

Sowing time of cotton and its performance in South-West Punjab

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ABSTRACT

A three-year (1990-92) field experiment was conducted at Regional Research Station, Bathinda, on a loamy sand soil to study the effect of sowing time of American cotton on its growth and yield. Cotton was sown after a presowing irrigation on April 22 to June 23 at fortnightly interval. The maximum air temperature during emergence showed wide fluctuations in the three years. During the 1st year, the maximum weekly air temperature was higher during 15th, 16th and 20th to 24th standard week than during 2nd and 3rd years. The maximum air temperature during 14th, 17th and 18th week of the 2nd year was higher than in other two years and later dropped to less than 37°C in 24th and 25th week. The number of post sowing irrigations was highest during 2nd year due to subnormal rainfall and varied with sowing time in the three years. The mean seed cotton yields were at par up to May 23 and subsequent sowings drastically reduced the seed cotton yield. May sown crop yielded highest during second year.

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Cotton has the important character of high lint production and long staple length. Hirsutum species is popularly known as American cotton grown on 2.8 million hectares in India which is about 31 per cent of total area under this crop (Raje, 1999). American cotton is mostly grown in Punjab, Haryana, Rajasthan, Gujrat, Maharashtra, Madhya Pradesh, Tamilnadu and Karnataka. Mohammed *et al.* (2003) opined that sowing time determines cotton yield and yield components rather than disease incidence. The sowing time of cotton differs in irrigated (Tomar *et al.*, 1989 and Dargan, 1970) and rain fed conditions (Sukhadia and Dhoble, 1990). In southwest Punjab it staggers from mid April to mid June. In some years the crop has to be resown two to three times due to severity of the climate, thereby necessitating profuse expense of the scarce irrigation (canal) water. The groundwater in the region is largely marginal to unfit and cannot be used for presowing irrigation. Any canal closure during this period further delays the sowing. The present investigation, therefore, was conducted to study the

performance of cotton sown on different dates.

MATERIALS AND METHODS

A field study was conducted with cotton (*Gossypium hirsutum*, L. F. 1054) for 3 years (1990-92) at the farm of Regional Research Station, Bathinda located at an altitude of 200 m, between 29° 40' to 30° 30' N latitude and 74° 20' to 75° 40' E longitude. The soils are non-saline/sodic, low in organic carbon (Table 1), medium in available phosphorus, and high in available potassium. The soils are stratified with texture varying from loamy sand to loam up to 180 cm soil depth. The in situ field capacity was 40.7 cm for 180 cm soil profile. The ground water table at the site remained more than 9 m below the surface during all the growing seasons. The crop was sown from April 22 to June 23 at about fortnightly intervals during 1990-92. However, some of the sowings had to be missed due to the canal closures in different years. The weekly maximum air temperature during the three years is shown in Fig. 1. The seasonal rainfall was

Table 1 : Properties of soil profile at experimental site

Depth	Texture	Bulk density, (Mg m ⁻³)	1 : 2 soil water suspension		O. C., (%)	Available soil moisture, cm
			pH	E C, (dSm ⁻¹)		
0-15	1s	1.48	8.2	0.38	0.26	2.8
15-30	1s	1.54	8.3	0.31	0.24	2.9
30-60	1	1.40	8.8	0.33	0.21	5.2
60-90	1	1.43	8.4	0.29	0.20	5.6
90-120	1s	1.52	8.3	0.33	0.19	5.4
120-150	1s	1.52	8.3	0.33	0.19	5.7
150-180	1s	1.50	8.4	0.32	0.18	5.5

1- loam and 1s- loamy sand