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Evaluation of ridge gourd (*Luffa acutangula* Roxb) hybrids during summer season for growth, yield and quality traits

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ABSTRACT : The study was conducted at Department of Horticulture, Agricultural College and Research Institute, Madurai. The hybridization programme was carried out during *Kharif* 2017 and 24 hybrids were evolved through Line x Tester mating design. Six inbreed lines (L) were used as female parents *viz.* L_1 was PKM-1(High yield), L_2 was CO-1 (High yield), L_3 was Virdhunagar Local (Earliness), L_4 was Seranmadevi local (More number of fruits/plant), L_5 was Arka Sujath (High yield), L_6 was Arka Sumeet (High yield) and four inbreds as male parents were tester (T), T_1 was Periyakottai local (High length of fruits), T_2 was Alathur local (Fruit diameter), T_3 was Kannapatti Local (Node to first female flower appear), T_4 was Srirampuram Local (More Female: Male ratio). The twenty four hybrids were evaluated during 2018 summer season to identify superior hybrids suitable commercial cultivation during summer season. The performance of parents and hybrids showed that the parents T_1 (1.02kg/vine) and T_2 (1.01kg/vine) were high yielding. Among the twenty four crosses, three cross combinations *viz.*, $L_3 \times T_2$ (1.35kg/vine), $L_3 \times T_1$ (0.96kg/vine), $L_4 \times T_1$ (0.93kg/vine) recorded highest yield per vine. The high fruit weight was recorded in $L_3 \times T_1$ (315g), L_4xT_1 (270g), L_4xT_4 (250g). The highest number of fruits per vine was recorded in L_3xT_2 (4.27), L_3xT_1 (4.25) and L_3xT_3 (4.05). The yield per hectare was high in L_3xT_1 (5.38t), L_3xT_2 (3.82t) and L_4xT_1 (3.74t). The high total soluble solids was observed in L_6xT_2 (6.0^0Brix) and L_1xT_3 (5.0^0Brix) hybrids. The highest crude fibre content was estimated in L_4xT_4 (0.59mg/100g), L_3xT_2 (0.58mg/100g) and L_4xT_3 (0.57mg) hybrids.

KEY WORDS : Ridge gourd, Summer season, Growth, Yield, Quality traits

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India is the largest producer of vegetables next to China. The family Cucurbitaceae consists of the many number of vegetable crops. India is the centre of origin of many Cucurbitaceous vegetables. The cucurbits are capable of thriving and performing well. Bitter gourd, bottle gourd, ash gourd, snake gourd, pumpkin, cucumber, water melon, ivy gourd and ridge gourd are the important crops grown by the farmers. Ridge gourd is popularly known as kalitori and also called as angled gourd, angled loofah, Chinese okra, silky gourd and ribbed gourd. Ridge gourd [*Luffa acutangula* (L).Roxb] or Ribbed gourd is an less exploited vegetable crop and it is an important Cucurbitaceous vegetable crop. It is grown as mixed crop in the river bed areas and as monocrop in the garden lands. It is widely grown in tropical and subtropical regions of the world

(Narasannavar *et al.*, 2014). The immature fruits are cooked as vegetable and used in preparation of chutney and curries. Fruit is demulcent, diuretic and nutritive. Every 100g of edible portion of ridge gourd contains 0.5 g of fibre, 0.5 per cent of protein, 0.34 per cent of carbohydrate, 37 mg of carotene, 5.0 mg of vitamin C, 18 mg of calcium and 0.5 mg of iron (Hazra and Som, 2005). It is also one of the vegetable rich in dietary fibre. Ridge gourd is a monoecious and cross pollinated crop, it exhibits considerable heterozygosity in population and does not show inbreeding depression resulting in natural variability in the population. Hence, it provides ample scope for exploitation of hybrid vigour for commercial cultivation to increase the production and productivity (Narasannavar *et al.*, 2014). The demand for hybrids of ridge gourd is increasing because of earliness, uniformity and high yield. The ridge gourd hybrids available in India are suitable for growing in *Kharif* and *Rabi* seasons. Plant breeding programme aims at improving the existing types and creating a new type which will be better than the existing commercial cultivars. Among the variety of biometrical procedures, line x tester analysis proposed by Kempthorne (1957) received considerable attention to assess the genetic differences among the parents for quantitative characters. In ridge gourd, similar attempt has made to create variability for fruit yield and quality. Hence, the present study was carried out to develop a hybrids with high yield and good quality suitable for commercial cultivation during summer.

