DISCUSSION

The data have been described in the previous chapter and the results have also been obtained in respect of the main characters. The findings obtained in the previous chapter are being discussed in this chapter which would offer useful information on each point.

The days of flowering were recorded to vary from 13.188 (v_9) to 17.783 (v_{13}) and 7.736 (v_{10}) to 16.487 (v_{13}) with the general mean of 10.750 and 11.080 days during 1982-83 and 1983-84, respectively. The maximum value was closely followed by 13.933 (v_{16}), 13.672 (v_{20}), 13.36 (v_{8}), 13.277 days (v_{17}) during 1982-83 and 13.934 (v_{18}), 13.110 (v_{15}), 13.080 (v_{16}), 12.250 days (v_{6}) during 1983-84. This variation in the period required for flowering has its importance in the selection of plant material for its improvement research work. Present findings are in accordance with the results obtained by Agati (1952), Arthur (1953), Agrawal et al. (1957), Arumugam et al. (1978), Bajpai and Prasad (1962), Bhardwaj and Singh (1969), Bapna and Joshi (1973), Arya and Saini (1977), Prasad and Nalini (1985) and Nalini (1985) in different crops.

The diameter of main shoot was found range from 0.927 (v_{10}) to 2.246 cm (v_{13}) and 0.977 (v_{10}) to 2.980 cm (v_{13}) with the general mean values of 1.700 and 1.779 cm during 1982-83 and 1983-84, respectively. The maximum value was closely followed by 2.09 cm (v_4), 1.870 cm (v_{20}),
1.867 cm ($V_{12}$) cm ($V_{12}$), 1.833 cm ($V_{3}$), during the year 1982-83 and 2.067 cm ($V_{12}$) ,1.982 cm ($V_{3}$), 1.886 cm ($V_{5}$), 1.863 cm ($V_{7}$) during the period of next 1983-84.

Similar findings have also been observed by Filov (1936), Davidson (1944), Chakravarty (1949), Chaudhary and Pathak (1961), Hanson (1961), Denna (1962), Globerson and Steiner (1970) and Prasad and Nalini (1985) in different crops.

In the growth aspects the height of plant was found to vary from 6.640 ($V_{5}$) to 10.166 ($V_{20}$) and 6.075 cm ($V_{17}$) to 10.583 cm ($V_{20}$) with the general mean values of 8.492 and 8.638 cm during the years of 1982-83 and 1983-84, respectively. The maximum height of plants was followed by 9.867 cm ($V_{8}$), 9.736 cm ($V_{19}$), 9.260 cm ($V_{11}$), 9.247 cm ($V_{10}$) and 10.280 cm ($V_{19}$), 9.803 cm ($V_{3}$), 9.643 cm ($V_{18}$) and 9.560 cm ($V_{12}$) during both the years of 1982-83 and 1983-84, respectively. Similar variations in growth aspects have also been reported by Glov (1936), Diameter (1944), Chakravarty (1949), Chaudhary and Pathak (1961), Hanson (1961), Bajpai and Prasad (1962), Denna (1962), Bhardwaj and Singh (1969), Globerson and Steiner (1980), Sapna and Joshi (1973), Arya and Saini (1977).

The number of primary branches was found variable where varied from 0.848 ($V_{19}$) to 14.176 branches ($V_{2}$) and 7.362 ($V_{16}$) to 13.260 ($V_{2}$) with the general mean 9.620 and 10.810 branches during 1982-83 and 1983-84, respectively. The maximum value of number of branches was closely followed by 12.550 ($V_{13}$), 12.236 ($V_{3}$), 10.890 ($V_{9}$), 10.866 branches ($V_{15}$).
during 1982-83 and 12.736 (v_3), 12.596 (v_{13}), 12.967 (v_{15}), 10.740 (v_{11}) during 1983-84, in the different cultures of the bottle gourd crop. Similar findings have also been observed by Agati (1952), Arthur (1953), Agrawal et al. (1957), Arunurgaim et al. (1973) and Chaudhary and Pathak (1961), in different crops.

