



# EFFECT OF DIFFERENT VARIETIES AND NUTRIENT DOSES ON GROWTH AND YIELD ATTRIBUTES AND COTTON YIELD IN *HIRSUTUM* COTTON

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## Abstract

A field experiment was conducted during *kharif* 2012 and 2014 at oil seed farm, Kalyanpur, Kanpur to study the effect of different genotypes and nutrient doses on growth and yield attributes and yield in *hirsutum* cotton. Data revealed that all the growth and yield attributing characters *viz.* plant height, no of bolls/plant and boll wt improved significantly with different genotypes. Highest seed cotton yield (985 kg/ha) was recorded with RS 2013 than Vikas (899 kg/ha) and ₹ 810 (922 kg/ha). The increase in seed cotton yield with ₹ 2013 was to the tune of 9.56 and 6.83 percent than Vikas and ₹ 810, respectively. Application of 125% RDF improved significantly yield of cotton than 100% RDF. Significantly higher seed cotton yield (955kg/ha), lint yield (320kg/ha) and seed yield (632kg/ha) were recorded with 125% RDF than 100% RDF and at par with 150% RDF. The increase in yield of cotton with 125% RDF was to the tune of 8.17%, 7.74% and 8.77% than application of 100% RDF.

**Key words:** Cotton, GOT %, lint yield, nutrient levels, seed cotton yield and seed yield.

## Introduction

Cotton is an important cash and fiber crop of India playing significant role in Indian economy by contributing 1/3 earning to the country. Cotton is grown in India on area about 11.88 mh with production of 352 lakh bales and productivity of 503 kg/ha. India has first rank in area as well as production in the world. (Anonymous, 2015). UP has very quiet low area about 7800 ha under cotton cultivation due to poor yield of cotton. Higher potential yield of cotton can be achieved by using high yielding varieties/hybrids and suitable agronomic practices *viz* fertilizers application. Imbalanced uses of fertilizers may effect vegetative and reproductive growth resulting in decline seed cotton yield. (G. S., Buttar *et.al* 2010). So, it is very essential to determine the suitable high yielding variety and optimum dose of fertilizers for boosting seed cotton yield. Keeping above fact in mind, present investigation was carried out to find out suitable variety and doses of fertilizer in *hirsutum* cotton.

## Materials and Medhods

The field experiment was conducted during *kharif* seasons of 2012 and 2014 at Oil Seed Farm, Kalyanpur

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of C.S. Azad University of Agriculture and Technology, Kanpur to study the effect of different varieties and nutrient doses on growth and yield attributes and seed cotton yield in *hirsutum* cotton. In all 9 treatments (3 varieties in main plot V1-Vikas, V2-RS 2013, V3-RS 810 and 3 nutrient doses in sub plot N1-100% RDF, 125% RDF and 150 % RDF) were tested in split plot design with 3 replication. The soil of experimental field was sandy loam in texture having pH of 7.9, low in available OC% (0.31), medium in available P<sub>2</sub>O<sub>5</sub> (12 kg/ha) and medium in available K<sub>2</sub>O (183 kg/ha) during Ist year and sandy loam in texture having pH of 7.9, low in available OC% (0.41), medium in available P<sub>2</sub>O<sub>5</sub> (16 kg/ha) and medium in available K<sub>2</sub>O (188 kg/ha) during IInd year. Cotton planting was done at spacing of 67.5x30 cm on 29.05.12 and 02-06-14 during Ist and IInd years, respectively. All the varieties and nutrient doses were used as per treatment. Recommended dose of fertilizer was applied at the rate of 60:30:20 kg NPK/ha. All the agronomic and plant protection measures were followed during crop season. Picking of the crop was done on 09-11 -12 and 20-11-14 during Ist year and IInd years of the study, respectively.

## Results and Discussion

### Effect of Genotypes

Data indicated (table 1) that *hirsutum* variety ₹ 2013 significantly produced more plant height (136.3 cm) as compared to Vikas (130.4 cm) and this plant height was at par with ₹ 810 (137.4 cm). Significantly highest no of bolls/plant (27.0) was recorded with the variety of ₹ 2013 than Vikas (24.7 bolls/plant) and it was at par with ₹ 810 (26.9). Highest boll wt (3.16 g) was observed with ₹ 810

3.14 g was noted with 125% RDF as compared to 100 % RDF (3.09 g) and it was at par with 150 % RDF (3.17 g). The increases in no of bolls/plant and boll wt of cotton might be due to the fact of increase in growth attributes *viz.* plant height, sympodial branch and dry wt of cotton. These results are in conformity with the finding of Kumar *et al.* (2011) and Kaur *et al.* (2010). Significantly higher seed cotton yield (955 kg/ha), lint yield (320 kg/ha) and seed yield (632 kg/ha) were recorded with application of 125% RDF as compared to 100% RDF (883,293 and

**Table 1:** Effect of different varieties and Nutrient doses on growth and yield attributes and seed cotton yield in *hirsutum* cotton (Pooled of two years data).

