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Effect of N P K S on Seed Cotton Yield of the Variety CB-12

Presented by

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Justification

CDB has hopefully developed very potential variety CB-12. Now, determination of the nutritional requirements is the prime condition before commercial release. Hence for the experiment is an urgent need to know the amount of fertilizer under field condition to boost up the sustainable and significant yield. Hence the experiment is justified.

Objective

To determine the effective doses of N P K S on cotton variety CB-12

Treatment

Experimental Details

Treatments

Fertilizer dose

	N	P	K	S (kg/ha)
1.	0	0	0	0 (Control)
2.	50	20	50	10
3.	75	30	75	15
4.	100	40	100	20 (Recommended dose)
5.	125	50	125	25
6.	150	60	150	30

Design : RCB
Replication: 3
Season : 2012-13
Variety : CB-12
Unit Plot size : 4.50 m × 3.60 m
Spacing: 0.90 m × 0.45 m
Location : 3 research farms of CDB
Priority : 1st
Status: 2nd year

Table 1. Initial analysis of soil at different locations

Location	pH	OM (%)	N (%)	K meq/ 100 g soil	P µg/g soil	S µg/g soil	Mg meq/ 100 g soil	Zn µg/g soil	B µg/g soil	Soil Texture
Sreepur	5.8	0.81	0.08	0.21	6.9	3.56	1.90	3.14	0.69	Clay loam
Sadarpur	5.37	1.03	0.06	0.16	38.64	3.81	-	-	0.17	Sandy loam
Jagadishpur	7.43	1.03	0.05	0.17	5.90	12.69	0.71	1.33	0.59	Sandy loam

Table 2. Effect of NPKS on yield and yield attributes of cotton at different locations.

Location	Plant Height (cm)	Number of Monopodia/ Plant	Number of Sympodia/ Plant	Number of Bolls/ Plant	Boll Wt (g)	Seed Cotton Yield (kg/ ha)
Sreepur	104.13	1.52	14.95	23.36	5.02	2529
Sadarpur	115.44	2.33	16.45	44.66	5.65	4267
Jagadishpur	116.66	1.66	23.33	25.01	5.40	2875
Level of Signi.	ns	*	*	*	*	*
LSD(%)	11.58	0.32	1.87	5.31	0.19	239.49

Note: * = Significant at 5% level, ** = Significant at 1% level, ns = Not significant

Table 3. Interaction effect of Treatment×Location on Sympodial branch

Treatment	Location		
	Sreepur	Sadarpur	Jagadishpur
T_1	9.90	14.56	17.60
T_2	13.06	19.43	17.23
T_3	11.33	22.06	28.40
T_4	14.70	15.53	17.40
T_5	15.73	15.76	17.50
T_6	22.80	27.66	27.73
Lvel of Signi.	*	*	*
LSD(%)	4.59	4.59	4.59

Table 4. Interaction effect of Treatment×Location on Boll Wt

Treatment	Location		
	Sreepur	Sadarpur	Jagadishpur
T_1	4.1	5.1	5.2
T_2	4.6	6.0	5.2
T_3	5.1	5.3	5.5
T_4	4.8	5.3	5.8
T_5	5.7	5.9	5.7
T_6	5.4	5.3	5.4
Lvel of Signi.	*	*	*
LSD(%)	0.47	0.47	0.47

Table 5. Combined effect of NPKS on yield and yield attributes of cotton (Three locations)

Treatment	Plant Height (cm)	Number of Monopodia/ Plant	Number of Sympodia/ Plant	Number of Bolls/Plant	Boll Wt (g)	Seed Cotton Yield (kg/ ha)
T_1	82.27	0.76	11.43	14.33	4.64	1576
T_2	101.34	1.71	17.74	26.25	5.35	3054
T_3	109.62	1.56	18.68	28.23	5.47	3150
T_4	121.50	2.31	19.65	40.11	5.53	3379
T_5	126.26	2.40	21.07	37.50	5.67	3650
T_6	131.47	2.28	20.87	37.64	5.47	3535
Level of Signi.	*	*	*	*	*	*
LSD(%)	16.38	0.46	2.65	7.52	0.27	341.52

T_1 = 0:0:0:0, T_2 = 50:20:50:10 T_3= 75:30:75:15, T_4 = 100:40:100:20, T_5 = 125:50:125:25 and T_6 = 150:60:150:30 kg NPKS/ha

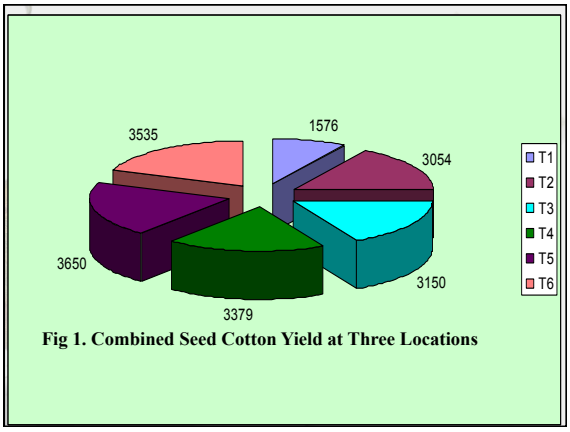

Fig 1. Combined Seed Cotton Yield at Three Locations

Table 6. Economics of different fertilizer on cotton production (average three locations)

Treatment	Seed cotton yield (kg/ha)	Gross Return (Tk/ha)	Total Variable Cost (Tk/ha)	Gross Margin (Tk/ha)	BCR
T_1	1576	94560	44080	50480	1.14
T_2	2954	177240	50600	126640	2.50
T_3	3150	189000	53866	135134	2.50
T_4	3379	202740	57152	145588	2.54
T_5	3650	219000	60960	158040	2.59
T_6	3535	212100	63672	148428	2.33

Urea=20 Tk/kg
TSP= 22 Tk/kg
MoP = 15 Tk/kg
Gypsum = 12 Tk/kg

Price of Seed =18 Tk/kg
Price of Seed Cotton = 60 Tk/kg

Conclusion

From the above results it can be concluded that, treatment T5 (125:50:125:25 kg/ha NPKS) enhance the cotton variety CB-12 to produced the highest amount of seed cotton (3650 kg/ha) from where the highest gross margin (158040 Tk) and the highest BCR (2.59) is obtain. Hence, it is recommended that @ 125:50:125:25 kg/ha NPKS should be applied to get the better seed cotton yield of variety CB-12