

EFFECTS OF SOWING TIME ON YIELD, GOT AND FIBER TRAITS OF UPLAND COTTON (GOSSYPIUM HIRSUTUM L.)

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ABSTRACT-The study was conducted during cotton season 2014-15 at Central Cotton Research Institute Sakrand to investigate the appropriate time and influence of sowing dates on yield, GOT and fiber traits of upland cotton. The yield attributes; viz. bolls per plant, seed index, boll weight, seedcotton yield, ginning outturn and fiber quality parameters, staple length, fiber fineness and fiber strength was affected highly significant against sowing dates and varieties. The bolls per plant and boll weight were non significant as interaction between sowing date into varieties. The result suggested that cotton crop sown from 1st May given highest results for yield attributing traits seedcotton yield, bolls per plant, boll weight, seed index, whereas it gradually decreased after 30 days interval, when crop sowing late. As regards the fiber quality parameters staple length, fiber fineness and fiber strength also obtained highest values on 1st May sowing, latter on it reduced when crop sowing late on 1st June after 30 days interval.

Keywords: Sowing dates, *Gossypium hirsutum* L., Yield, GOT, Fiber Traits.

1. INTRODUCTION

Cotton can rightly be considered as an internationally traded crop that plays a vital role for uplifting country's economy. A better crop growth ensures with the appropriate coordination of different agronomic practices and judicious use of various inputs and among these, sowing date is important to explore the potential of a cultivar in the area. Cotton is an important fiber crop and occupies a key position in the world's trade and economy particularly in Pakistan. Sowing a crop too early appears with poor crop stand that results lower yield potential and alternately, planting too late commonly becomes very vegetative and difficult to manage resulting in lower seed cotton yield as well.

It was also observed that even a delay of a week in sowing may result in a marked decrease in yield. Soomro *et al.*, [10] recommended that May 15 sown crop result increased number of bolls plant⁻¹, boll weight and seed cotton yield and further observed that cotton sown earlier or later than its optimum time showed a steadily decreased in its yield. Arain *et al.*, [2] reported that maximum seed cotton yield was produced when cotton was sown on May 1st at Nawab Shah Sindh Pakistan. Arshad *et al.* [3] studied the effect of planting dates on fiber characters and suggested that when sowing time was late, staple length, fiber maturity and fiber strength were drastically decreased. The varietal differences were highly significant for all the characters which he studied.

The yield of cotton is mostly associated with sowing

dates as boll weight and formation of bolls which are interred linked with the yield [8]. Whereas other scientist i.e. Ibrahim *et al* [9] suggested that higher values for staple length were obtained when crop was sown during early part of the season. Bilbro and Ray [6] also observed that fiber length and micronaire units were reduced due to late planting.

2. MATERIALS AND METHODS

The sowing date trail conducted with four planting dates 16th April, 1st May, 15th May and 1st June, to investigate the appropriate sowing time of three cotton varieties at Central Cotton Research Institute Sakrand during the cotton season 2014. The experiment was designed with four replications in randomized complete block design, row to row distance 75 cm and between plant to plant distances 30 cm was maintained. The other inputs and plant protection measures were applied accordingly as per need. The characters were studied bolls per plant, seed index, boll weight, seedcotton yield, ginning outturn percentage, staple length, fiber fineness and fiber strength of cultivars CRIS-533, CRIS-585 and CRIS-342 developed by CCRI Sakrand.

3. RESULTS AND DISCUSSION

The Analysis of variance presented in Table-1. The variance due to sowing dates was highly significant for all the characters such as bolls per plant, seed index, boll weight, seed cotton yield, ginning outturn, staple length, fiber fineness and fiber strength. The variance due to varieties was also highly significant for all the characters except fiber fineness. The variance due to interaction between sowing dates into varieties were also highly significant for the trait seed index, seed cotton yield, ginning outturn, staple length, fiber fineness and fiber strength except bolls per plant and

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boll weight, both were non significant. These results hence suggested that data is worth for further processing and interpretations.

