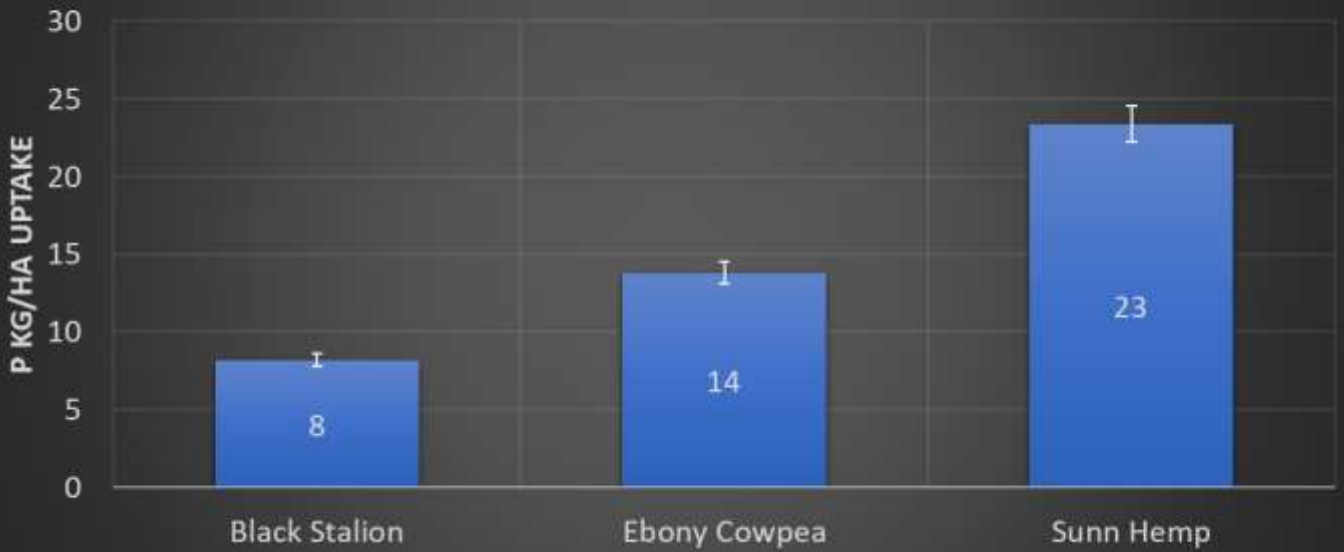


Legume Nutrient uptake results



Average of Total P

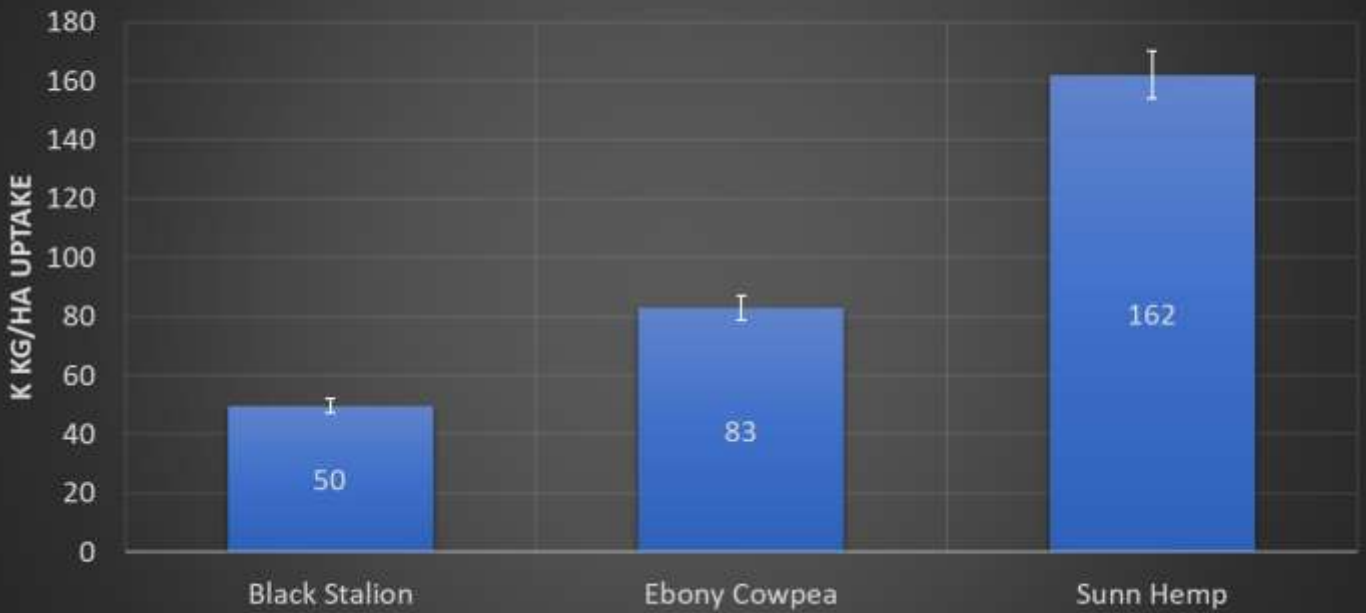
P uptake by legume -kg per ha - April 2017



