DISCUSSION
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The data were collected on various aspects of brinjal and they were calculated for obtaining the results. The results obtained on various aspects of brinjal have been discussed in this chapter.

The plant height was found the maximum in variety $V_8$ (95.733 cm) during the year 1989-90 and in variety $V_{10}$ (96.700 cm) during the year 1990-91. During first and second years the general mean values were found 80.2867 and 81.6644, respectively. Besides varieties $V_8$ and $V_{10}$, few other varieties namely $V_1$ (during both the years) and $V_7$, $V_8$ (during second year) were also found to attain high values of plant height. These results are in accordance with the findings reported by the scientists in the field of solanaceous crops (Halsted and Kelsey, 1918b; Wright, 1921; Majtongi, 1936; Tatele, 1943; Jaiswal et al., 1974; Lal and Pathak, 1974; Selevaraj, 1977; Bailey and Munsen, 1981).

During the period of investigation it was observed that the main stem diameter was ranged from 2.113 to 2.427 cm in the varieties $V_7$ to $V_4$ and $V_{11}$ in the first year of the inves-
tigations but during consecutive year, it ranged from 2.217 \((V_7)\) to 2.450 cm \((V_6)\) with the general mean value of 2.3844. Besides, varieties \(V_6\) and \(V_{17}\) also possessed high values of main stem diameter during both the years where it was recorded 2.397, 2.450 cm and 2.413, 2.440 cm in the first and second years, respectively. A view on the results of many earlier research workers in different crops revealed that present results are in conformity with their findings as has been reported by Lal and Pathak (1974), Selvaraj (1979), Tetele (1943), Jaiswal et al. (1974) and Wright (1921).

Regarding branch number it was found that the variety \(V_5\) during both the years was recorded to produced the maximum branch number per plant. During first year it showed a value of 12.567 and in the second year a value of 12.800. The general mean values during 1989-90 and 1990-91 were found 9.6622 and 9.3222, respectively. Besides variety \(V_{15}'\), varieties \(V_9\) and \(V_{10}\) also exhibited the high branch numbers during both the years of these investigations. Earlier researches were carried out by a number of scientists in this crop and they had also reported similar findings (Baha Eldin, 1968; Singh, 1970; Pathak, 1972; Mehrotra and Dixit, 1973).

The length of laterals were found to
show a great range of variation during both the years of investigations. It ranged from 54.000 to 64.300 cm and from 54.233 to 64.200 cm in the varieties $V_4$ to $V_{14}$ in the first and second years, respectively. The other high values of length of laterals were found in the varieties $V_7$ (63.500), $V_{13}$ (62.667), $V_8$ (62.600 cm) in the year 1989-90 and in varieties $V_{10}$ (63.567), $V_9$ (63.467), $V_2$ (22.800 cm) in the year 1990-91. A great variation in the length of laterals have also been reported by Jaiswal et al. (1974), Lal and Pathak (1974), Selevaraj (1977), Bailey and Hunson (1981) and Halested and Kelsey (1986) in the growth behaviour investigations of different crops.

In the first year the diameter of laterals showed a promising variation of 1.270 to 1.393 cm in the varieties $V_{10}$ to $V_6$ with the general mean value of 1.3262. In the second year it ranged from 1.333 to 1.410 cm in the varieties $V_9$ to $V_{14}$ with the general mean value of 1.3660. However, it was again found that the varieties $V_1$ (1.373 cm) and $V_{12}$ (1.353 cm) in the year 1989-90 and varieties $V_7$, $V_{10}$ (1.390 cm) and $V_{15}$ (1.383 cm) in the year 1990-91 also recorded higher values of diameter of laterals. Researches have also been carried out by other research workers in this particular crop.
and they also obtained almost similar results. These researches proved positive variation on the findings reported by Singh and Nandpuri (1978), Singh et al. (1974), Cherebeva (1975), Mittal (1976), Singh (1976), Singh et al., (1976) and Dherm Geveda (1977). However, negative variations were also recorded due to climatic effect and they have been reported by Majtony (1936), Selevaraj (1977), Singh et al. (1974), Lal and Pathak (1974), Lantion et al. (1963), Rajhi (1964) and Singh (1974) in different crops.