RESEARCH METHODS

The present study was conducted at Department of Horticulture, Agricultural College and Research Institute, Madurai, during 2017-18. The research area located at 09°58' 30.5" N latitude, 078°12' 27.4"E longitude and at an altitude of 158 m above the mean sea level. The climate at the experimental location is generally warm. The hottest period of the year is between the months of March to August, reaching the maximum temperature recorded upto 41.0°C in April. The temperature drops in December and the low temperature continues upto January, reaching the minimum of 20°C. The location received an average annual rainfall of 1006 mm during 2018.

Parental materials:

The experimental material consist of ten inbreds of which six as female parent as lines (L) L_1 (PKM-1, High yield), L_2 (CO-1, High yield), L_3 (Virdhunagar Local, Earliness), L_4 (Seranmadevi local, More number of fruits/ plant), L_5 (Arka Sujath, High yield), L_6 (Arka Sumeet, High yield) and four inbreds as male parents tester (T), T_1 (Periyakottai local, High length of fruits), T_2 (Alathur local, Fruit diameter), T_3 (Kannapatti Local, Early Node to first female flower appear), T_4 (Srirampuram Local, More Female: Male ratio) were raised in the field during *Kharif* 2017 for crossing in Line x Tester design.

Selfing and crossing:

The female and male parents seeds were sown in pits at a spacing of 2.5 x 2m during August 2017. The recommended cultivation practices were adopted uniformly in all the parents under study. The crossing of parents attended in Line x Tester mating design. Ridge gourd is monoecious in nature producing staminate and pistillate flowers separately on the same plant. For hybridization, the staminate and pistillate flowers of all parents were covered separately with butter paper covers on the previous day evening prior to opening. On the next day morning as soon as the flowers opened the pollen from the staminate flowers were collected during 6.00 - 7.30 hours and dusted on the stigma of the pistillate flower of the bagged female parent. The pistillate flowers were rebagged and tagged for identifying the cross-combination. For selfing, the pollen grains from the bagged male flowers were dusted on the pistillate bagged flowers of the same plant. The pollinated parental lines were rebagged and tagged.

The seeds were extracted from the fully matured dry pods and dried at eight per cent moisture level. All the 24 F_0 seeds along with their parents and standard check hybrid were raised in Randomized Block Design (RBD) with three replications during summer season March to May 2018 to evaluate the hybrids. The spacing of 2.5m between row and 2m between pits was adopted. Recommended cultural practices and plant protection measures were followed to all the plants. In each replication, five competitive plants were identified randomly for recording data on vine length (m), days to first male and female flower appearance, node to first male and female flower, sex ratio, days to first harvest, average fruit weight (g), fruit length (cm), fruit diameter (cm), flesh thickness (mm), fruit yield per vine (Kg), fruit yield per hectare (tone), total soluble solids (TSS) (^{0}Brix). The crude fibre content estimated in the fruits by following the method suggested by Chopra and Kanwar (1976)

and the dry matter content of the fruits recorded by following the methods described by AOAC (1975). The data recorded were statistically analysed by using the methodology of Panse and Sukhatme (1967).

