operative basis among three provinces of the country. During the year 2002-2003, sixteen (16) approved promising lines were tested at the experimental field of Quaid-e-Awam Agriculture Research Institute, Larkana to compare quantitative and qualitative performances to develop most suitable and promising varieties for the area. The variety LRK-2001 proved good response of environmental reaction for Brix % and cane yield and its inclusion as approved variety was recommended for general cultivation in upper Sindh province (Naich, *et al*., 2006). The present study was conducted by keeping in view the major objective of varietal improvement under agro-ecological conditions of Larkana, Sindh.

MATERIALS AND METHODS

Investigations to evaluate the most suitable varieties for the area, were carried out through varietal trial including twelve varieties with one check (L-116) viz. Chandka, LRK-2003, LRK-2004, HoLRK-3-19, Ganj Bakhash, NIA-2004, S 2001-US-400, CP-92-1167, S 98-SP-108, S 96-SP-1215, CSSG 668 and CSSG 676 during the year 2005-06 at Quaid-e-Awam Agriculture Research Institute (QAARI) Larkana, Sindh. The trial was laid out in randomized complete block design having four replications in a net plot size of $3x9m^2$. The ridges/furrows were made at the distance of 90 cm. The seed setts were placed at depth of 6-8 inches, covered with soil and irrigated. The sowing was done on 8^{th} of October, 2005.The recommended dose of NPK fertilizers was applied @ 275-150-150 kg ha^{-1}. Whole doses of P and K and 1/3 of N fertilizers were applied as basal dose at the time of land preparation. Remaining N fertilizer was applied in two equal split doses, at the time of first and second earthing. Weedicide Gexapex Combi was sprayed @ 4-5 kg ha^{-1} as pre-emergence herbicide to control the weeds. Further weeding was done by cultural operations and earthing up. Furadon 3G was applied @ 20 kg ha^{-1} in two half split doses for the control of borer attack. All agronomic practices like earthing, irrigation were carried out uniformly as per requirements of the crop. The crop was harvested in last week of December 2006.The observations on germination (%), cane length (m), cane girth (cm), tillers/stool, internodes/cane, brix (%) and yield (tones ha^{-1}) were recorded on monthly basis and at the time of harvest from each variety including check.

RESULTS AND DISCUSSION

Data on germination parentage (%) of all promising lines are given in Table 1 that show that this parameter ranged from 67.75 to 89.00 (%). The variety S98-SP-108 produced higher germination percentage (89.00) followed by varieties HoLRK-3-19, Chandka and CP-92-1167 having 86.25, 80.50 and 79.75 mean germination percentage respectively. However, the minimum germination percentage (67.75) was recorded for the variety S2001-US-400. The differences in germination character between all the varieties might be due to their different genetic potential (Naich, *et al*., 2006). The results regarding cane length (m) reveals that highest cane length (4.10) recorded in case of variety LRK-2004 followed by Chandka and S96-SP-1215 with 3.67 and 3.17 respectively. While the minimum cane length (1.99) recorded for the variety L-116 (Check). The higher cane length of the varieties might be due to the genetic make up of the parent materials of these varieties. These results are partially supported with the findings of Buriro, *et al*., (2003) and Baloch, *et al*., (2004) who reported different response of yield component in different sugarcane cultivars.

Stalk diameter is an important yield contributing character and large stalk diameter would enhance the acceptability

of varieties from commercial point of view (Ramdoyal, 1999). The results regarding cane girth (cm) revealed that variety Gang Bakhsh had significantly maximum girth (3.39) followed by Chandka with an average cane girth of 3.28 cm. The minimum cane girth (1.88) was recorded for L-116 (Check). Data regarding number of tillers/stool (Table 1) revealed that variety LRK-2004 produced significantly maximum number of tillers/stool (10.43) followed by variety LRK-2003 with (8.58) average number of tillers/stool. Varieties Chandka and S98-SP-108 also produced good number of tillers/stool with 7.43 and 6.93 respectively. Minimum number of tillers/stool (5.22) was recorded in case of variety Gang Bakhsh. The higher values for number of tillers/stool obtained in case of variety LRK-2004 might have genetically associated to have greater tillering capacity. These results are further supported by the findings of Singh and Singh (2004) who studied considerable numbers of sugarcane varieties and found significantly varying trend of effectiveness in all varieties, regarding number of tillers/stool.

