Crop Tech Pty Ltd
410 Langbeckers East Rd
Bundaberg QLD 4670
ABN: 13 010 782 975

23/12/2004

SUGAR CANE TRIALS

CLIENT: KISMET INTERNATIONAL PTY. LTD.

For And On Behalf Of

GUANO AUSTRALIA PTY. LTD.

49 FIELD ST, SHEPPARTON 3630, VICTORIA

RESEARCH COMPANY: CROP TECH PTY LTD

410 Langbeckers East Road

Bundaberg 4670, Queensland

RESEARCH AGRONOMIST: Robert Doyle

OVERVIEW

A field trial was conducted in Bundaberg to evaluate the effectiveness of Reefsafe®/Agrispon®, a soil Bio-stimulant product made from natural plant extracts, on commercial cane sugar (CCS) and yield in sugar cane. The objectives of the trial were to ascertain whether reduced levels of nitrogen, combined with an application of Reefsafe®/Agrispon®, could maintain sugar cane yield and CCS levels.

Previous studies of the use of Reefsafe®/Agrispon® in sugar cane have shown nitrogen inputs to cane plantings can be reduced by up to 50%, while still maintaining sugar yield and CCS levels.

The trial was conducted in plant cane blocks. Both normal and reduced levels of nitrogen were used.

INTRODUCTION

Three trial sites were established around the Bundaberg region. The sites were representative of the wide diversity of soil types, irrigation methods, and crop rotation systems.

All sites were planted in the spring of 2003. They all had a sugar cane ratoon crop ploughed out in the 2002 sugar cane crushing season.

Table 1 shows the soil types and crops grown on each field between the previous cane crop, and the trial planting.

Table 1: Soil types and fallow crops of each site.

Site	Soil Type	Fallow Crop
1	red medium clay	sweet potatoes
2	grey fine sandy	sorghum followed by a crop of oats
3	grey sandy loam	caloona peas

TRIAL DESIGN

The trial was designed to duplicate previous Agrispon trials that have been conducted throughout the world. The reports from these trials can be viewed at the Agrispon website www.agrisciences.com The common fertilizer practices that are employed in the sugar industry were considered.

The trial areas were laid out as a randomised complete block design, four treatments by four replications, giving a total of 16 plots. The four treatments are shown in Table 2.

Table 2: Treatments applied.

Treatment 1	Industry standard fertilizer
Treatment 2	Industry standard fertilizer + Reefsafe®/Agrispon® @ 1L/ha
Treatment 3	Industry standard fertilizer (N @ 75%) + Reefsafe®/Agrispon® @ 1L/ha
Treatment 4	Industry standard fertilizer (N @ 50%) + Reefsafe®/Agrispon® @ 1L/ha

Each plot was 20m long, by three rows wide. The plots were laid out consecutively along the length of the rows. A buffer zone of at least 10m was left at the beginning of each row, before the first treated plot. At least two rows were left as 'buffer rows' beside the headland.

METHODS AND MATERIALS

Planting

During land preparation each of the sites had a full soil test conducted. The results of the soil tests for sites 1, 2, and 3 are shown in Appendix 1, 2 and 3 respectively.

The standard pre-plant land preparation was conducted at each field. The respective treatments were marked out along the length of each row.

Planting was conducted at each of the sites using a conventional cane billet planter, as shown in Figure 1.

Figure 1: Planting of site two (dual row).

Reefsafe®/Agrispon® was applied to the plant billets as they were dropping through the planting chute. The Reefsafe®/Agrispon® rate of 1L/ha was determined by the width of the planter shoot furrow.

The four treatments at each site received the same basal application of fertilizer. The nitrogen differences were addressed at the time of side dress fertilizer application.

Post planting

Approximately one month after planting shoot emergence was monitored at each site. In each of the plots one root sample was dug up to compare root growth between the various treatments.

Side dress fertilizer application

One post plant application of fertilizer was applied at each of the sites. This was conducted approximately three months after planting, when the grower was side dressing the rest of the field.

