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Effect of Different NP Fertilizer Levels on the Yield of Cotton Cultivars

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Abstract: The experiment was laid out in randomized complete block design with 03 replications. Treatments comprised of 03 cotton cultivars (TH- 41/ 83, TH- 35/83 and Rehmani) and 10 fertilizer levels.It has been observed that Cotton cultivar TH- 35/83 gave highest seed cotton yield per plant i.e. 95.13 gms, fallowed by TH – 41/83 i.e. 84. 19 gms per plant. While the maximum yield per plant was recorded under fertilizer level 200 – 50 kg/ha (100. 52) grams. Cultivar TH – 41/83 gave highest yield per plot 4.89 kg and 3773.12 kg / ha. Cultivar Rehmani gave lowest yield i.e. 3.97 kg/plot and 3063. 25 kg/ha. It is also investigated that NP, fertilizer level 200 – 75 kg / ha, produced maximum cotton yield 4. 88 kg/plot and 37 65. 40-kg/ hectare.

Key Words: NP Fertilizer, yield, cotton cultivars

Introduction

Cotton *Gossypium hirsutum* L .is an important fiber crop of world and occupies a key position in the crop husbandry of Pakistan. The most important cotton growing areas of Pakistan are Sindh and Punjab provinces (Afzal Khan, 1969). Cotton is a leading cash crop of our country. It is one of the major source of foreign exchange that boost up the economy of country (Hanif *et al.*, 1987). The main cotton plant products are seed cotton, seed and lint. Cotton not only meets the fiber requirements like clothing for human beings but also it can be used in number of ways. It contains about 18% oil, which is utilized for the preparation of vegetable oil and cosmetic (Baloch,1974). Cotton seed meal and cotton seed cake are most important source of animal food (Habib & Sidiqui, 1994). Seed cotton yield per hectare in Pakistan is quite low as compared to other countries of the world. The planting of high yielding cultivars with judicious fertilizer application are the most important factors that have great effect on
the yield of cotton. Therefore the present research work was under taken to asses the yield of different cotton cultivars under different NP fertilizer levels. Most of the research workers of the world have conducted research on nitrogen and phosphorus like from Nigeria (Ogunlek & Abed, 1984), (Elayan, 1992, El – Kasssay and Kandil, 1986), (Ansatasiou and Setatou, 1981), (Hussain *et al.*, 1986 (Ustimenko *et al.*, 1986), (Constable and Roshester,1988), (Ning *et al.*, 1991). On the other hand many researchers form Pakistan have also investigated the effect of different NP fertilizer levels and reported that cotton crop significantly responded to the different rates of NP fertilizer levels like Qayyum *et al.*, 1985, Hanif *et al.*, 1987 , Khan *et al.*, 1993 , Choudhary *et al.*, 1994, Latif *et al.*, 1994 and many others.

Materials and Methods

A field experiment was conducted at Cotton Research Section, Agriculture Research Institute Tando jam to investigate the effect of different Np fertilizer levels on the yield of cotton cultivars in 1996. The experiment was laid out in randomized complete block design under 03 replications and 10 fertilizer levels. The plot size was kept as 5.4m x 2.4m (12. 96 m2). The detail of treatments and fertilizer levels was as under:

Cultivars = 03,
C1 = TH - 41/ 83,
C2 = TH – 35/ 83,
C3 = Rehmani

Treatments	N.	P_2O_5, Kg / ha
F1	0	0
F2	100	0
F3	100	50
F4	100	75
F5	150	0
F6	150	50
F7	150	75
F8	200	0
F9	200	50
F10	200	75

The sowing was done in lines with single counter drill. Full dose of Phosphorus was applied at first irrigation and the Nitrogen was applied at the time of flowering. All necessary agricultural practices were done as usual.