During both the years of investigation it was found that $V_{15}$ variety took the minimum period (days) to flower during both the years of investigation. In the first and second years, it showed values of 37.000 and 38.233 days, respectively. Contrary to this, varieties $V_{8}$ (69.500), $V_{9}$ (64.000) and $V_{11}$ (64.300 days) in the previous year and in the second year some varieties like $V_{8}$ (69.200), $V_{9}$ (65.000), $V_{11}$ (62.033 days) were recorded to have higher values of days required to flowering. Present results are in accordance with the results given by Mishra (1977), Singh et al. (1978), Khan et al. (1978) and Khan (1979). Research trials conducted on in solanaceous crops exhibited almost similar results in respect of period of flowering.
and fruiting. However, climatic factors also affect the flowering and sometimes the adverse position have been reported on the basis of stress conditions during vegetative and reproductive growth period (Singh, 1974; Shrivastava, 1975; Oganesyam, 1977; Hari Badr et al., 1977; Pathak, 1972; Misra, 1980).

Regarding days required to edible fruit size, it was observed that variety V_{15} (46.833 days) during first year and V_{10} (49.467 days) during successive year took the minimum number of days to develop edible fruit size. The general mean values in the first year and second year were found 61.2356 and 62.3556 days, respectively. On the other hand, varieties V_{8} (81.233, 81.467), V_{11} (72.500, 71.100) and V_{2} (69.133, 70.200 days) during both the years took more period for development of edible fruit size. These results are in accordance with the results already reported by Lal and Pathak (1974), Tetek (1943), Bailey and Munson (1981), Mishra (1977) and Singh (1976).

Total number of fruits/plant was found to show a great range of variation and it varied from 9.600 to 51.600 and from 10.733 to 50.500 fruits/plant in the varieties V_{8} to V_{14} during first and second years, respectively. During 1989-90
the general mean value was found 23.1844 and in the year (1990-91) it was found 23.6533. This great range of variations left basis for making improvement in brinjal plant material and such recommendations have also been made by other research workers (Biswas, 1964; Rajbi, 1964; Henderson, 1952; Sambandam, 1962; Srivastava and Bajpai, 1977; Peter and Singh, 1974; Singh and Khanna, 1978).

In the previous year of the investigation it was found that the maximum fruit length was recorded in the variety $v_3$ where it gave a value of 24.567 cm and in the variety $v_{10}$ in the successive year it recorded the value of 21.633 cm. The general mean value in the years 1989-90 and 1990-91 was found 15.0222 and 15.3444, respectively. The variation in fruit length is an important finding for making improvement (Jonra Aver, 1941; Stebbins, 1950; Vavilov, 1951; Jinks, 1954; Gotoh, 1956; Singh and Nandpuri, 1974; Mishra, 1980).

Fruit width obtained during first year had maximum value of 10.467 cm which was recorded in the variety $v_{12}$. However, during second year it recorded 11.033 cm in the same variety. The general mean values during 1989-90 and 1990-91 were found 5.9933 and 6.3067 cm, respectively. However,
varieties $V_6$ and $V_9$ were also found to have high values of fruit width during both the years of these investigations. A large number of research workers namely Singh and Nandpuri (1974), Singh et al. (1974), Charebova (1975), Mittal (1976), Dherm Gwoda (1977) and Mishra (1977) also obtained similar results during their experimental trails.

Fruit size index showed a great range of variations, and it was found to vary from 36.000 to 167.800 cm in the varieties $V_7$ to $V_8$ during 1989-90 and from 36.900 to 165.133 in the same varieties during 1990-91. The other varieties showing high values of fruit size index were $V_6$ (92.167, 91.500) and $V_{10}$ (96.600, 97.967). The general mean values were found 80.2867 and 81.6822 in the first and second years, respectively. Fruit size index has been reported to have its basis for selections in crop plants. With above views, Chaudhary and George (1962), Pathak (1972), Prasad and Prasad (1974), Bhutani et al. (1977), Khan et al. (1978) and Singh et al. (1978) have also reported their findings.