RESEARCH FINDINGS AND DISCUSSION

The results of the study (Table1 and 2) reveals that among the six female parents, L_5 (7.80m) and T_1 (7.50m) among the male parents produced longest vine length followed by L_6 (7.75m). The hybrid L_5 x T_1 (7.75m) significantly recorded the highest value for this trait followed by L_6 x T_1, L_6 x T_2 (7.60m). Similar results also reported by Kumar *et al*. (2005) in pumpkin and Manikandan (2012) in ash gourd. The female parent L_1 (29.75), male parent T_1 (30.00) and the hybrids L_5xT_1 (30.33), L_1xT_1 (29.25), L_2xT_2 (29.50) and L_3xT_4 (29.75) were early with respect to days to first male flower opening. It might be due to the expression of dominance allels present in the female parent. The results are in accordance with the finding of Tamilselvi (2010) in pumpkin. The female parent L_1 (33.75), male parent T_2 (33.95) and the hybrids L_3xT_2 (31.00), L_1xT_1 (29.25) and L_3xT_3 (33.00) were early with respect to days to first female flower opening. It might be due to the expression of dominance allels present in the female parent. The results are in accordance with the reports of Aravindakumar *et al*. (2005) in musk melon. The first male flower in the female parents L_1 (3.00), L_2 (4.00) and in male parents T_1 (3.50), T_2 (3.80) appeared in lower nodes, while in the hybrids L_1 x T_1 (3.00), L_1 x T_2 (3.00), L_1xT_3 (3.00). It may be due to the non-additive gene action of the male parents. This was supported findings of Josephin (2008) in ash gourd and Kumar *et al*. (2005) in pumpkin. The first female flower in the female parents L_1 (17.50), L_3 (18.10) and in male parents T_3 (16.80), T_1 (17.40) appeared in lower nodes, while in the hybrids

Table 1: Performance of ridge gourd (*Luffa acutangula*) parents for different traits during summer March-May, 2018

Parents/ hybrids	Vine length (m)	No. of branches/ plant	Days to first male flower	Days to first female flower	Node to first male flower	Node to first female flower	Sex ratio	Days to harvest	No.of fruits/ plant	Fruit weight (g)	Fruit length (cm)	Fruit circum brance	Rind thick ness (mm)	Flesh thick ness (mm)	yield / plant (g)	Yield/ha (t/ha)	TSS (brix)	Total crude fibre (mg/100g)	Dry matter content (%)	Moisture content (%)
L_1: PKM-1	6.50	3.5	29.75	33.75	3.00	17.50	4.95	75.50	3.76	206.00	27.5	16.7	2.0	4.0	775	3.10	2.0	0.40	3.93	96.07
L_2: Co-1	7.30	4.0	30.25	34.25	4.00	20.10	6.6	93.50	3.81	154.00	26.2	17.5	3.0	11.0	587	2.35	3.0	0.55	9.81	90.19
L_3 Virdhunagar local	7.10	3.5	32.75	37.75	4.00	18.10	6.12	83.60	3.94	206.00	25.5	14.7	6.0	5.0	812	3.25	6.0	0.45	3.22	96.78
L_4Seranmadevi local	6.40	2.5	33.25	36.25	4.00	19.50	5.63	78.60	3.06	286.00	23.2	18.3	4.0	7.0	874	3.50	4.0	0.51	4.15	95.85
L_5: Arka Sujath	7.80	2.5	32.50	35.25	6.00	21.50	5.82	84.60	2.69	110.00	19.2	15.2	5.0	7.0	296	1.18	5.0	0.45	12.50	87.50
L_6: Arka Sumeet	7.75	3.0	30.25	33.75	5.00	20.60	6.12	87.50	3.00	115.00	36.5	13.2	3.0	9.0	344	1.38	3.0	0.46	10.59	89.41
T_1: Periyakottai Local	7.50	4.0	30.00	34.75	3.50	17.40	4.82	80.67	3.98	256.00	28.2	16.3	3.0	6.0	1020	4.08	3.0	0.48	5.35	94.65
T_2: Alathur local	7.20	5.0	31.25	33.75	3.80	20.10	4.73	86.45	3.72	272.00	26.2	20.3	4.0	10.0	1012	4.05	4.0	0.47	20.43	79.57
T_3: Kannapatti Local	6.50	3.5	32.75	35.75	4.00	16.80	5.62	70.50	3.15	175.00	29.5	20.2	4.0	3.0	551	2.21	4.0	0.55	3.05	96.95
T_4:Srirampuram Local	7.00	4.0	30.25	34.25	3.80	18.50	5.25	66.35	3.88	230.00	28.1	14.5	3.0	5.0	893	3.57	3.0	0.45	9.38	90.62
Mean	7.14	3.86	31.3	34.95	4.11	19.01	5.50	80.44	3.53	202.27	26.92	16.47	3.55	6.73	725.49	2.90	3.73	0.48	8.34	91.66
S.E.±	0.28	0.50	0.56	0.60	0.29	0.58	0.60	1.01	0.96	9.00	1.32	0.70	0.24	1.00	13.50	0.35	0.60	0.10	0.38	1.00
C.D. (P=0.05)	0.60	1.10	1.20	1.30	0.60	1.28	1.20	2.10	1.98	18.30	2.80	1.40	0.50	2.00	27.20	0.72	1.20	0.22	0.76	2.00