Treatment 1 was applied by each grower with his own fertilizer rig. Treatments 2, 3 and 4 were applied by hand, positioning the fertilizer the same as in treatment one.

The total fertilizer applications for each site are shown in Table 3.

Table 3: fertilizer rates

Site 1	Treatments	N	P	K	Ca	Mg	S
Planting	1, 2, 3 & 4		22		50		28
Total (incl side dress)	1 & 2	116	32	88	50	0	51
	3	87	32	88	50	0	51
	4	58	32	88	50	0	51

Site 2	Treatments	N	P	K	Ca	Mg	S
Planting	1, 2, 3 & 4	15	20	16			10
Total (incl side dress)	1 & 2	141	20	93	0	0	24
	3	105.75	20	93	0	0	24
	4	70.5	20	93	0	0	24

Site 3	Treatments	N	P	K	Ca	Mg	S
Planting	1, 2, 3 & 4	20	22	20			10
Total (incl side dress)	1 & 2	149	22	134	0	0	36
	3	111.75	22	134	0	0	36
	4	74.5	22	134	0	0	36

Harvesting

Harvesting of the trial sites was aligned with commercial harvesting of the fields. The harvests were conducted during August and September. Due to the small scale of the trial, harvesting was carried out by hand.

At each property harvesting commenced from the headland, with each plot being harvested in succession along the treated rows. The harvested section from each plot was the central 14m, of the middle row, of each plot.

The yield of each plot was measured on a weigh trailer. CCS readings were measured from the top, middle and bottom of each stalk, using a refractometer. The total number of stalks in each harvested area was also recorded.

The results of the yield and CCS readings from each site were statistically analysed.

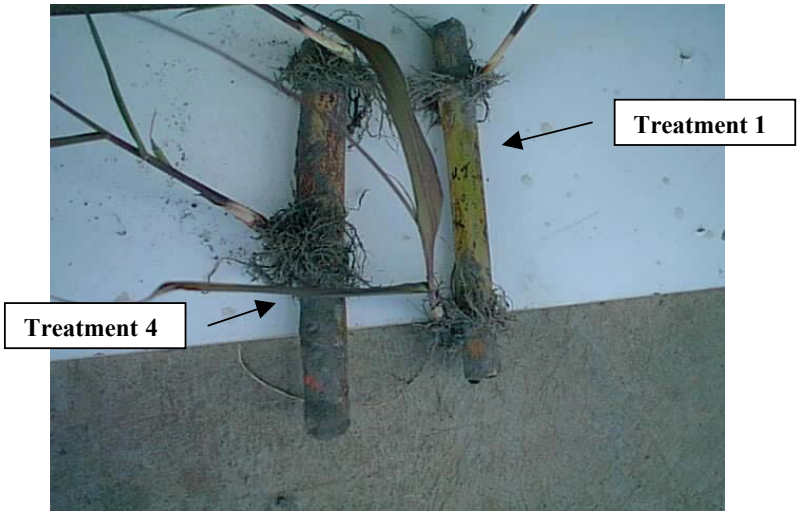
RESULTS

Shoot emergence and root appearance

The results obtained when monitoring shoot emergence and root appearance, were from observations made and measurements recorded. The results were not statistically analysed.

At the spiking stage of the crop, and on the lighter soils (sites two and three), total shoot numbers on the average were slightly lower on the Reefsafe®/Agrispon® treated plots. However on these soil types the plants appeared to have a more aggressive root system. Figure 2 shows a comparison of roots from site 3.

Figure 2: Aggressive root growth on Reefsafe®/Agrispon® treated plots.



On the heavier red volcanic soil (site 1), the plant root systems appeared to be similar across all treatments, one month after planting. Shoot count assessments made at this time on treatments one and four only, show counts were up to 33% better on treatment four.

However, when statistically analysing the total millable stalks at harvest time, there was no significant differences found between any of the four treatments, at any of the sites. Figure 3 shows the progression of shoot counts over time of treatments one and four only, at site 1.