In the growth behaviour of plant, the length of branches was found to vary from 2.823 m (v_{10}) to 7.123 m (v_{13}) and 2.533 m (v_{15}) to 7.033 m (v_{16}) with the mean value of branch which was observed 4.173 and 4.310 m during 1982-83 and 1983-84, respectively. The maximum length of branches was closely followed by 5.633 m (v_{20}), 5.570 m (v_{16}), 5.368 m (v_{12}), 5.226 m (v_{19}) during 1982-83 and 5.556 m (v_{12}), 5.693 m (v_{13}), 5.047 m (v_{19}), 4.638 (v_{5}) during 1983-84. Present findings are in accordance with the results obtained by Dhamdson (1944), Dhesi et al. (1964), Davidson (1944), Ito and Saito (1956) 1956 a). However, the otherwise results have also been reported by Prasad and Prasad (1978) and Prasad and Nalini (1985) in cucurbits.

The diameter of branch in the different treatments varied from 0.457 cm (v_{10}) to mean of 0.712 and 0.786 cm during 1982-83 and 1983-84, respectively. The maximum diameter was closely followed by 0.836 cm (v_{14}), 0.833 cm (v_{13}), 0.802 cm (v_{15}), 0.778 cm (v_{19}) during 1982-83 and
0.863 cm \( (V_4) \), 0.820 cm \( (V_5) \), 0.806 cm \( (V_{16}) \), 0.798 cm \( (V_3) \) during the year of 1983-84, similar findings have also been observed by Prasad and Prasad (1978), Fuji (1954), Venkataraman (1963), Shihheomany et al. (1978), Prasad (1952), Kamalnathan (1972), Mamalnathan and Thamburaj (1973), Arya and Saini (1977) and Agarwal et al. (1957) where they advocated the useful findings in different crops.

The length petiole was found variable as data per which varied from 9.436 \( (V_{10}) \) to 23.366 cm \( (V_{15}) \) and 9.736 \( (V) \) to 24.79 cm \( (V_{15}) \) having general mean of petiole length of 16.789 cm and 17.543 cm during 1982-83 and 1983-84, respectively. The maximum length was also followed by 21.327 cm \( (V_{20}) \), 20.597 cm \( (V_{14}) \), 21.218 cm \( (V_3, V_7) \), 20.158 cm \( (V_{20}) \), 19.852 cm \( (V_{16}) \) during the year 1983-84.

Present findings are accordance with the results obtained by Alain (1930), Kumar et al. (1965), Kamalnathan (1972), Nath and Prasad 1972), Singh et al. (1974), Prasad and Prasad (1979 a), Mathur and Nath (1978), Sharma (1983) in different cucurbits.

The results of the observations of diameter of petiole were found to vary from 0.642 \( (V_5) \) to 0.963 cm \( (V_5, V_{11}) \) and 0.680 \( (V_5) \) to 0.996 cm \( (V_{11}) \) with the general mean of diameter were 0.802 cm and 0.823 cm during 1982-83 and 1983-84, respectively. The maximum value of diameter character was followed by 0.907 cm \( (V_{20}) \), 0.876 cm \( (V_3, V_{13}) \),
0.863 cm (v_1), 0.852 cm (v_6) during 1982-83 and 0.968 cm (v_20), 0.882 cm (v_{13}, v_{15}), 0.866 cm (v_{19}), 0.860 cm (v_6, v_6) during 1983-84, similar findings have also been observed by Kobjabkona (1930), currence (1932), Filov (1936) Pal and Singh (1943), Mahmud and Kremer (1951), Naumann (1952), Lal et al. (1963), Krevenceska (1965), Kamandhanathan et al. (1972), Prasad and Prasad (1978 a), Galum (1958), Gandhi et al. (1964) and Gotoh (1953).