L_1xT_1 (17.50), L_1xT_3 (17.50). It may be due to the non-additive gene action of the male parents. Similar results were observed by Josephin (2008) in ash gourd and Kumar *et al*. (2005) in pumpkin. The narrow sex ratio is preferable in cucurbits crop improvement programmes, which could be favourable for the production of more number of fruits which results in higher yields. The female parents L_1 (4.95) and male parent T_2 (4.73), T_1 (4.82) recorded lowest values for sex ratio and the hybrids L_1 x T_1 (4.86), L_1 x T_2 (4.90), L_1 x T_4 (5.12), L_3 x T_1 (5.20), L_3 x T_2 (5.30), L_2 x T_2 (5.35) recorded the lowest values. It may be due to the presence of dominant genes expression. Similar observations in ash gourd were made by Narasannavar *et al*. (2014) and Reddy *et al*. (2013) in ridge gourd.

The days to first harvest was less in the female parent L_1 (75.50) and male parent T_4 (66.35) and also in hybrids L_4 x T_4 (69.80) and L_1 x T_4 (70.35). Rana *et al*. (2016) in pumpkin and Kumar *et al*. (2017) in cucumber reported the similar results. The female parents L_3 (3.94), L_2 (3.81) and male parents T_1 (3.98) and T_4 (3.88), hybrids L_3 x T_1 (4.27), L_3 x T_2 (4.25) and L_3 x T_3 (4.05) recorded more number of fruits per vine. The dominant non additive genes might be involved. This is also similar to the results

Table 2: Performance of ridge gourd (*Luffa acutangula*) F_1 hybrids for different trait during summer March-May, 2018