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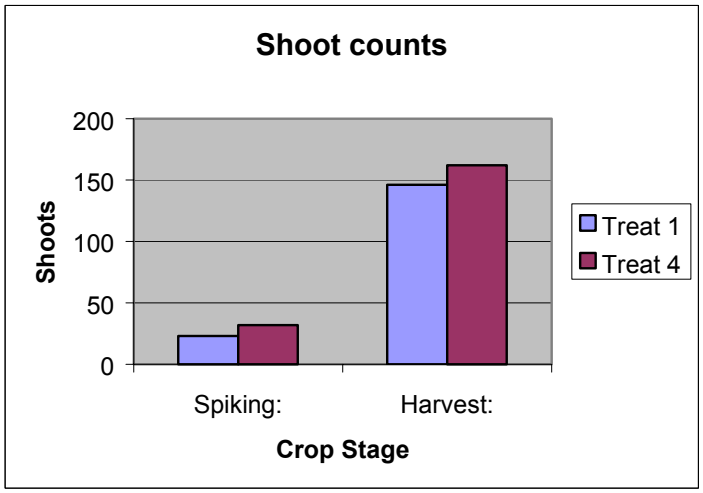
Figure 3: Shoot counts over time.



HARVEST

When statistically analysing the parameters of yield, CCS, and total millable stalks, no significant differences were found between any of the four treatments, at any of the sites. The analysed results from sites 1, 2 and 3 are shown in Appendix 4, 5 and 6 respectively.

DISCUSSION

Nitrogen application studies to many crops can produce varying results, due to the cycle of the nitrogen element. The recent history of crops on the site, length of fallow periods, and environmental conditions, can influence both the amount of residual nitrogen, and the form it is present in.

Crop performance will be limited by the most limiting ingredient. When nutritional elements or water are limited, or if pests and diseases are present above a threshold level, crops will not perform to their full potential, regardless of how much they may have of any one ingredient.

CONCLUSION

Under the conditions of this trial, nitrogen inputs to a plant crop of sugar cane can be reduced by up to 50%, without compromising sugar content or cane yield, when an application of Reefsafe®/Agrispon® is incorporated.

However, in an environment where all elements of the crops are monitored regularly, and the balance of crop inputs adjusted accordingly, Reefsafe®/Agrispon® could have worked to it's full potential, and the trial may have produced different results.

Appendix 1

Crop Tech
SOIL TEST RESULTS

410, Langbeckers East Road
Bundaberg QLD 4670
ABN: 13 010 782 975
Telephone: 07 4155 6344
E-mail: croptech@croptech.com.au
Facsimile: 07 41556656
Web site: http://www.croptech.com.au

The account for this test will be billed to:
please advise if details are incorrect

KISMET INTERNATIONAL PTY LTD
49 FIELD STREET
SHEPPARTON VIC 3630

Grower: KISMET INTERNATIONAL PTY LTD **Sample number:** 19

Block: **Date entered:** 17-Sep-2003
Recommendation for: Sugarcane **Order no.:**

Variety:	Unknown	**Age:**	TO BE PLANTED	**Soil condition:**	Friable
Irrigation type:	Trickle	**Soil drainage:**	Good	**Soil colour:**	Red
Soil type:	Clay Loam	**Water penetration:**	Fast	**Preferred application:**	
Yield goal (t/ha):	0.0	**Crop duration (days):**	0	**Target pH:**	0.0

Soil test results

					Comments
pH:	6.1				Acidic
EC:	0.13	mS/cm	130	µS/cm	Good
Nitrate-N:	37	ppm			Good
Phosphate-P (BSES):	70	ppm			Good-high
Phosphate-P (Colwell):	120	ppm			High
Potassium:	99	ppm	0.25	meq %	Medium-good
% cations:	2.56	%			Low
Calcium:	1,109	ppm	5.55	meq %	Good
% cations:	55.87	%			Low
Magnesium:	442	ppm	3.68	meq %	High
% cations:	37.11	%			High
Sodium:	102	ppm	0.44	meq %	Medium
% cations:	4.47	%			Good
Sulfate - S:	20	ppm			Medium-good
Zinc:	23.5	ppm			High
Copper:	5.1	ppm			Good
Manganese:	0.50	ppm			Good
Iron:	1.3	ppm			Low
Boron:	0.04	ppm			Low
Organic carbon:	1.86	%			Medium-low
Chloride:	41	ppm			Good
K retention:	15	%			

