

## Influence of sowing time and moisture regimes on growth, seed cotton yield and fibre quality of Bt-cotton\*

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**Abstract:** To find out optimum sowing time and suitable moisture regime for Bt-cotton and to assess their effects on growth, yield and fibre quality parameters, field experiment was conducted at Agriculture Research Station, Dharwad for two years (2005-06 and 2006-07) under irrigated conditions. Sowing time had a significant influence on seed cotton yield. Early sown crop produced significantly higher yield (2227 kg/ha) than late sowing in July (1809 kg/ha) and August (1004 kg/ha). Irrigation at 0.8 IW/CPE ratio produced significantly more seed cotton yield (1807 kg/ha) as compared to 0.4 or 0.6 IW/CPE ratios but was on par with 0.6 IW/CPE ratio (1731 kg/ha). Productivity was affected to a greater extent by date of sowing than irrigation levels. Loss in yield due to late sowing was not compensated with increase in irrigation level. Different moisture regimes did not affect the fibre length, fibre strength, fibre fineness and uniformity percentage. Whereas, fibre maturity was significantly increased with 0.6 and 0.8 IW/CPE ratio. Cotton with best fibre quality can be produced with June sowing at 0.6 IW/CPE ratio, which can produce highest fibre length, fibre strength, uniformity percentage and maturity ratio under transitional tract of Dharwad.

**Key words :** Bt- cotton, sowing time, moisture regime, IW/CPE ratio,

### Introduction:

After release of Bt-cotton in the country meager efforts were made to decide the production technologies to boost the productivity of Bt-cotton, thinking that the production technologies already developed for the non Bt-cotton are suitable to the Bt-cotton production. Bt-cotton, when compared with its counter part is high yielding with shorter duration and compact bushy frame. Change of plant type in Bt-cotton, its duration and response to pests necessitates studying the effects of environment in relation to planting time. Traditional cottons have been suffering severely with bollworm infestations when sown late in the season and early sown cotton in the season provided highly productive with good quality fibers. Protection from sucking pest can be ensured with suitable plant protection measures. So also the problem of bollworms can be solved very well by transgenic cotton. In the light of these thoughts further advantages of right time of sowing may help to boost productivity of Bt-cotton. In Karnataka, large area which was under cotton in command areas of irrigation projects reduced to greater extent due to late sowings caused by late release of canal water. Since late sowings are inevitable under certain situations. Performance under such late sown conditions needs to be assessed. If Bt-cotton proves better under late sown condition due to its insect resistance capacity, the more and more area can be brought under Bt-cotton. So area under cotton in the state can be increased to greater extent. As stated by several workers that though earliness in cotton is an inherited varietal trait, it is also influenced by the prevailing weather conditions, cultural practices and plant protection measures

(Fowler and Ray, 1977). Therefore, studies on response of Bt-cotton to time of sowing pays much advantage.

Cotton in general does not withstand heavy irrigations. Scheduling of irrigation thus become important in cotton since water is valuable, costly and scarce on one hand. On the other, excess water encourages vegetative growth. Excess growth of cotton is conducive for pests and disease attack. It also reduces the flow of air and incidence of sunlight resulting in reduced reproductive growth and finally lower yields. Thus, due to different growth habit and duration of Bt-cotton with that of non-Bt cotton, the existing schedule of irrigation may become improper if the same is followed and there is need to workout the irrigation schedule.

### Material and methods

Field experiment was conducted for two years from 2005 to 2006 at Agriculture Research Station, University of Agricultural Sciences, Dharwad, Karnataka. Soils were medium deep black and neutral in their pH (7.6) with available N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O are in the class of low, medium and high, respectively. Experiment was laid out in split-plot design with three replications. Moisture regimes of 0.4, 0.6 and 0.8 IW/CPE ratio and unirrigated control were in main plot. Different sowing dates in June, July and August were in sub-plots. Plot size was 5.4 m x 5.4 m. Recommended dose of fertilizer to irrigated intra hirsutum hybrid cotton was 120: 60: 60 kg N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O per hectare. At sowing, 50% N and 100 percent recommended P, K were applied and remaining 50% N was applied at 50, 80 and 110 DAS.

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