Parents/ hybrids	Vine length (m)	No. of branches/ plant	Days to first male flower	Days to first female flower	Node to first male flower	Node to first female flower	Sex ratio	Days to harvest	No. of fruits/ plant	Fruit weight (g)	Fruit length (cm)	Fruit circum brance	Rind thick ness (mm)	Flesh thick ness (mm)	yield / plant (g)	Yield/ha (t/ha)	TSS (Brix)	Total crude fibre (mg/100g)	Dry matter content (%)	Moisture content (%)
L_1xT_1	7.50	7.0	29.25	33.00	3.00	17.50	4.86	77.55	3.80	215.00	26	14.3	2.0	7.0	817	3.27	4.0	0.46	9.30	90.70
L_1xT_2	7.10	10.0	30.00	34.00	3.00	18.50	4.9	80.20	3.75	210.00	25	17.5	5.0	7.0	788	3.15	4.0	0.48	7.44	92.56
L_1xT_3	6.50	7.0	30.00	34.00	3.00	17.50	5.55	73.20	3.35	185.00	21.2	19.2	2.0	9.0	620	2.48	5.0	0.55	4.44	95.56
L_1xT_4	6.85	5.0	30.00	41.00	3.00	18.00	5.12	70.35	3.80	215.00	28.1	15.3	3.0	7.0	817	3.27	3.0	0.49	5.37	94.63
L_2xT_1	7.40	2.5	30.00	34.00	4.00	19.00	5.46	88.80	3.80	170.00	26.4	15.2	3.0	5.0	646	2.58	3.0	0.53	10.31	89.69
L_2xT_2	7.20	5.0	29.50	34.00	4.00	20.10	5.35	87.00	3.70	185.00	26.2	17.1	4.0	7.0	685	2.74	4.0	0.55	9.69	90.31
L_2xT_3	6.40	2.0	30.75	34.00	4.00	18.33	6.2	77.20	3.34	165.00	25	17.1	3.0	6.0	550	2.20	3.0	0.52	7.05	92.95
L_2xT_4	6.90	4.5	30.00	34.25	5.00	19.12	5.47	83.50	3.81	175.00	27.1	14.1	3.0	5.0	667	2.67	3.8	0.51	2.33	97.67
L_3xT_1	7.20	5.0	31.33	35.00	4.00	17.77	5.2	81.00	4.27	315.00	25.5	13.1	3.0	4.0	1346	5.38	3.5	0.60	4.01	95.99
L_3xT_2	7.15	5.0	31.00	32.00	3.50	19.12	5.3	83.00	4.25	225.00	26	16.5	3.0	8.0	956	3.82	4.0	0.58	6.04	93.96
L_3xT_3	6.50	3.0	29.75	33.00	4.00	17.61	5.88	78.10	4.05	201.00	24.5	19.1	3.0	7.0	814	3.26	3.0	0.53	6.78	93.22
L_3xT_4	7.10	3.5	29.75	35.50	4.10	18.21	6.11	81.00	3.94	216.00	26	14.2	3.0	4.0	851	3.40	1.8	0.47	3.28	96.72
L_4xT_1	6.95	4.0	35.00	36.00	4.00	19.00	5.62	79.00	3.46	270.00	26.5	15.5	2.0	6.0	934	3.74	3.0	0.49	4.18	95.82
L_4xT_2	6.80	4.0	32.00	36.00	3.90	19.62	5.6	81.10	3.50	180.00	25.1	13.2	3.0	7.0	630	2.52	3.0	0.55	11.83	88.18
L_4xT_3	6.45	1.5	32.00	36.25	4.00	18.23	5.63	72.50	3.10	175.00	23.2	12.2	2.0	5.0	543	2.17	5.0	0.57	7.04	92.96
L_4xT_4	6.60	3.5	32.00	35.00	4.00	19.10	5.58	69.80	3.40	250.00	25.5	19.1	2.0	8.0	850	3.40	2.5	0.59	5.00	95.00
L_5xT_1	7.75	3.5	30.33	34.00	5.10	19.21	5.65	82.50	3.09	118.00	22	15.1	3.0	5.0	365	1.46	2.4	0.45	6.09	93.91
L_5xT_2	7.40	2.0	31.25	33.75	6.20	20.85	5.58	84.50	3.35	130.00	21	12.5	4.0	10.0	436	1.74	6.0	0.48	6.84	93.16
L_5xT_3	7.00	5.0	32.00	35.00	5.50	20.25	5.7	80.40	3.00	125.00	19.5	12.2	3.0	4.0	375	1.50	3.0	0.52	13.33	86.67
L_5xT_4	7.40	4.5	31.00	35.00	5.30	21.00	6.4	75.00	3.12	220.00	23	16.3	3.0	8.0	686	2.75	3.0	0.50	9.32	90.68
L_6xT_1	7.60	4.0	30.00	34.00	5.10	20.00	5.8	86.50	3.40	155.00	32	14.4	5.0	10.0	527	2.11	5.0	0.43	6.00	94.00
L_6xT_2	7.60	4.5	31.25	33.75	4.90	20.50	5.8	87.50	3.50	175.00	30	13.5	3.0	7.0	613	2.45	3.0	0.46	14.01	85.99
L_6xT_3	7.10	4.0	30.25	35.00	5.50	19.23	6	82.50	3.40	125.00	28.1	16.5	3.0	7.0	425	1.70	3.0	0.48	7.59	92.41
L_6xT_4	7.40	4.0	30.00	34.00	4.90	19.66	5.85	76.50	3.30	145.00	31.8	14.5	4.0	7.0	479	1.91	4.0	0.50	6.51	93.49
Check-1	6.83	5.00	30.00	32.00	4.00	20.23	6.23	68.00	3.20	145.00	25.50	4.30	3.00	5.00	435.00	1.74	3.20	0.36	5.60	92.40
Mean	7.06	4.22	30.77	34.65	4.29	19.06	5.64	80.05	3.55	188.26	25.60	15.37	3.13	6.65	678.23	2.71	3.52	0.51	7.15	92.85
S.E.±	0.30	0.70	0.51	0.76	0.33	0.48	0.80	0.91	1.00	7.40	1.21	0.80	0.30	1.10	12.80	0.32	0.50	0.12	0.40	1.10
C.D.(P=0.05)	0.62	1.40	1.00	1.50	0.66	0.98	1.60	1.80	2.10	15.10	2.40	1.60	0.60	2.20	25.60	0.62	1.10	0.24	0.80	2.20

