Twenty five cotton genotypes were tested with two standard check varieties in National Coordinated Varietal Trial (NCVT). The significant difference was observed among all the genotypes of yield, its contributing traits and fiber quality traits, which indicated sufficient genetic diversity, were present in the material. Among the genotypes, ICI-2121, GH-Hadi and NIAB-898 are high yielding cotton genotypes; these are suggested for commercial cultivation at the environmental condition of central zone of Sindh to boost up cotton production and at the same time utilization in hybridization and breeding program to evolve high yielding variety. For the fiber quality traits NIBA-898 and NS-191 are suitable genotypes to meet the criteria of textile sector.

**RESULTS AND DISCUSSION:** The significant difference was observed among all the genotypes of yield, its contributing traits and fiber quality traits at 1% and 5% probability, which indicated sufficient genetic diversity, were present in the material (table 1). The significant variation was recorded in mean performance of genotypes for all the characters. Regarding the plant height (figure 1), the tallest varieties was observed NS-191 given (107.2 cm), while lowest was given by NIAB-898 (85.2 cm). The variation in plant height among various cotton genotypes were due to significant difference in genetic makeup of strains. Similar findings were reported by Anwar et al. (2002), Corpus (2006) and Ashokkumar and Ravikesavan (2011). Cotton breeders and farmers prefer medium height varieties due to lodging. Therefore, selection of varieties should be based on medium plant height. The per se performance of sympodial branches (figure 2) revealed significant variation among cultivars, FH-444 given maximum sympodial branches (22.7).

It was statistically at par with variety NIA-85 (22.2). While,....
Table 1: Analysis of variance means performance and statistical analysis of yield and fiber traits of cotton.

<table>
<thead>
<tr>
<th>Traits</th>
<th>Replication</th>
<th>Genotypes</th>
<th>Error</th>
<th>CD 5%</th>
<th>CD 1%</th>
<th>CV %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DF-2</td>
<td>DF-26</td>
<td>DF-52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Height</td>
<td>51.308</td>
<td>99.664**</td>
<td>42.591</td>
<td>10.53</td>
<td>14.03</td>
<td>6.75</td>
</tr>
<tr>
<td>Sympodial Branches</td>
<td>13.823</td>
<td>14.531**</td>
<td>6.753</td>
<td>4.20</td>
<td>5.59</td>
<td>9.86</td>
</tr>
<tr>
<td>Bolls Plant-1</td>
<td>66.952</td>
<td>112.107***</td>
<td>44.066</td>
<td>10.87</td>
<td>14.49</td>
<td>8.51</td>
</tr>
<tr>
<td>Boll Weight</td>
<td>0.0267</td>
<td>0.4587**</td>
<td>0.082</td>
<td>0.47</td>
<td>0.62</td>
<td>7.84</td>
</tr>
<tr>
<td>Seed cotton Yield</td>
<td>38971</td>
<td>657178**</td>
<td>10775</td>
<td>170.07</td>
<td>218.5</td>
<td>4.36</td>
</tr>
<tr>
<td>Ginning Outturn</td>
<td>0.011</td>
<td>21.515**</td>
<td>0.327</td>
<td>1.39</td>
<td>1.85</td>
<td>4.50</td>
</tr>
<tr>
<td>Staple Length</td>
<td>0.508</td>
<td>3.332**</td>
<td>0.245</td>
<td>0.81</td>
<td>1.08</td>
<td>2.87</td>
</tr>
<tr>
<td>Micronaire Value</td>
<td>0.007</td>
<td>0.3418**</td>
<td>0.0103</td>
<td>0.17</td>
<td>0.23</td>
<td>2.58</td>
</tr>
<tr>
<td>Fiber Strength</td>
<td>0.0414</td>
<td>6.205**</td>
<td>0.709</td>
<td>1.37</td>
<td>1.83</td>
<td>3.05</td>
</tr>
</tbody>
</table>

Figure 1: Plant height.
While, minimum was noted in strain BS-18 (14.0). The results are in accordance with Cupur (2006), Ehsan et al. (2008) and Ashokkumar and Ravikesavan (2011).