Treatments	Plant height (cm)	No of bolls /plant	Boll wt (g)	Seed cotton yield (kg/ha)	GOT%	Lint yield (kg/ha)	Seed yield (kg/ha)	Plant (stand /ha)
<b>Main plot(varieties )</b>								
V1-Vikas	130.4	24.7	3.10	899	33.2	298	595	32948
V2-RS 2013	136.3	27.0	3.14	985	33.6	332	648	32196
V3-RS 810	137.4	26.1	3.16	922	33.5	311	609	32893
C. D.(P=0.05)	2.47	0.96	NS	NS	0.32	9.71	NS	NS
<b>Sub plot(Nutrient doses)</b>								
N1-100%RDF(60:30:20 NPK/ha)	132.4	25.7	3.09	883	33.35	297	581	32587
N2-125% RDF	135.3	26.1	3.14	955	33.52	320	632	32722
N3-150% RDF	136.4	26.2	3.17	968	33.58	325	639	32728
C. D.(P=0.05)	NS	NS	0.067	64.36	NS	22.0	43.39	NS

followed by ₹ 2013 (3.14 g) and Vikas (3.10 g). Maximum seed cotton yield (985 kg/ha) was recorded with ₹ 2013 as compared to ₹ 810 (922 kg/ha) and Vikas (899 kg/ha). The increase in seed cotton yield with ₹ 2013 to tune of 9 % and 7.8 % than Vikas and ₹ 810, respectively. The increase in seed cotton yield with ₹ 2013 variety might be due to more no bolls/plant and boll wt. These results are in conformity with the finding of Kumar *et al.* (2010). Significantly higher GOT% (33.6) and lint yield (332 kg/ha) were obtained with ₹ 2013 as compared to Vikas (33.2 % and 298 kg/ha), respectively and these parameter were at par with ₹ 810 (33.5%) and (322 kg/ha), respectively. Highest seed yield was recorded with ₹ 2013 (648 kg/ha) than Vikas and ₹ 810 but did not reach to level of significant.

### Effect of Nutrient doses

Data revealed (table 1) that all the growth and yield attributing characters were improved with increasing doses of nutrient. Highest plant height 136.4 cm and no of bolls/plant 26.2 were obtained with 150 % RDF than 100 % RDF (132.4 cm and 25.7 and 125% RDF (135.3 cm and 26.1), respectively. Significantly higher boll wt

581 kg/ha, respectively. This yield was at par with 150 % RDF. The increase in yield with 125% to the tune of 8.17%, 7.74% and 8.77% than 100% RDF application. The increase in yield of cotton might be due to more no of boll and boll wt of cotton. These results are in conformity with the finding of Kaur *et al.* (2010), Kumar *et al.* (2010), Pawar *et al.* (2010) and Kumar *et al.* (2011). The ginning out turn % of cotton did not reach to the level of significant with different doses of fertilizers application.

## References

- Anonymous (2015). Annual report of All India Coordinated Cotton Improvement Project, CICR, Coimbatore pp A2-3
- Buttar, G.S., K.S. Singh Sekhon and Sudeep (2010). Effect of different spacing and nitrogen levels on growth and yield attributes of American Cotton Bt hybrids under irrigated condition. *J. Cotton. Res. Dev.*, **24(1)**:73-75.
- Kaur, Paminder, Maninder Kaur, M.S. Gill and G.S. Butter (2010). Response of Bt cotton hybrids RCH 134 to varied spacing and fertility levels under Punjab condition. *J. Cotton. Res. Dev.*, **24(2)**:189-192

- Kumar, Mandeep, R.K. Ranu, D.S. Nehra and A.K. Dhaka (2011). Effect of spacing and fertilizers on growth, yield and quality of different genotypes. *J. Cotton. Res. Dev.*, **25(1)** : 236-239.
- Kumar, Jagdish, M.S. Parhar, R.V. Singh Chouhan and Rakesh Babu (2010). Effect of different nutrient on growth, yield attributes and yield of cotton under varying spacing. *J. Cotton .Res. Dev.*, **24(2)** :193-195.
- Pawar, S.U, A.N. Gitte, G.P. Bhosle and S.B. Suryawanshi (2010). Effect of fertilizer levels and plant densities on yield, gross return and monetary return of Bt cotton hybrids. *J. Cotton Res. Dev.*, **24(2)** :182-185.