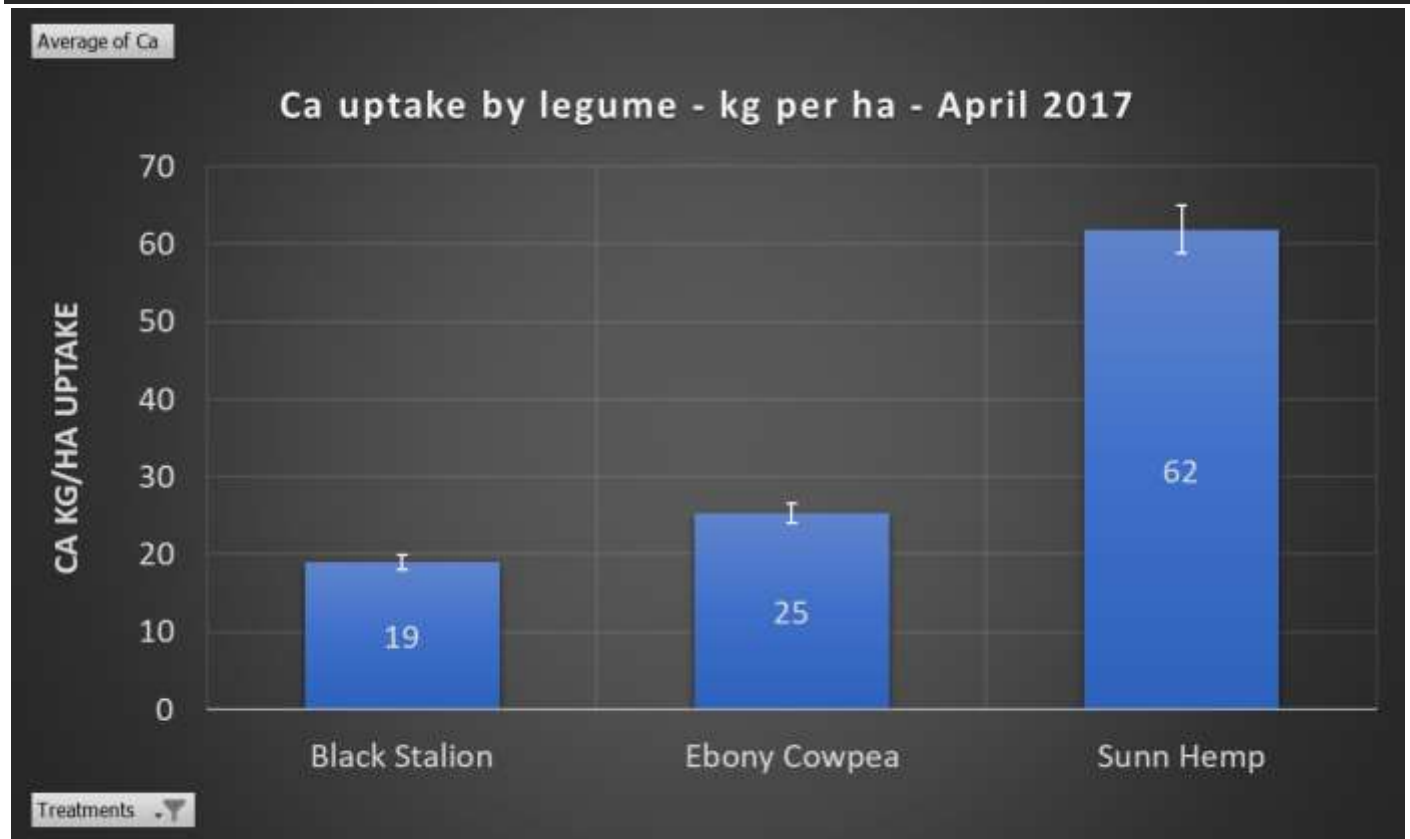