Optional tests

Silicon:		ppm
Ammonium-N:		ppm
P retention:	0	%

Recommendations:

Variety:	Unknown	**Age:**	TO BE PLANTED	**Soil condition:**	Friable
Irrigation type:	Trickle	**Soil drainage:**	Good	**Soil colour:**	Red
Soil type:	Clay Loam	**Water penetration:**	Fast	**Preferred application:**	
Yield goal (t/ha):	0.0	**Crop duration (days):**	0	**Target pH:**	0.0

Pre plant
Due to soil pH slightly high for planting with suscon and low calcium availability consider
Gypsum @ 1.5-2t/ha [broadcast and incorporate .]

Note
Due to high zinc level watch over application .also Suscon can be drilled in at fill in stage for best results

Plant
Approx 125-130 units of N
20 units of P
and 100 units of K required for criop
as straights
Superphosphate @ 250kg/ha
Sulphate of potash @ 250-260kg/ha
and Ammonium nitrate @ 375-390kg/ha

Note
Would consider at planting
Super @ 250kg/ha [All phosphorus,drilled into rows]
and Sulphate of potash @ 75-90kg/ha
and Ammonium nitrate @ 100kg/ha [sulphate of potash and ammonium nitrate can be drilled in or fertigated .]

Side dress/Fertigate
Sulphate of potash @ 150-175kg/ha
and Ammonium nitrate @ 275-290kg/ha [amounts can be split into 3-4 monthly applications and fertigated from 1 mtr stage .]

Foliars [As test strips for response .]
Iron sulphate @ 100g/100L
next
Solubor @ 100g/100L [consider 1 application at 1 mtr]

Appendix 2

Crop Tech
SOIL TEST RESULTS

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ABN: 13 010 782 975

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Web site: **http://www.croptech.com.au**

The account for this test will be billed to:
please advise if details are incorrect

KISMET INTERNATIONAL PTY LTD
49 FIELD STREET
SHEPPARTON VIC 3630

Grower:
Sample number: 8

Block: 1A
Recommendation for: Sugarcane
Date entered: 22-Jul-2003
Order no.:

Variety:	UNKNOWN	**Age:**	TO BE PLANTED	**Soil condition:**	Friable
Irrigation type:	Overhead	**Soil drainage:**	Good	**Soil colour:**	Grey
Soil type:	Clay Loam	**Water penetration:**	Slow	**Preferred application:**	
Yield goal (t/ha):	25.0	**Crop duration (days):**	112	**Target pH:**	0.0

Soil test results

					Comments
pH:	6.0				Optimal
EC:	0.03	mS/cm	30	µS/cm	Very low
Nitrate-N:	3	ppm			Very low
Phosphate-P (BSES):	64	ppm			Very high
Phosphate-P (Colwell):	48	ppm			Optimal
Potassium:	10	ppm	0.03	meq %	Very low
% cations:	1.01	%			Very low
Calcium:	376	ppm	1.88	meq %	Optimal
% cations:	74.09	%			Optimal
Magnesium:	68	ppm	0.57	meq %	Optimal
% cations:	22.33	%			Medium-High
Sodium:	15	ppm	0.07	meq %	Optimal
% cations:	2.57	%			Good
Sulfate - S:	3	ppm			Very low
Zinc:	1.1	ppm			Optimal
Copper:	0.5	ppm			Optimal
Manganese:	0.13	ppm			Optimal
Iron:	36.2	ppm			Very high
Boron:	0.03	ppm			Very low
Organic carbon:	1.37	%			Very low
Chloride:	13	ppm			Optimal
K retention:	22	%			

Optional tests

Silicon:		ppm
Ammonium-N:		ppm
P retention:	0	%

Recommendations:

Grower: **Sample number:** 8

Block: 1A **Date entered:** 22-Jul-2003
Recommendation for: Sugarcane **Order no.:**