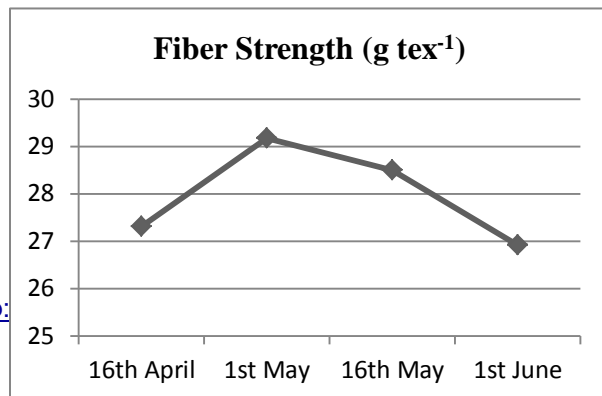
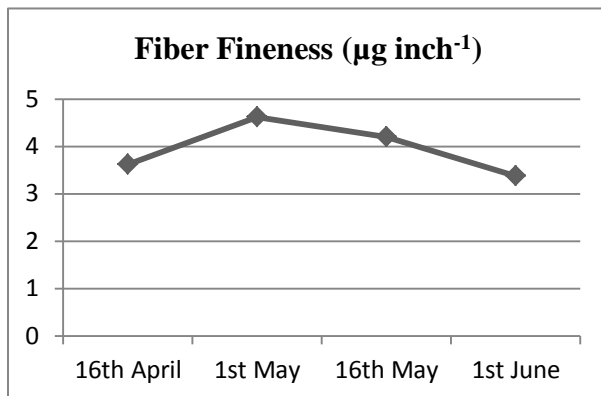
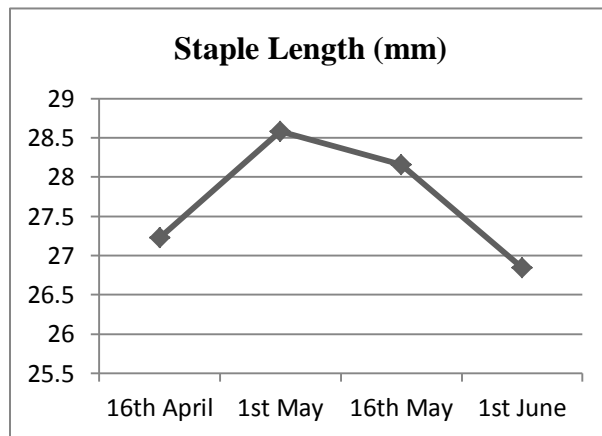
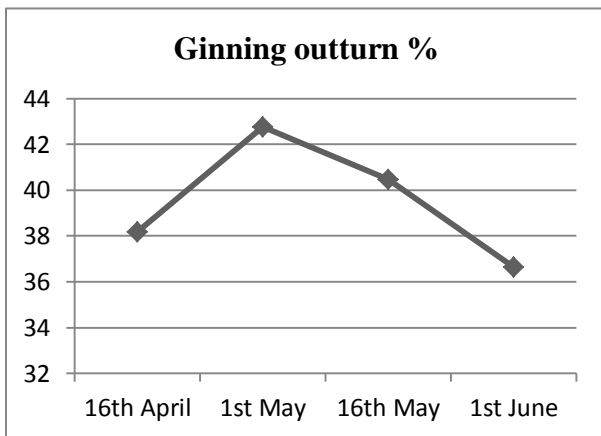
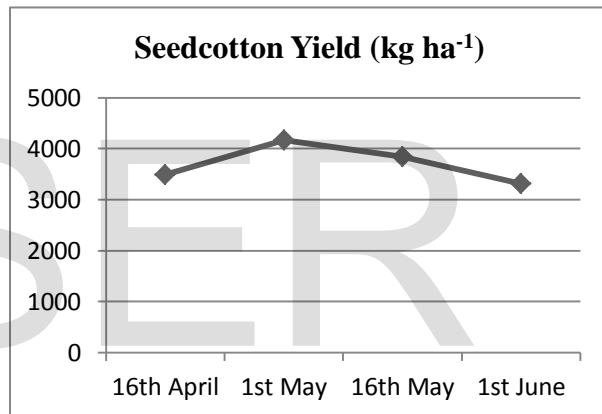
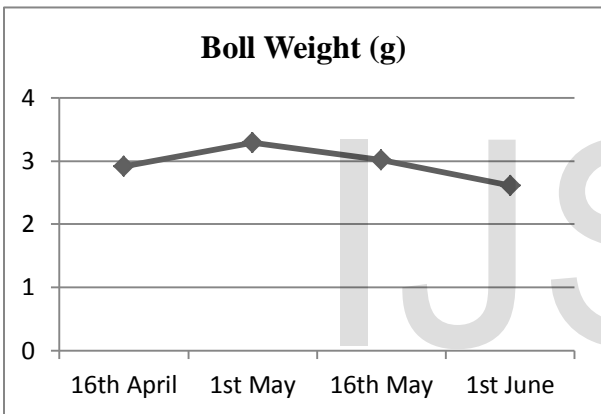
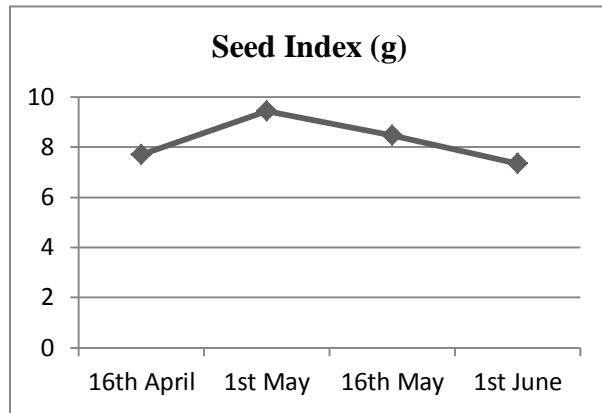
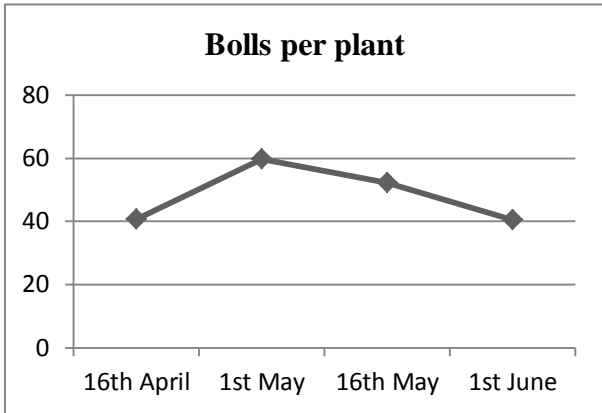
The mean performance of varieties presented in table-2. Among the varieties CRIS-533 was given highest values for the traits; number of bolls per plant, seed index, seed cotton yield, fiber fineness and fiber strength, whereas for the same traits the second scores was CRIS-585. For the traits; boll weight, staple length and ginning outturn percentage the variety CRIS-585 was given top values presented in table-2. The variety CRIS-342 (standard check) was lowest position among the varieties for all the traits except seed index, in which it was the second scorer.

