COMPOST EVALUATION

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AIM

To evaluate compost and clay for their ability to improve the production capacity of soil.

BACKGROUND

Agritech Crop Research conducted this trial on behalf of the Liebe Group to evaluate the addition of compost and clay on the production capacity of loamy sand. Compost was applied at 6 t/ha and 18 t/ha and clay at 15 t/ha in 2004. Combined applications of compost and clay were also evaluated. Each of the soil amendments were spread on the plots and incorporated prior to sowing 2004. Three different levels of nutritional input were applied to each treatment in order to determine the interaction that compost and clay may have with different levels of conventional fertiliser application.

There were no significant responses in 2004 to the soil amendments. However, the trial area was resown in 2005 to determine the long-term effects of the different soil amendments (clay and compost). The three different levels of nutritional input (low, district and high) were applied to each treatment again in 2005.

TRIAL DETAILS

Property	Bryant Bros, West Buntine
Plot size & replication	6.6m x 20m, 3 replications
Soil type	Loamy sand
Sowing date	19th May 2005
Seeding rate	75 kg/ha
Fertiliser (kg/ha)	As per treatment list
Paddock rotation	2003 Lupins, 2004 Wheat
Herbicides	SpraySeed 2L, TriflurX 1.6L, Logran 35g, Tigrex 500mL, Lontrel 100mL
Growing Season Rainfall	258mm

ECONOMIC ANALYSIS

Treatment		Hectolitre Weight (g)	Protein %	Screenings %
Amendment	**Fertiliser**			
Nil	Low	410.46	9.6	2.5
	District	418	10.1	2.1
	High	404	10.8	2.3
Compost 6 t/ha	Low	410.6	9.6	2.0
	District	409.6	10.6	2.1
	High	408.2	10.5	2.3
Compost 18 t/ha	Low	417.83	9.7	2.4
	District	399.3	9.8	2.4
	High	401.5	11.2	2.8
Compost 6t + Clay 15 t/ha	Low	414.2	9.9	2.5
	District	417.6	10.4	2.9
	High	409.7	10.6	2.1
Compost 18t + Clay 15 t/ha	Low	418.66	9.6	2.1
	District	419.3	10.4	2.2
	High	410.16	10	2.1
Clay 15 t/ha	Low	415	10.1	2.1
	District	417.2	10.4	2.1
	High	412.76	10.3	2.1

Table 1: Head Counts (/m row) 145 DAS and Yield (t/ha) 182 DAS Factorial Analysis.

Part Rated **Rating Data Type** **Rating Unit** **Rating Date** **Crop Stage** **Trt-Eval Interval**		**Head Counts per m row 11/10/2005 Z71 145 DA-A**	**Crop Yield t/ha 17/11/2005 Z95 182 DA-A**
No.	**Treatment**		
TABLE OF R MEANS			
Replicate 1		49.9	2.281
Replicate 2		52.6	2.242
Replicate 3		52.9	2.395
LSD (P=0.05)		**NSD**	**NSD**
TABLE OF A MEANS			
1	Nil Amendment	50.3 b	2.222
2	Compost (6 t/ha)	47.2 b	2.322
3	Compost (18 t/ha)	52.7 a	2.394
4	Compost (6 t/ha) Clay (15 t/ha)	52.6 a	2.301
5	Compost (18 t/ha) + Clay (15 t/ha)	55.8 a	2.425
6	Clay (15 t/ha)	52.2 ab	2.174
LSD (P=0.05)		**4.6**	**NSD**
TABLE OF B MEANS			
1	Low Fertiliser Regime	46.4 c	2.111 b
2	District Practice Fertiliser Regime	51.3 b	2.277 b
3	High Fertiliser Regime	57.7 a	2.531 a
LSD (P=0.05)		**3.2**	**0.186**

Table 2: Head Counts (/m row) 145 DAS and Yield (t/ha) 182 DAS Analysis of Variance.