Variety:	UNKNOWN	**Age:**	TO BE PLANTED	**Soil condition:**	Friable
Irrigation type:	Overhead	**Soil drainage:**	Good	**Soil colour:**	Grey
Soil type:	Clay Loam	**Water penetration:**	Slow	**Preferred application:**	
Yield goal (t/ha):	25.0	**Crop duration (days):**	112	**Target pH:**	0.0

Pre plant
Due to low calcium levels and slightly higher than optimum pH
consider
Gypsum @ 1.5-2 t/ha [broadcast and incorporate]

Note
pH has been reviewed and tested over a longer settlement and we have revised pH to 6 ,Gypsum application remains and would still consider soil pH slightly high for planting with suscon ,consider acidifying and drilling in suscon if required at side dressing [fill in stage]

Plant
Approx 150 units of N
20-25 units of P
and 110-120 units of K required for crop
as Industry standard with low potassium levels a NPK blend at planting would be recommended
consider
Option 1
CK 66 @ 225kg/ha [drilled into rows .]

Side dress
HF 16 @ 450kg/ha

Note
Will supply 148 units of N 28 units of P and 114 units of K

Ratoon
HF 14 S @ 750kg/ha

Trial
Option 2
Drilled into rows
Urea @ 50kg/ha
Guano @ 240kg/ha
Muriate of potash @ 75kg/ha

Side dress
HF 16 F @ 450kg/ha

Ratoon
HF 14 S @ 750kg/ha

Foliars [As test strips for response .]
1 application at 1 mtr]
Manganese sulphate @ 100g/100L
next
Solubor @ 100g/100L

Sugarcane: Soil Analysis Report - Topsoil

BUNDABERG SUGAR LTD
P O BOX 500

BUNDABERG 4670
Phone No: 07 4150 8945
Fax No: 07 4150 8911
Email:

Customer No: 67395
Sample No: 10125407
Sample Taken: 09/04/2003
Reported: 23/04/2003
Order No: 254072

Paddock Name	CHRIS TOWNSON	Size 0 ha	Paddock dGPS Ref
Sample Name	27A,28A&28A	Depth	Northing
Paddock Location	BUNDABERG		Easting

TEST	RESULT		VERY LOW / MARGINAL / OPTIMAL / EXCESS HIGH	OPTIMAL RANGE
Phosphorus - BSES (P)	36 mg/kg			40-60
Potassium - soil reserve (K)	60 mg/kg			234-3900
Available Sulphur - BSES (S)	4.8 mg/kg			10-50
Zinc (Zn)	0.22 mg/kg			>0.3
Zinc - BSES (Zn)	0.36 mg/kg			>0.6
Copper (Cu)	0.52 mg/kg			>.4
Iron (Fe)	145.00 mg/kg			2-100
Manganese (Mn)	6.63 mg/kg			4-100
Boron (B)	0.26 mg/kg			0.3-2
Electrical Conductivity (EC)	0.03 dS/m			<0.14
Organic Carbon (OC)	0.96 %			>0.9
Silicon BSES (Si^+)	28 mg/kg			> 100
Nitrate Nitrogen (NO3)	6.6 mg/kg			
EC of saturated extract (ECe)	0.42 dS/m			
pH water	5.50		Moderately Acidic	5.7-6.5
pH CaCl2	4.60			
Soil Texture	SANDY LOAM			
Soil Colour	Brown			
Total Cation Exchange Capacity	2.04 meq/100gm			>4
Aluminium (Al)	0.18	9%		<10%
Calcium (Ca)	1.20	59%		>1.25meq
Magnesium (Mg)	0.54	27%		>0.25meq
Sodium (Na)	0.03	1%		<6%
Potassium (K)	0.09	4%		0.3-0.5me
Calcium to Magnesium Ratio	2.22			>3

SUGAR SERVICES

FERTILISER STRATEGY

Grower Name: Chris Townson
Block No. 27A & 28A
Advisor: Julian Collins
Date: 23-04-2003

Crop : Sugarcane - Fallow Plant
Sample No: 10125407
Depth: 25 cm
Target Yield: 100 t/ha

Target nutrient rate	N	P	K	S	Zn
Plant	120	20	120	10	10
Ratoons	150	20	120	10	0

Recommendation:

Crop Time	Product	Rate/ha	Comments
Pre planting	Lime	t/ha	
Planting	DAP + 8% Zn	125 kg/ha	1 bag/acre
Side dressing	Caneboosta 50/50(S)	460 kg/ha	3.7 bags/acre
Ratoons	Caneboosta 40(S)	650 kg/ha	5.2 bags/acre

Comments.