It can be inferred from the data presented in Table 3 that highest number of (28.99 and 28.32) internodes/cane were recorded from varieties Chandka and LRK-2004 respectively, followed by varieties LRK-2003 and CSSG-676 with mean values of 27.74 and 27.58 internodes/cane respectively. Lowest number of (20.33) internodes/cane was recorded for variety L-116 (Check). These results are in line with Khan, *et al*., (2003) who pointed out that different varieties had different trend for number of internodes/cane.

Field brix is a good estimation of the sugar content in sugarcane (Ramdoyal, 1999) and is used as a criterion for evaluation of maturity and quality of sugarcane under field conditions (Habib, *et al*., 1992). It is evident from the results presented in Table 1 that variety LRK-2003 exhibited highest brix percentage (21.45), closely followed by variety LRK-2004.While, Chandka variety exhibited the least performance of brix percentage i.e. 17.80. The varieties that had high brix percentage might be due to their good response of environmental reaction and association with the genetic make up of the parent material of these varieties. These results are in agreement with the findings of Panhwar, *et al*., (2003), Memon, *et al*., (2004) and Naich, *et al*., (2006) who studied a number of sugarcane varieties and found different levels of brix percentage.

The results regarding cane yield revealed that the mean cane yield of the varieties differed significantly from one another. Variety LRK-2004 produced the highest cane yield (186.21) followed by variety Ganj Bakhsh with mean cane yield of (135.91) tones ha^{-1}. Varieties NIA-2004 and Chandka also gave good results with cane yield of 129.23 and 128.39 tones ha^{-1} respectively. While, varieties HoLRK-3-19 and S98-SP-108 had cane yield of 113.12 and 112.28 tones ha^{-1}, respectively. The lowest cane yield of 75.32 tones ha^{-1} was produced by variety S-2001-US-400. High cane yielding varieties showed best environmental response and hence revealed good performance of cane yield as compared to the other varieties. This higher cane yield of variety LRK-2004 was mainly associated with higher cane length, more number of tillers $plant^{-1}$, and better values regarding germination percentage and cane girth. The results are in agreement with those of Keerio, *et al*., (2003), Buriro, *et al*., (2003), Baloch, *et al*., (2004) and Naich, *et al*., (2006), who carried out studies on different sugarcane varieties and found different trend for cane yield per unit area.

Table-1: Yield and yield parameters of different sugarcane varieties planted at Quaid-e- Awam Agriculture Research Institute, Larkana

Varieties	Germination (%)	Plant height (m)	Tillers stool^{-1}	Internodes/ cane	Cane girth (cm)	Brix (%)	Yield Mt ha^{-1}
Chandka	80.50	3.67	7.43	28.99	3.28	17.80	128.39
LRK-2003	74.25	2.93	8.58	27.74	2.73	21.45	106.72
LRK-2004	70.25	4.10	10.43	28.32	2.92	21.30	186.21
HoLRK-3-19	86.25	2.85	6.15	27.49	2.38	18.90	113.12
Ganj Bakhsh	69.00	2.75	5.22	27.32	3.39	18.95	159.1
NIA-2004	75.50	3.07	5.28	27.08	2.35	18.85	129.23
S2001-US-400	67.75	2.78	5.47	24.58	2.26	19.35	75.32
CP-92-1167	79.75	2.41	5.74	24.16	2.86	18.00	78.11
S98-SP-108	89.00	2.77	6.93	25.46	2.51	18.50	112.28
S96-SP-1215	72.00	3.17	6.12	25.83	2.39	18.50	81.72
CSSG-668	77.50	2.89	5.98	25.08	2.56	18.65	79.76
CSSG-676	73.00	2.87	5.48	27.58	2.44	18.35	89.77
L-116 (Check)	78.75	1.99	6.68	20.33	1.88	18.30	79.49
Minimum	**67.75**	**1.99**	**5.22**	**20.33**	**1.88**	**17.80**	**75.32**
Maximum	**89.00**	**4.10**	**10.43**	**28.99**	**3.39**	**21.30**	**186.21**
Average	**76.42**	**2.94**	**6.58**	**26.15**	**2.61**	**18.99**	**107.39**

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