obtained by Rana *et al*. (2016) in pumpkin and Kumar *et al*. (2017) in cucumber. The higher fruit weight was observed in the female parents L_4 (286g) and L_3 (206g) and the male parents T_2 (272g) and T_1(256g) and in hybrids L_3xT_1 (315g), L_4xT_1 (270g), L_4xT_4 (250g). This is in consonance with the findings of Kothainayagi (2013) in pumpkin. It might be under the control of non-additive gene action and partial dominance nature. These results are also in corroboration with the findings of Narasannavar *et al*. (2014) in ridge gourd. The high fruit length among the female parents were recorded in L_6 (36.50cm) and L_1 (27.50cm) and the maximum fruit length in male parent T_3 (29.50). In hybrids the maximum fruit length was recorded by L_6 x T_1 (32.00cm) followed by L_6 x T_4 (31.80cm). This is in consonance with the results of Kothainayagi (2013) in pumpkin. The female parent L_2 (17.50cm) and the male parents T_2 (20.30cm), T_3 (20.20cm) and hybrids L_4xT_4 (19.10cm), L_1xT_3 (19.20cm) recorded higher diameter of the fruit. Singh *et al* (2002) in pumpkin found same results. Fruit flesh thickness is essential to decide the quality of edible portion of ridge gourd. Further, more flesh thickness favours better keeping quality and transportability than the less thick fruits. The highest flesh thickness was observed in the female parent L_2 (11.00 mm), L_6 (10.00mm) and male parents T_2 (10.00mm), T_1 (6.00mm) and in hybrids L_2xT_4 (4.10mm), L_4xT_2 (4.10mm). This might be due to the presence of both additive and dominance nature. This result is in corroboration with the findings of Muthaiah *et al*. (2017) in ridge gourd.

The fruit yield per plant among the parents ranged from 296g to 1.02kg. The male parent T_1 recorded the highest yield (1.02kg) per vine followed by T_2 (1.01kg). Six parents in the present study recorded significantly higher values than the grand mean (725g). The fruit yield per vine in the twenty four hybrids ranged from 360g to 1.35kg. The hybrid L_3xT_1 recorded the highest yield (1.35kg) per vine followed by L_3xT_2 (960g), L_4xT_1 (934g). Eleven hybrids in the present study recorded significant higher values than the grand mean (678g/ plant). It is similar to the observations reported by Pandey *et al*. (2005) in ash gourd and Podder *et al*. (2010) in snake gourd. The fruit yield per hectare was high in female parent L_3 (3.25tone /ha), L_4 (3.50tone /ha), in male parents T_1 (4.08tone/ha), T_2 (4.05tone /ha). The hybrid L_3 x T_1 (5.38tone /ha), L_3xT_2 (3.82tone/ha) and L_4 xT_1 (3.74tone/ha) recorded the highest yield. This was in accordance with result of Reddy *et al*. (2013) in ridge gourd.