Nitrogen rate has been reduced due to Organic carbon level
Potassium, Calcium, Sulfur, Zinc and Silicon levels are all low
To alleviate Zinc deficiency
Use DAP+8% Zn at Planting
Or apply 45 kg/ha Zinc sulfate heptahydrate on the soil prior to planting
If using suScon apply lime 3 months prior to planting
Take a leaf test in the 1st ratoon crop to check adequacy of nutrients

For further advice regarding this recommendation please call:
Julian Collins mobile 0407 144 487

Note

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Appendix 4

AGRISPON SITE 1

Number of Sticks

```
                  ANALYSIS OF VARIANCE
            Df  Sum Sq Mean Sq F value Pr(>F)
block        3  603.69  201.23  1.7264 0.2309
treatment    3  771.69  257.23  2.2068 0.1568  not significant
Residuals    9 1049.06  116.56
> model.tables(numberofsticks,"means")
Tables of means
Grand mean

157.1875

 block
     1      2      3      4
148.75 154.00 164.00 162.00

 treatment
     1      2      3      4
145.50 158.50 163.00 161.75
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

Yield

```
                  ANALYSIS OF VARIANCE
            Df  Sum Sq Mean Sq F value Pr(>F)
block        3  190.62   63.54  0.2629 0.8505
treatment    3 1138.40  379.47  1.5699 0.2634
Residuals    9 2175.47  241.72


Tables of means
Grand mean

239.7125

 block
     1      2      3      4
237.98 236.47 238.90 245.50

 treatment
     1      2      3      4
225.83 240.75 244.12 248.15
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

CCS Readings

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

No difference between treatments, but position of taking sample is highly significant.

Locsample = top, middle or bottom

ANALYSIS OF VARIANCE

Error: blk:treat

	Df	Sum Sq	Mean Sq	F value	
blk	3	61.945	20.648	7.68	**
treat	3	20.258	6.753	2.51	not significant
blk:treat	9	24.184	2.687		(experimental error values)

Error: Within

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
locsample	2	2104.91	1052.45	588.2449	< 2.2e-16	***
treat:locsample	6	7.03	1.17	0.6544	0.686485	
blk:treat:samp	64	198.12	3.10		(sampling error)	
Residuals	152	271.95	1.79			

* = 5%; ** = 1%; *** = <1% (probability levels)

Tables of means
Grand mean

22.90875

blk

	1	2	3	4
	22.61	22.7	23.78	22.54
rep	60.00	60.0	60.00	60.00

treat

	1	2	3	4
	23.26	22.66	22.59	23.12
rep	60.00	60.00	60.00	60.00

locsample

	Bottom	Middle	Top
	25.76	24.13	18.83
rep	80.00	80.00	80.00

blk:treat

blk	treat 1	2	3	4
1	22.613	22.387	22.593	22.860
rep	15.000	15.000	15.000	15.000
2	23.227	22.353	22.353	22.860
rep	15.000	15.000	15.000	15.000
3	23.613	23.933	23.680	23.907
rep	15.000	15.000	15.000	15.000
4	23.600	21.953	21.733	22.873
rep	15.000	15.000	15.000	15.000