The mean performance of sowing dates effects illustrated in table-3 for all the traits. The maximum number of bolls was recorded (59.77) when crop sown from 1st May and it gradually decline after 30 days interval on 1st June. Seed index was also noted highest (9.43) at 1st May. The seed cotton yield was also observed highest (4164 kg ha⁻¹) when crop sown at 1st May, whereas it slowly declined as crop sown late after 30 days interval at 1st June. It indicated that due to temperature and environmental conditions effects on the production of seed cotton. The maximum boll weight was achieved (3.29) for sowing period from 1st May, after that it reduced as crop sown at 1st June after one month period of interval. The results further suggested that for the characters number of bolls per plant, seed index, and seed cotton yield and boll weight; the appropriate period of sowing time is from 1st May for the varieties of CRIS-533, CRIS-585 and CRIS-342 for highest results and it declined when delayed in sowing. These results also presented by researchers; Ali H. *et.al* [1] observed the yield attributes; such as number of bolls, seed index, boll weight and seed cotton yield. The results revealed that cotton yield were reduced with later planting dates, which showed that both the cultivars with early sowing produced gave higher yield as compared to the late sowing date. Arain *et al.*, [2] reported that maximum seed cotton yield was produced when cotton was sown on May 1st at Nawab Shah Sindh Pakistan. Deho, Z.A [7] suggested that the sowing non May 1st produced the highest seed index, boll weight and seed cotton yield, it decreased when crop sowing late. Soomro *et al.*, [10] presented that, it has been observed that May 15 sown crop gave increased number of bolls plant⁻¹, boll weight and seed cotton yield and further observed that cotton sown earlier or later than its optimum time showed a rapid decline in its yield.

The mean values of GOT and fiber traits presented in talbe-3, it revealed that the highest GOT% (42.76) was observed at 1st May sowing, meanwhile it steadily diminish at sowing later. The quality parameters staple length, fiber fineness and fiber strength were affected by sowing dates. The higher values obtained for staple length, fiber fineness and fiber strength 28.58, 4.62 and 29.17 respectively when crop sown at 1st May, meanwhile it gradually decreased at late sowing on 1st June after 30 days. Ali H. *et.al* [1] observed staple length and fibre strength were reduced with later planting dates, which showed that early sowing produced gave higher staple length and fiber strength compared to the late sowing date. Awan *et.al* [4] suggested that some fiber

quality traits like fiber strength and ginning outturn (GOT %) were affected significantly by time of sowing. The traits like fiber fineness and staple length also affected by different sowing times. Baloch *et.al.* [5] results demonstrated that when the planting date was delayed, staple length and fibre strength were significantly reduced. Wrather, *et.al.* [11] presented results that fiber length was significantly shorter for the first than the last planting date.

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16 th April	40.58c	7.70c	2.91c	3486c	38.17c	27.23c	3.62c	27.31c
1 st May	59.77a	9.43a	3.29a	4164a	42.76a	28.58a	4.62a	29.17a
16 th May	52.16b	8.46b	3.02b	3836b	40.47b	28.16b	4.20b	28.50b
1 st June	40.36c	7.33d	2.61d	3319d	36.63c	26.85d	3.38d	26.91d
LSD @ 0.05%								
Sowing								
Dates	1.84	0.28	0.14	27.96	0.51	0.19	0.17	0.23

BPP = Bolls per plant, SI = Seed Index, BW = Boll Weight, SCY = Seed Cotton Yield
GOT = Ginning outturn, SL = Staple Length, FF = Fiber Fineness, FS = Fiber Strength

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