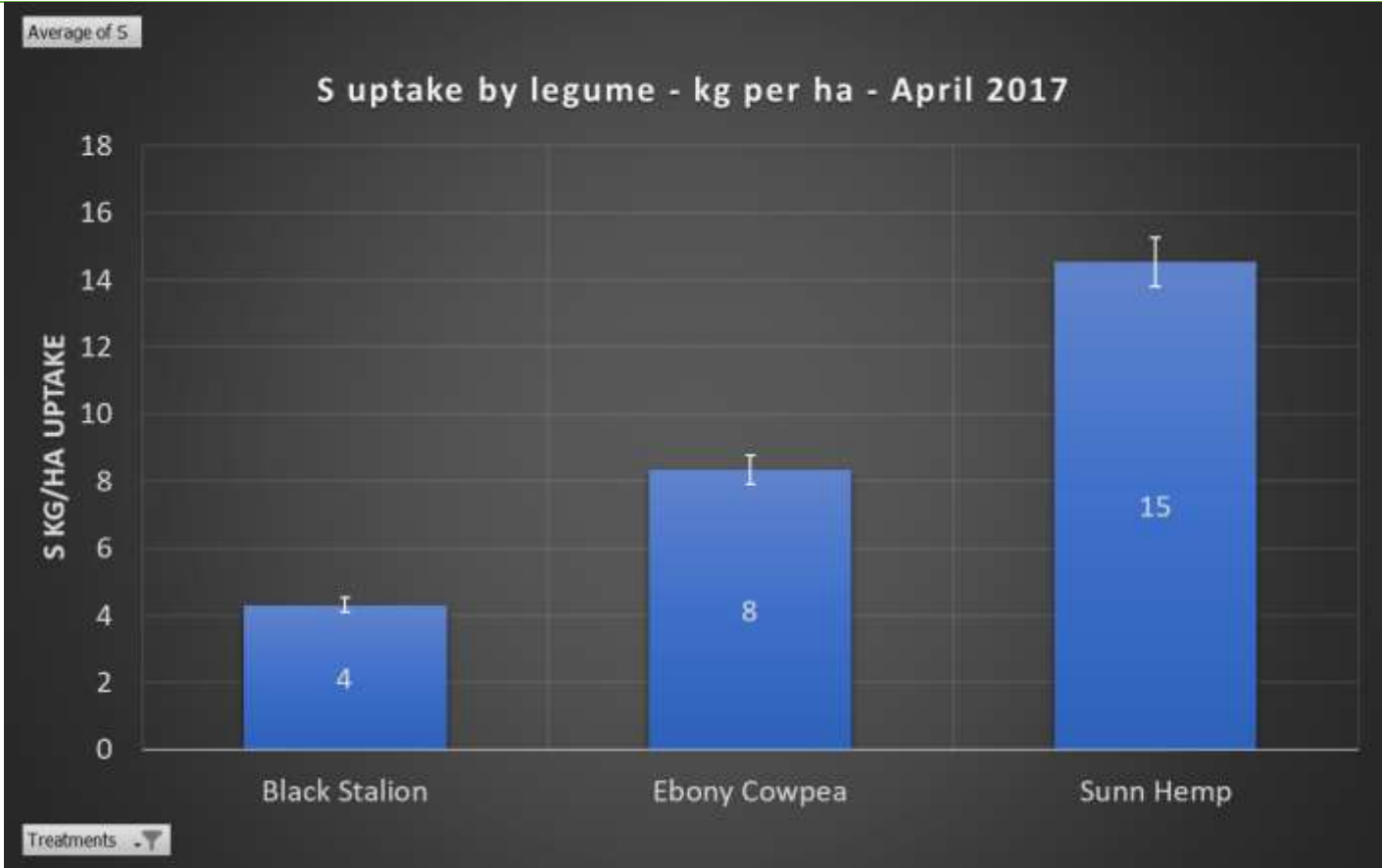
Treatments ▾