treat:locsample

```
     locsample
treat Bottom Middle Top
  1   25.985 24.300 19.505
  rep 20.000 20.000 20.000
  2   25.720 23.725 18.525
  rep 20.000 20.000 20.000
  3   25.355 24.075 18.340
  rep 20.000 20.000 20.000
  4   25.995 24.440 18.940
  rep 20.000 20.000 20.000

 blk:treat:samp
, , samp = 1

     treat
blk   1      2      3      4
  1   23.533 23.600 23.200 23.500
  rep  3.000  3.000  3.000  3.000
  2   23.467 20.800 22.933 21.700
  rep  3.000  3.000  3.000  3.000
  3   25.000 23.133 22.000 25.267
  rep  3.000  3.000  3.000  3.000
  4   23.933 22.067 22.333 22.900
  rep  3.000  3.000  3.000  3.000

, , samp = 2

     treat
blk   1      2      3      4
  1   20.633 21.233 22.200 22.867
  rep  3.000  3.000  3.000  3.000
  2   24.500 21.333 21.300 23.400
  rep  3.000  3.000  3.000  3.000
  3   23.600 25.400 24.000 23.267
  rep  3.000  3.000  3.000  3.000
  4   23.333 22.067 20.600 22.333
  rep  3.000  3.000  3.000  3.000

, , samp = 3

     treat
blk   1      2      3      4
  1   23.233 22.567 22.733 21.400
  rep  3.000  3.000  3.000  3.000
  2   21.867 23.833 21.733 22.833
  rep  3.000  3.000  3.000  3.000
  3   23.600 23.667 24.800 24.400
  rep  3.000  3.000  3.000  3.000
  4   23.867 21.400 24.267 21.767
  rep  3.000  3.000  3.000  3.000

, , samp = 4

     treat
blk   1      2      3      4
  1   21.367 21.233 22.333 22.933
  rep  3.000  3.000  3.000  3.000
  2   21.833 23.800 22.867 23.500
```

```
  rep  3.000  3.000  3.000  3.000
  3   23.400 24.200 23.867 23.400
  rep  3.000  3.000  3.000  3.000
  4   23.400 22.233 21.200 23.333
  rep  3.000  3.000  3.000  3.000

, , samp = 5

     treat
blk   1      2      3      4
  1   24.300 23.300 22.500 23.600
  rep  3.000  3.000  3.000  3.000
  2   24.467 22.000 22.933 22.867
  rep  3.000  3.000  3.000  3.000
  3   22.467 23.267 23.733 23.200
  rep  3.000  3.000  3.000  3.000
  4   23.467 22.000 20.267 24.033
  rep  3.000  3.000  3.000  3.000

Means
bottom            middle            top
25.764            24.135            18.828

LSD(5%) 0.4178  LSD(1%) 0.55167

2 ** 1      3 ** 1            3 ** 2
```

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Appendix 5

AGRISPON SITE 2

Number of sticks

```
                  Analysis of Variance
            Df Sum Sq Mean Sq F value  Pr(>F)
blk          3 4294.2  1431.4  4.1715 0.04151 *
trt          3 1621.3   540.4  1.5749 0.26231
Residuals    9 3088.2   343.1
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Tables of means
Grand mean

215.375

 blk
     1      2      3      4
222.75 200.00 200.00 238.75

 trt
     1      2      3      4
215.00 231.50 204.25 210.75
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

Yield

```
            Analysis of Variance
            Df Sum Sq Mean Sq F value Pr(>F)
blk          3  783.7   261.2  0.6084 0.6262
trt          3 1488.8   496.3  1.1557 0.3788
Residuals    9 3864.6   429.4

Tables of means
Grand mean

214.6625

 blk
     1      2      3      4
215.20 205.38 213.08 225.00

 trt
     1      2      3      4
216.50 229.23 209.80 203.13
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

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CCS Readings

```
            Analysis of Variance
Error: blk:trt
             Df  Sum Sq Mean Sq F value
blk           3  7.1605  2.3868  1.46
trt           3  4.7235  1.5745  0.97
blk:trt:samp  9 14.6804  1.6312  (Expt error)

Error: Within
              Df Sum Sq Mean Sq F value    Pr(>F)
location       2 47.958  23.979 45.9911 2.404e-16 ***
trt:location   6  3.064   0.511  0.9796  0.441124
blk:trt:samp  64 56.632   0.885  (sampling error)
Residuals    152 79.251   0.521
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

GENERAL MEAN
23.6012

Blk means
         Blk          Blk          Blk          Blk
           1            2            3            4
       23.5900      23.6967      23.7900      23.3283

Trt means
        Trt          Trt          Trt          Trt
          1            2            3            4
      23.4967      23.6550      23.8050      23.4483
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