The mean value for the total soluble solids of six parents ranged from 2.0 to 6.0 ºBrix. The female parent L_3 recorded the highest value (6.0ºBrix), followed by T_3, T_4 (4.00ºBrix). The parent L_3 (6.0ºBrix) recorded low total soluble solids. Five parents in the present study recorded significant higher values than the grand mean (3.55ºBrix). The total soluble solid content in the hybrids ranged from 2.0 to 5.0 ºBrix. The hybrid L_6xT_1 recorded the highest value (5.00ºBrix) followed by L_1xT_2 (5.0ºBrix). L_4xT_1 recorded the lowest value (2.0ºBrix). Totally five hybrids in the present study recorded significantly higher values than the grand mean (3.13ºBrix).It is similar to results reported by Singh and Ram (2003) in muskmelon and Sapovadiya *et al*. (2014) in water melon. The total crude fibre content among the parents ranged from 0.39 to 0.53mg per 100g. Maximum total crude fibre content was recorded in the parent L_2 (0.55mg/100g) followed by T_3 and the minimum total crude fibre content was recorded in L_1 (0.40mg/100g). Four parents recorded significantly higher values than the grand mean (0.48mg/100g) for this character. The mean performance of total crude fibre content in hybrids varied from 0.42 to 0.58mg/100g. The hybrid L_4 x T_4, L_3 x T_2 and L_4 x T_3 recorded the highest total crude fibre content of 0.59mg, 0.58mg and 0.57mg per 100g. The hybrid L_6x T_1 (0.43mg/100g) recorded the lowest total crude fibre content. The grand mean of 0.51mg/100g was observed for this trait. Eleven hybrids recorded significantly higher values than the grand mean (0.51mg/ 100g). This was in consonance with result of Tamilselvi (2010) in pumpkin and Narasannavar *et al*. (2014) in ridge gourd. The dry matter content among the parents T_2 (20.43%) and L_5 (12.50%) recorded favourable high *per se* values of dry mater content and in hybrids L_6xT_2 (14.01%), L_5 x T_3 (13.33%), L_4xT_2 (11.83%) and L_2 x T_1 (10.31%) recorded the higher values. The results are in accordance with the Rana *et al*. (2016) in pumpkin and Kumar *et al*. (2017) in cucumber. The moisture matter content among the female parents L_5 (87.50%) and L_6 (89.41%) recorded low moisture content. The male parent T_3 (96.96%) and T_1 (94.65%) and in hybrids L_2 x T_4 (97.67%), L_3 x T_4 (96.72%) and L_3 x T_1 (95.99) recorded the higher values. The results are in accordance with the Muthaiah *et al*. (2017) in ridge gourd were also recorded similar results.

Based on the *per se* performance of 24 hybrids, three cross combinations *viz.*, L_3 x T_1 (Virdhunagar Local

x Periyakottai Local), L_3 x T_2 (Virdhunagar Local x Alathur Local and L_4 x T_1 (Arka Sujath x Alathur Local) recorded higher fruit yield per vine 1.35kg, 0.96kg and 0.94kg and 5.38tone, 3.82tone, 3.74tone per hectare, respectively. These hybrids recorded 17.77, 19.12, 19.00days to first female flowering, respectively. The sex ratio was 5.2, 5.3, 5.62, respectively. These hybrids recorded the fruit length ranged from 25.5cm to 26.5cm. This medium sized fruits will have good marketability as the fruits will be less breakage. These hybrids may used for commercial cultivation.

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