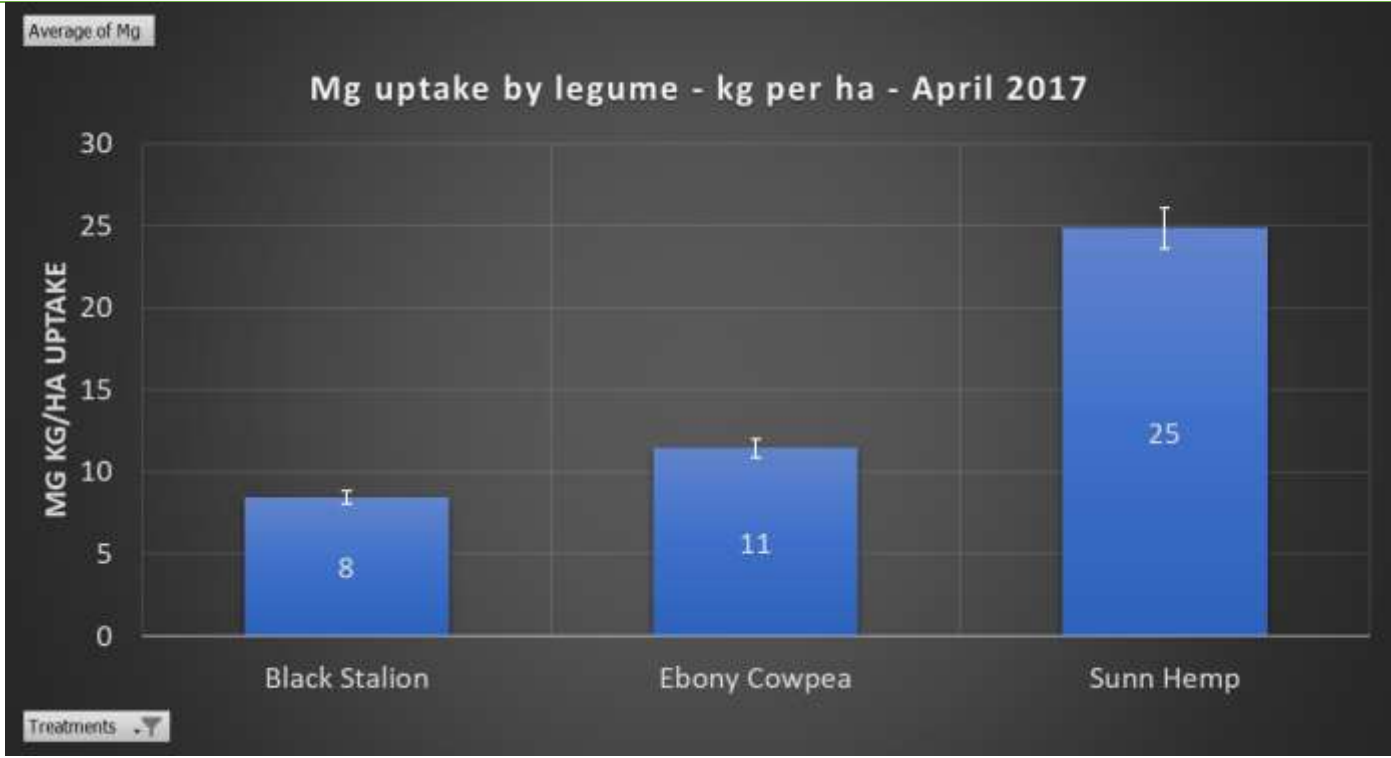
Average of K

K uptake by legume - kg per ha - April 2017

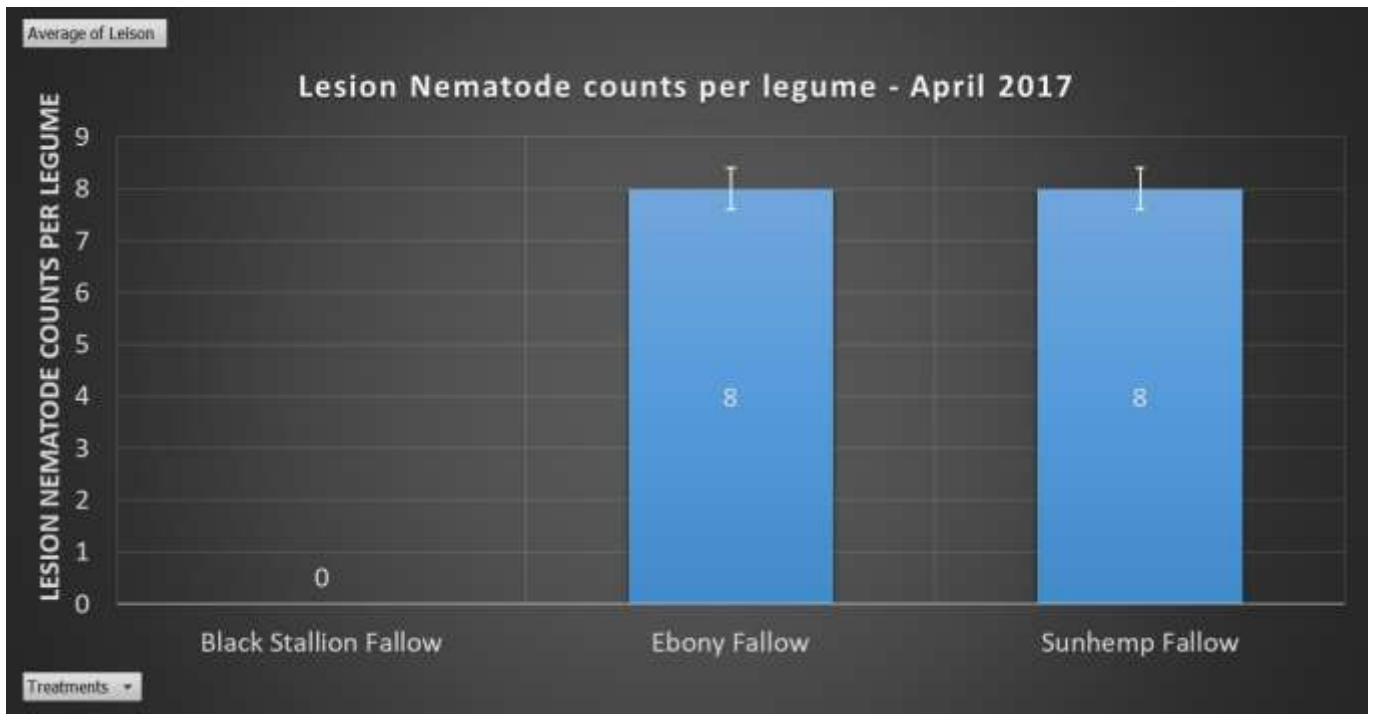


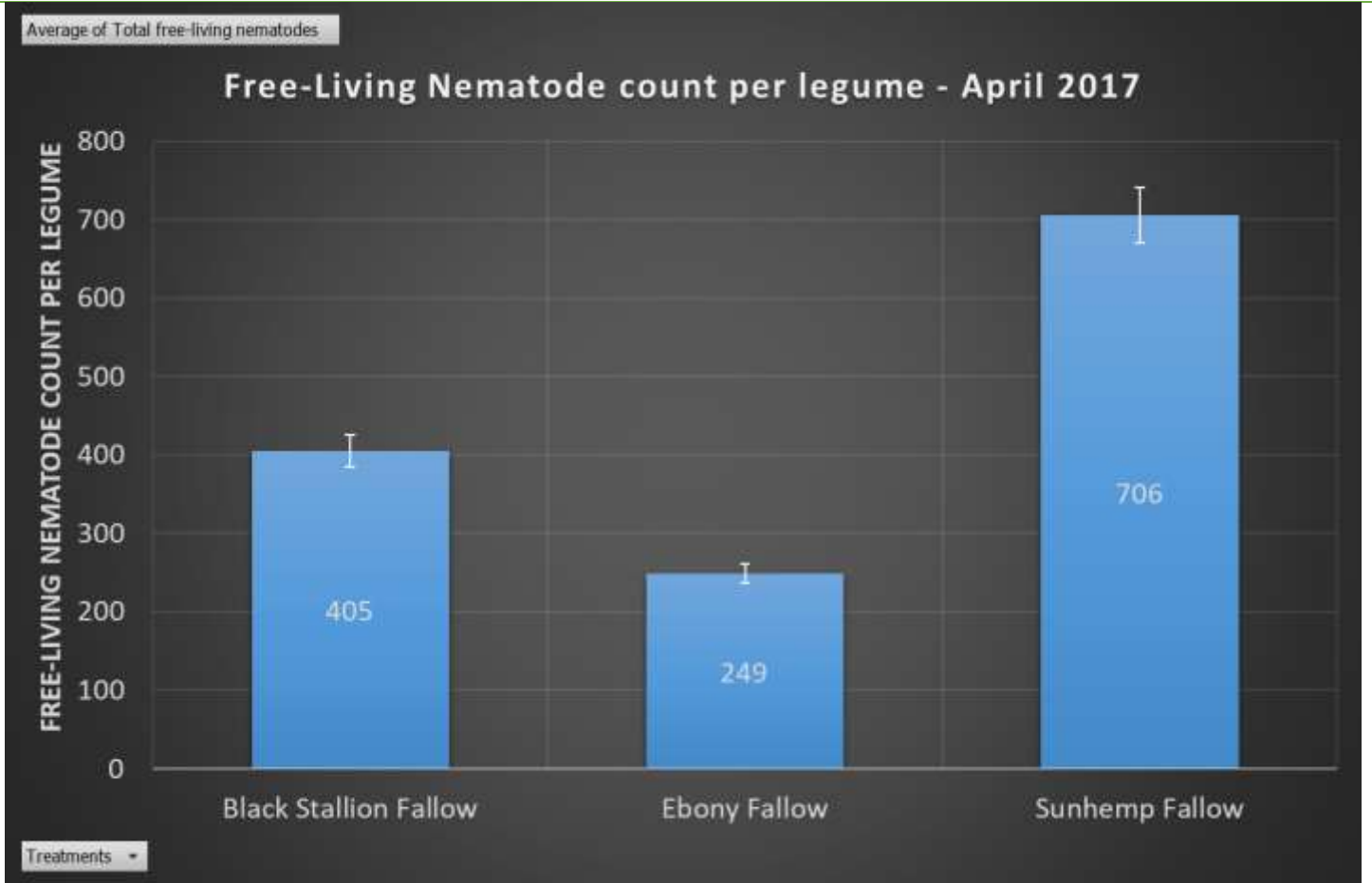
Treatments ▾



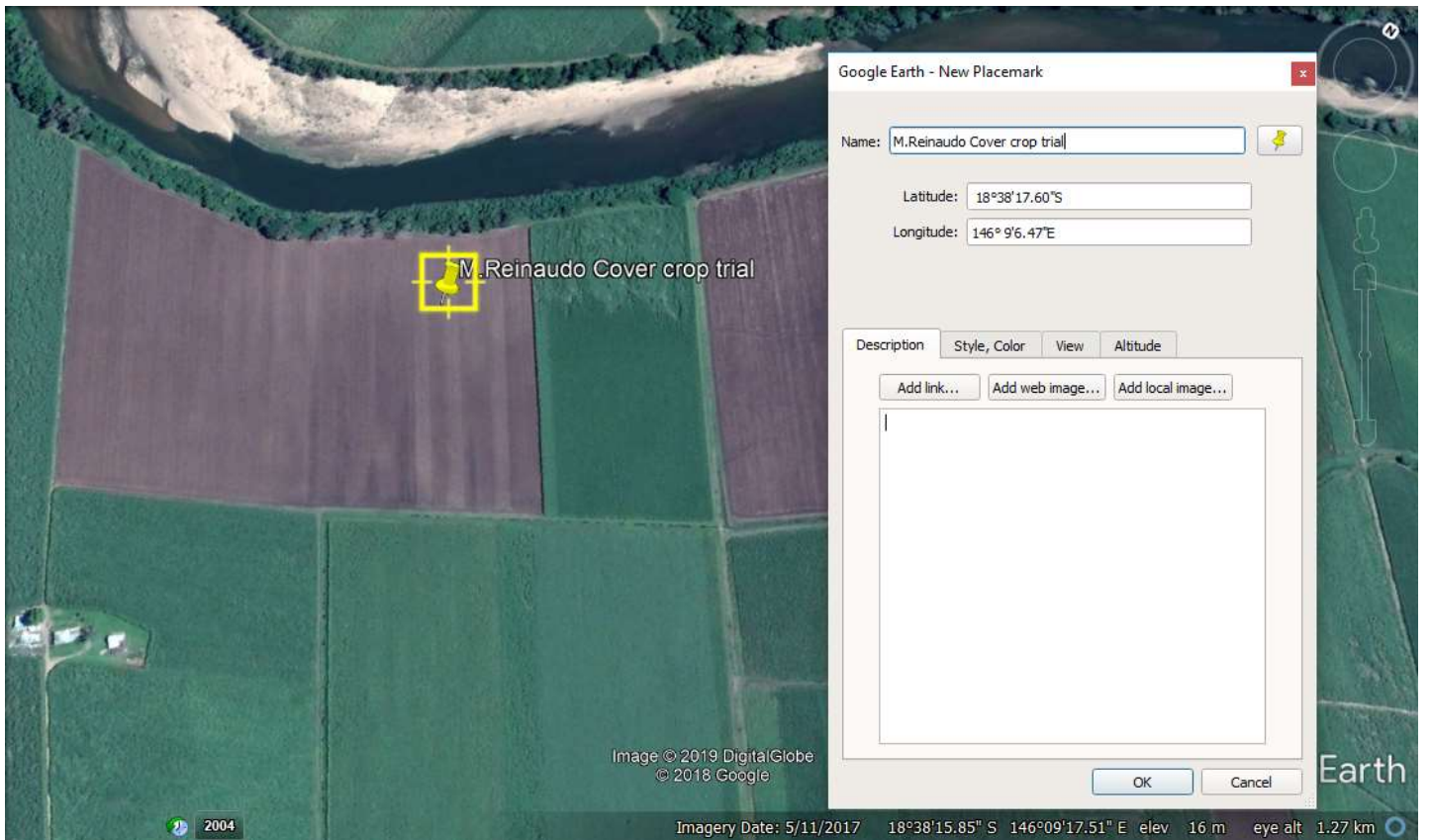


Nematode results in legumes





Google Earth reference map



Conclusions and comments

Unfortunately due to different varieties being planted across the trial we couldn't carry the data forward into the cane crop. Looking at what results were gathered during the legume crop, it is thought that Sunhemp would have given the best results to the cane crop. Due to sunhemp's big biomass tonnage, this legume supplies more of all the nutrients than the other legume crops compared. Due to these results with the sunhemp, it is then thought that the sunhemp treatments would have been able to reduce the chemical fertiliser the most without compromising yield and CCS. The black stallion cowpea didn't really perform well for the entire legume crop and was down in biomass and nutrients across the data set, though it did have good results for both pathogenic and free-living nematodes with no pathogenic nematodes found at all and still a high number of free-living nematodes. The free-living nematodes are a good sign towards re-gaining healthy soils.

Advantages of this Practice Change:

Economical advantages, possible soil health advantages, nutrient input advantages. Reduce erosion

Disadvantages of this Practice Change:

Sunhemp can be hard to get in Australia due to importing and quarantine. If the crops fail due to weather events you can lose your investment and any possible advantages that might be gained by the cane crop.

Will you be using this practice in the future:

Yes there will be cover crops on all fallow ground when weather permits. Maybe try a mixed species crop as well

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

Fallow blocks where possible