Results

The present study was carried out to determine the effect of different NP fertilizer levels on the yield of cotton cultivars at cotton research section, Agriculture research institute Tandojam. Cultivar TH-35/83 gave comparatively highest seed cotton yield per plants i.e. 95.13 gms followed by TH-41/83 i.e. 84.19 gms per plant. Where as the lowest yield per plant 83.69 was recorded in cultuvar Rehmani. It has been observed that NP, fertilizer level 200-50 kg/ha gave highest yield i.e. 100.52 gms / plant followed by fertilizer levels 150-50 kg/ha i.e 92.66 gms/plant. shows seed cotton yield per plot and per hectare. Cultivar TH-41/83 gave highest yield i.e. 4.89 kg/plot and 3773.12 kg/ ha, followed by TH-35/83 i.e. 4.01 kg/ plot and 3094.11 kg/ha. While cultivar Rehmani gave lowest yield i.e. 3.97 kg/plot and 3063.25 kg/ha. The data further shows that fertilizer levels 200-75 kg/ha produce maximum yield i.e. 4.88 kg/plot and 3765.40 kg/ha followed by 4.80 kg/plot and 3703.68 kg/ha under fertilizer level 200-50 NP kg/ha.

Table 1:Average performance (seed cotton yield grms/plant) of cotton cultivars under different NP fertilization treatments

Treatments		Cultivars			Average
	N-P	TH-41/83	TH-35/83	Rehmani	
F1=	0-0	85.40	70.76	78.33	78.16
F2=	100-0	86.80	108.26	72.10	89.05
F3=	100-50	80.36	109.13	81.76	90.41
F4=	100-75	67.43	99.76	83.23	83.47
F5=	150-0	83.13	91.96	87.70	87.59
F6=	150-50	86.56	97.03	94.40	92.66
F7=	150-75	86.13	79.03	69.33	78.16
F8=	200-0	96.75	64.23	92.86	84.60
F9=	200-50	78.76	116.66	106.13	100.52
F10=	200-75	91.36	114.46	70.56	92.12
Average		84.19	95.13	83.69	

Table 2: Performance (seed cotton yield kg per plot and per hectare) of cotton cultivars under different NP fertilizer levels

Treatments		Cultivars				Yield kg/ha
	NP	TH-41/83	TH-35/83	Rehmani	Average/plot	
F1	0-0	3.86	3.31	2.96	3.37	2600.29
F2	100-0	5.10	3.90	2.26	4.42	3410.42
F3	100-50	5.08	3.76	3.53	4.12	3170.99
F4	100-75	5.30	5.03	3.93	4.75	3665.16
F5	150-0	5.20	3.33	3.70	4.07	3140.41
F6	150-50	4.85	4.76	4.03	4.58	3533.92
F7	150-75	5.00	3.50	3.93	4.14	3194.92
F8	200-0	4.10	3.39	3.90	3.79	2924.42
F9	200-50	5.46	4.63	4.33	4.80	3707.68
F10	200-75	5.03	4.53	5.10	4.88	3765.40
Average		**4.89**	**4.01**	**3.97**	**4.29**	**3311.36**
Yield/ ha		**3773.12**	**3094.11**	**3063.25**		

Discussion

Khan *et al.*, (1993) applied 10 nitrogen levels 0,56,84,112, 168, 168, 196 and 224 kg /ha and also 50 kg P_2O_5/ha. They reported that 224 Kg N/ha increased upto 106.8% seed cotton yield as compared to rest of other nitrogen levels. Patel *et al.*, (1993) applied 0, 40, and 80 Kg N/ha. They found that the seed cotton yield of cultivar-H6 increased up to 0.58 to 0.86 and 0.98 t/ha. Choudhry *et al.*, (1994) applied 04 levels of P_2O_5, 0, 49,99 and 148kg N/ha. They observed that cotton crop significantly responded to the levels of phosphorous and nitrogen increased seed cotton yield. Ebaid (1994) applied different nitrogen levels 30, 45 and 50 kg/ha. Results showed that cottonseed yield increased with the increasing of N, levels. Latif *et al.*, (1994) studies the combination of the nitrogen and phosphorus on cotton varities (Niab-78 and Niab-86). They observed that the increasing rate of N, from 0 to 200 kg/ha. Significantly increased seed cotton yield in both varities. Our findings are in general agreement with the findings of above

workers. We also observed that seed cotton yield increased with the increasing of Nitrogen and Phosphors levels.

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