```
Location means Top, Middle, Bottom

                   Top         Middle    Bottom
                 22.9912      24.0500      23.7625

     S.E. MEAN 0.80730e-01 LSD(5P.C.) 0.22556     LSD(1P.C.) 0.29782

SIG DIFFS
Middle **  Top
Middle  *  Bottom
Bottom **  Top

Table Trt:Location
                     Trt          Trt          Trt          Trt
                       1            2            3            4
         Location
           Top      23.0600      23.0000      23.2450      22.6600
           Middle   23.9900      24.0500      24.2350      23.9250
           Bottom   23.4400      23.9150      23.9350      23.7600

     S.E. MEAN 0.16146     LSD(5P.C.) 0.45113     LSD(1P.C.) 0.59564
```

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23/12/2004

Appendix 6

AGRISPON SITE 3

Number of Sticks

```
            Analysis of Variance
            Df Sum Sq Mean Sq F value Pr(>F)
blk          3  67.50   22.50  0.2465 0.8618
trt          3 416.00  138.67  1.5192 0.2751
Residuals    9 821.50   91.28

Grand mean

192.25

 blk
     1      2      3      4
189.50 195.25 191.75 192.50

 trt
     1      2      3      4
200.25 192.25 190.25 186.25
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

Yield

```
            Analysis of Variance
            Df Sum Sq Mean Sq F value Pr(>F)
blk          3 1449.7   483.2  0.8273 0.5114
trt          3 1550.9   517.0  0.8851 0.4848
Residuals    9 5256.8   584.1

Grand mean

273.2438

 blk
     1      2      3      4
265.48 288.88 272.98 265.65

 trt
     1      2      3      4
287.50 273.73 272.03 259.73
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

CCS Readings

```
            Analysis of Variance
Error: blk:trt
             Df  Sum Sq Mean Sq F value  Pr(>F)
blk           3 12.2600  4.0867 3.8571   0.050 *
trt           3  2.3423  0.7808 0.7369
blk:trt:samp  9  9.5357  1.0595

Error: Within
             Df  Sum Sq Mean Sq F value  Pr(>F)
pos           2   3.091   1.546  4.2562 0.01590 *
trt:pos       6   1.814   0.302  0.8325 0.54649
blk:trt:samp 64 184.261   2.879
Residuals   152  55.195   0.363
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

GENERAL MEAN             23.4483

 MEANS        blk
                     blk          blk          blk          blk
                     1            2            3            4
                  23.1717      23.4117      23.4083      23.8017

     S.E. MEAN 0.13289     LSD(5P.C.) 0.42512     LSD(1P.C.) 0.61074

     SIG DIFFS
   4 **  1

 MEANS        trt
                     trt          trt          trt          trt
                     1            2            3            4
                  23.4033      23.4783      23.5900      23.3217

     S.E. MEAN 0.13289     LSD(5P.C.) 0.42512     LSD(1P.C.) 0.61074
```

NO SIGNIFICANT DIFFERENCES BETWEEN TREATMENTS

```
 MEANS        pos
                     pos          pos          pos
                     1            2            3
                  23.3638      23.6087      23.3725

     S.E. MEAN 0.67372E-01 LSD(5P.C.) 0.18824     LSD(1P.C.) 0.24854

     SIG DIFFS
   2  *  1      2  *  3

 MEANS       trt:pos
                     trt          trt          trt          trt
                     1            2            3            4
          pos
          1      23.5150      23.3500      23.4200      23.1700
          2      23.4350      23.6350      23.8600      23.5050
          3      23.2600      23.4500      23.4900      23.2900

     S.E. MEAN 0.13474     LSD(5P.C.) 0.37649     LSD(1P.C.) 0.49708
```

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