In the vegetative characters leaf is a very important one and its length was recorded to vary from 14.940 (v_{10}) to 26.652 cm (v_6) and 15.160 (v_10) to 28.976 cm (v_{15}) with the general mean length of 20.317 cm and 21.742 cm during the years of 1982-83 and 1983-84, respectively. Further these maximum lengths were followed by 24.645 cm (v_3), 23.093 cm (v_{20}), 22.616 cm (v_5), 21.867 cm (v_{19}) during 1982-83 and 27.833 cm (v_{19}), 26.363 cm (v_{20}), 25.333 cm (v_{18}), 24.530 cm (v_3) in the years of 1983-84. Such variations in the growth character of leaf have also been reported by woker and moorthy (1962), Kumar et al. (1965), Prasad et al. (1965), Beaker and Nigam (1972), Singh and Singh (1974), Prasad and Prasad (1977 a), Prasad et al. (1978), Prasad and Prasad (1979 a), Ramchander and subramanyatn(1980), Prasad and Sharma (1981), Sharma (1982) in different cucurbit crops.

The weight of fruit was found to vary from 0.856 (v_1) to 0.960 kg (v_{16}) and 0.780 (v_{10}) to 1.996 kg (v_5) with the general mean weight which was found 1.360 kg and 1.339 kg during 1982-83 and 1983-84, respectively. The maximum weight
under different varieties was closely followed by 1.870 kg. (V3), 1.863 kg (V8), 1.743 kg (V1), 1.692 kg (V5), during 1982-83 and 1.971 kg (V8), 1.630 kg (V16), 1.552 kg (V11), 1.535 kg (V4) in present investigations during 1983-84.

Present findings are in accordance with the results obtained by Whitaker and Preyer (1946), Mahmud and Kramer (1951), Mekmann (1952), Trivena (1952), Carlson (1962), Glokerson and Steiner (1970), Varaswamy et al. (1973 c), Sharma (1981) and Singh (1983).

The number of fruits was found to range from 5.563 (V6) to 10.560 (V13) and 7.086 (V7) to 10.962 (V9), with the general mean wincher of fruits which were observed 8.092 and 9.364 during 1982-83 and 1983-84, respectively.

The maximum number was followed by 9.957 (V9), 9.238 (V15), 9.663 (V11), 9.647 (V12), 11.220 (V15), 10.130 (V13) during 1982-83 and 10.497 (V10), 10.453 (V12), 10.220 (V15), 10.130 (V13), during 1983-84; Similar findings have also been observed by Sharma (1981), Singh (1983), Prasad and Prasad (1978, 1978 c), Prasad and Nalini (1985), Gandhi et al. (1968), Nandpuri and Singh (1967), Nandpuri and Brar (1966) and Nandpuri et al. (1971).

The yield of fruits/plant was found to be ranged from 7.675 (V18) to 15.276 kg (V1), and 7.299 (V9) to 16.630 kg (V4) with the general mean of yield which found
10.935 kg and 11.479 kg during 1982-83 and 1983-84, respectively. The maximum yield was followed by 14.675 kg (v15), 14.364 kg (v11), 13.825 kg (v5), 12.125 kg (v14), during 1982-83 and 14.327 kg (v11), 13.603 kg (v17), 13.534 kg (v16), 13.363 kg (v2), during 1983-84. Present findings are in accordance with results obtained by Mital and Singh (1978), Mohamed and Chemdramohan (1972), Singh (1973), Nath and Dutta (1971), Prasad (1982), Singh (1957), Singh (1971), Shishhamany et al. (1978) and Veeraswamy et al. (1973 a) in different crops.

The number of seeds/fruit was recorded to vary which results 306.313 (v18), to 774.917 (v20) and 284.460 (v18) to 797.160 (v20) with the general mean number of seeds which were observed 466.851 during 1932-83 and 474.715 during 1983-84, respectively. The maximum value was closely followed by 669.743 (v9), 614.500 (v6), 607.837 (v5), 591.437 (v8) and 672.830 (v19), 647.180 (v11), 616.513 (v5), 584.360 (v8) during both years of 1982-83 and 1983-84, respectively. Similar findings have also been observed by Das (1968), Ramirez (1968), Costacurta (1969), Prasad and Prasad (1976), Bhekasut et al. (1976) and Pichi (1976) in different cucubit crops.