Rating Data Type **Rating Unit** **Rating Date** **Crop Stage** **Trt-Eval Interval**					**Head Counts per m row 11/10/2005 Z71 145 DA-A**	**Yield t/ha 17/11/2005 Z95 182 DA-A**
No.	**Amendment**	**Fertiliser Regime**	**Product**	**Rate**		
1	Nil	Low	K Gold Urea	50 kg/ha 25 kg/ha	45.1 def	1.975 f
2		District Practice	K Gold Urea	100 kg/ha 50 kg/ha	54.3 bc	2.279 b-f
3		High	K Gold Urea	140 kg/ha 100 kg/ha	51.4 cde	2.413 a-f
4	Compost 6 t/ha	Low	K Gold Urea	50 kg/ha 25 kg/ha	43.7 ef	2.099 c-f
5		District Practice	K Gold Urea	100 kg/ha 50 kg/ha	45.5 def	2.330 b-f
6		High	K Gold Urea	140 kg/ha 100 kg/ha	52.6 cd	2.536 abc
7	Compost 18 t/ha	Low	K Gold	50 kg/ha	47.4 c-f	2.037 ef

			Urea	25 kg/ha		
8		District Practice	K Gold	100 kg/ha	48.9 c-f	2.351 a-f
			Urea	50 kg/ha		
9		High	K Gold	140 kg/ha	61.8 ab	2.793 a
			Urea	100 kg/ha		
10	Compost 6 t/ha + Clay 15 t/ha	Low	K Gold	50 kg/ha	41.3 f	2.207 b-f
			Urea	25 kg/ha		
11		District Practice	K Gold	100 kg/ha	55.2 bc	2.052 def
			Urea	50 kg/ha		
12		High	K Gold	140 kg/ha	61.3 ab	2.644 ab
			Urea	100 kg/ha		
13	Compost 18 t/ha + Clay 15 t/ha	Low	K Gold	50 kg/ha	51.6 cde	2.299 b-f
			Urea	25 kg/ha		
14		District Practice	K Gold	100 kg/ha	49.3 cde	2.500 a-d
			Urea	50 kg/ha		
15		High	K Gold	140 kg/ha	66.4 a	2.474 a-e
			Urea	100 kg/ha		
16	Clay 15 t/ha	Low	K Gold	50 kg/ha	49.5 cde	2.047 def
			Urea	25 kg/ha		
17		District Practice	K Gold	100 kg/ha	54.4 bc	2.150 c-f
			Urea	50 kg/ha		
18		High	K Gold	140 kg/ha	52.6 cd	2.325 b-f
			Urea	100 kg/ha		
LSD (P=.05)					**8.0**	**0.457**
CV					**9.2**	**11.880**
Replicate F					**2.083**	**1.524**
Replicate Prob(F)					**0.140**	**0.232**
Treatment F					**5.666**	**2.060**
Treatment Prob(F)					**0.000**	**0.036**

Means followed by same letter do not significantly differ (P=.05, LSD).

COMMENTS

Head Counts

Head counts carried out on 11th October 2005 indicated there was a slight response to soil amendment applied in 2004. Compost 18 t/ha (52.7 heads/m row), Compost 6 t/ha + Clay 15 t/ha (52.6 heads/m row) and Compost 18 t/ha + Clay 15 t/ha (55.8 heads/m row) all produced significantly more heads than those plots with no soil amendment (50.3 heads/m row).

Fertiliser regime (applied in 2005) also influenced number of heads produced. There was a significant response from low (K Gold 50 kg/ha + Urea 25 kg/ha) to district practice (K Gold 100 kg/ha + Urea 50 kg/ha) to high (K Gold 140 kg/ha + Urea 100 kg/ha) fertiliser regimes. Low fertiliser regime produced 46.4 heads/m row, district practice produced 51.3 heads/m row and the high fertiliser regime produced 57.7 heads/m row.

Yield

Average yields ranged from 2.1 to 2.5 t/ha.

Soil amendments applied in 2004 did not significantly improve wheat yields in 2005 (although there appeared to be slight trends).

The high fertiliser regime (2.53 t/ha) yielded significantly higher than the district practice regime (2.28 t/ha) and the low fertiliser regime (2.11 t/ha).

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