Bolls plant-1 considered as important character that has direct effect on seed cotton yield. Among the varietal performance GH-Mubarak formed maximum (46.0) number of bolls plant-1, followed 45.4 and 43.2 given by varieties AA-993 and NIAB-898 (figure 3) as compared with standard check varieties, CIM-602 and IUB-13. While, minimum number of bolls plant-1 produced by BS-18 (22.8), which indicated that variety could not perform well in Sakrand environment that could be due to stability and changing environmental condition. Boll weight is also an important trait which contributed in seed cotton yield. Out of 27 genotypes FH-444 given bigger boll and stood top as compared with other advance cotton genotypes and standard check varieties.

Figure 2: Sympodial Branches
The smaller boll weight was weighted in variety NIA-85 (figure 4). The character seed cotton yield place a unique position as compared to other traits. It is a joint contribution of other traits and their direct effect on increasing and decreasing yield. All the cotton genotypes were statistically differ from each other. The utmost seed cotton yield was produced by genotypes ICI-2121 (3279 kg ha-1), followed by GH-Hadi (3135 kg ha-1) and NIAB-898 (3087 kg ha-1) which were highest among all other genotypes as well as comparison with standard check varieties CIM-602 and IUB-13 (figure 5). Whereas, the lowest seed cotton yield was given by BZU-05 and IUB-69 which were below from standard check varieties. The results indicated that every genotype performed in different way at the environmental condition of Sakrand on the basis of varietal genetic makeup, characters, stability, environmental condition and might be soil factors. Therefore, it is suggested that varieties which possess higher boll plant-1, boll weight and seed cotton yield could be preferred for commercial cultivation.
Figure 3: Bolls Plant

Figure 4: Boll Weight

as well as utilization in breeding program to improve the characters. Corpur (2006), Elsan et al. (2008) and Ashokkumar and Ravikesavan (2011) also reported significant difference among varieties for bolls plant, boll weight and seed cotton yield. Hofs et al. (2006) documented variation in boll weight due to varieties. Khalid and Mueen-u-Din (2018) found variation in mean performance of genotypes for bolls plant,

Figure 5: Seed cotton yield.

Figure 6: Ginning outturn


Data pertaining to ginning outturn per se performance (figure 6) indicated that ICI-2121 ginned higher ginning outturn (42.7%) followed by Bahar-07, BS-18 and GH-Mubarak compared with
standard check varieties CIM-602 and IUB-13. While, nine advance strains lowest ginning outturn which was below than standard. The results of varieties for ginning outturn was found statistically differ from each other. The results are supported with Wang et al. (2004), Ehsan et al. (2008) and Ashokkumar and Ravikesavan (2011). The comparison of treatment means indicated that varieties had significant effect on staple length. The longest staple length was measured in genotype NIAB-898 (28.2 mm) and NS-191 (28.1 mm) as compared with standard check varieties CIM-602 and IUB-13. However, out of twenty five advance genotype only two genotypes given staple length more than set standard (figure 7). As regards the trait fiber strength (figure 8), the strongest fiber strength was noted in genotype NS-191 and FH-Afnan as compared with other genotypes and standard check variety.

Figure 7: Staple length

Figure 8: Fiber strength

Fiber fineness/micronaire value is an important trait in fiber quality parameters and is very valuable for textile industry. The significant difference in mean performance was observed for micronaire value (figure 9).

Figure 9: Micronaire value

The genotypes NIAB-898 and NS-191 declared as best which produced fineness fiber 3.0 and 3.3 respectively, as compared with other genotypes and standard check varieties CIM-602 and IUB-13. The findings are agreement with those of Copur (2006), Ehsan et al. (2008) and Ashokkumar and Ravikesavan (2011), Khokhar et al. (2017).

CONCLUSION: It was concluded that ICI-2121, GH-Hadi and NIAB-898 are high yielding cotton genotypes, these are suggested for commercial cultivation at the environmental condition of central zone of Sindh to boost up cotton production and at the same time utilization in hybridization and breeding program to evolve high yielding variety. For the fiber quality traits NIBA-898 and NS-191 are suitable genotypes to meet the criteria of textile sector.

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