The seed weight was recorded in different cultures varied from 4.567 (v13) to 8.817 gm (v10) and 4.367 (v13) to 8.963 gm (v10), with the general mean weight which was
observed 5.885 gm and 6.047 gm during 1982-83 and 1983-84, respectively. The maximum weight of seed was followed 7.927 gm \( (V_{15}) \), 6.713 gm \( (V_{19}) \), 6.577 gm \( (V_{13}) \), 6.420 gm \( (V_{8}) \) during 1982-83 and 7.990 gm \( (V_{15}) \), 6.773 gm \( (V_{15}) \), 6.667 gm \( (V_{15}) \), 6.503 gm \( (V_{3}) \) during 1983-84. Similar variable production of seed weight have also been reported by Brenchley and Warrington (1930), Crocker (1938), Toole and Brown (1946), Steller et al. (1951), Darlington and Suindour (1961), B igns (1967), Das (1968), Abroskin (1968), Costacurta (1969), Collis geogra, Heertor (1971) and Roger (1975) in different crops.

Path coefficient analysis of fruit yield (by weight) relationship of different growth and reproductive attributes revealed the similar behaviour of relationships during 1982-83. However, the path ways of associations in direct path analysis revealed positive relationship of length of main axis (0.187), diameter of main axis (0.215), internodal length (0.183), length of primary branches (0.054), diameter of primary branches (0.033), length of lamina (0.085), diameter of lamina (0.094) etc. Characters with respect of fruit yield. Similar relationships of different characters with the path ways of association have also been found in different crops by Nandpuri et al. (1971, 1975), Padda et al. (1971, 1979), Panwar et al. (1977), Prasad and Prasad (1979 a), 1979 b, 1979 c, 1979 d, 1980), Prasad et al. (1980 a), Prasad and Sharma (1983 b, 1983 c), Prasad Rao and Chadha (1982), Ramgaswamy and Muragesan (1973), Sharma (1982), Sharma and Nath (1971), Sharma and Swarup (1964) and Sigh et al. (1978).
Present findings on heritability and genetic advance revealed useful results in different treatments of bottle gourd. Different characters of heritable nature also showed the mean range and estimates of the possibility for the improvement. Similar results have also been found by Naum and Prasad (1972), Venkarataraman (1967), and Kamalnathan and Thamburaj (1970) in Radish (Raphanus sativus L.), snake-gourd (Trichosanthes anguina L.) and pumpkin (Cucurbita moschata poir.) crop respectively.

In the findings of correlation of different aspects, it was found that growth of main shoot number of branches, male and female flowers, sex-ratio etc. Characters have showed the positive and significant correlations in respect of the yield of fruit. These findings of all these characters of correlations have been supported by Kamalnathan (1972) in ashgourd (Benincasa hispida Thumb.), Kamalnathan et al. (1972) in pumpkin (Cucurbita moschata L.), Thamburaj (1973), Prasad and Prasad (1977), Gotoh (1953), Dhesi et al. (1964) and Singh and Singh (1970).

Results obtained in the factor analysis also gave the relationship of several characters giving thereby useful findings of different attributes of this crop. Similarly the direct and indirect relationship of path coefficients have also exhibited the positive and significant results by factor analysis and path coefficients analysis in
respect of the various characters, similar results have also been obtained by Kamalnathan (1972), Thamburaj (1973), Nalni (1983), Prasad and Verma (1985), Prasad et al. (1978), Mathur and Nath (1978), Pal et al. (1982) and Prasad and Nalini (1985) in different covered crops. However, there were some negative relationships for certain attributes, but mostly there were positive and significant results in this crop.

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