Where on one hand variety $V_{14}$ showed the minimum value of fruit weight, the variety $V_8$ showed the maximum values of it during both the
years. In the first year 3.267 gm and in the second year 3.307 gm fruit weight was recorded in the variety \( V_8 \). The general mean value in the first year was found 1.6182 gm and in the second year it was 1.6036 gm. The weight of fruit revealed a good deal of range of variation which has also been reported by Tiwari (1966), Srivastava and Sachan (1973), Singh et al. (1978), Singh and Singh (1980) and Mishra (1980).

Regarding fruit yield it was observed that the maximum fruit yield was obtained in the variety \( V_8 \) (3.580, 3.657 kg.) during both the years of the present investigation. During these two years the general mean values were found 2.5184 and 2.5198 kg., respectively. The results obtained by many other scientists in their researches also confirm the above findings (Bailey and Munsen, 1981; Selvaraj, 1977; Pathak, 1974; Jaiswal et al., 1974; Singh et al., 1976; Singh et al., 1978; Khan et al., 1978; Khan, 1979; Chandramurthy, 1966; Kumar and Singh, 1986.

**HERITABILITY, GENETIC ADVANCE AND COEFFICIENT OF VARIATION**

The highest heritability values were found 99.0856 and 99.5519 per cent for fruit size
index during first and second years, respectively. Besides, characters namely fruit length 98.7049, 97.1682 per cent, fruit width 98.3995, 97.2125 per cent and days to flower 96.1000, 59.25 per cent gave heritability estimates. However, the highest heritability along with high value of genetic advance was found for the character fruit size index (99.0856, 62.2721 per cent) in the year 1989-90 and 99.5519, 59.4908% in the year 1990-91. Thus highest genetic advance was found for the same character. Other high values of genetic advance were found for the characters plant height (18.3099, 19.3903), days to flower (17.5810, 16.9265) and number of fruits/plant (24.7414, 25.6436 per cent) during first and second years of the investigations, respectively. These results are in conformity with the results obtained by Jasmine (1954), Dhesi et al. (1964), Pathak (1972), Gill et al. (1976) and Mishra (1980).

Regarding genotypic coefficient of variation it was observed that the maximum variation was found 55.5428 for the character fruit weight and maximum Phenotypic coefficient of variation was found 53.9943 for the character number of fruits/plant in the year 1989-90. However, in the year 1990-91, the maximum genotypic coefficient of
variation was found 52.8835 for character number of fruits/plant and maximum phenotypic coefficient of variation 53.1933 for the same character. Variability studies, especially in this crop have also been carried out by Mehindra and Dixit (1973), Prasad and Prakash (1974), Singh and Nandpuri (1974), Singh et al. (1974) and Bhutani et al. (1977) who reported the similar results.

Presents results of different characters in accordance with the results of other scientists (Sprague and Tatum, 1942; Jasmine, 1954; Nakamura, 1954; Jinks, 1956; Chaudhary and George, 1962; Desi et al., 1964; Pathak, 1972; Wanjari and Phandix, 1974; Gill et al., 1976; Mishra, 1980). Similar results were also obtained on genetic advance by Bajlama (1918), Negi and Kida (1926), Teeise (1927), Kakizaki (1930, 1931), Joneva (1941), Pal and Singh (1946), Olland and Hope (1948) and Pal and Singh (1949).

crop and Kumar and Lal (1989) in tomato studied variability and they had also obtained the similar results in their investigations.

**CORRELATION COEFFICIENT**

The Phenotypic correlation coefficient showed that most of the characters were positively associated to each others. The characters namely days to flower and days to edible fruit size (0.7844), fruit width and fruit weight (0.8408), fruit size index and fruit yield/plant (0.7264), fruit width and fruit yield/plant (0.5374) and fruit weight and fruit yield/plant (0.5542) were found to be highly significantly and positively associated to each other during the year 1989-90. However, during following year, the characters such as plant height and fruit yield/plant (0.5469), branch number and plant height (0.57979), length of laterals and fruit yield/plant (0.5028), days to flower and days to edible fruit size (0.8243), fruits width and fruit size index (0.5170), fruit weight and fruit size index (0.7940) also showed highly significant positive associationships among themselves. These results are in accordance with the findings reported by Pal and Singh (1946), Singh et al. (1974), Singh and Khanna (1978) and Mishra (1980).
As regards the genotypic correlation it was found that the characters fruit width had its significant positive correlation with characters namely diameter of laterals (0.5206), Fruit size index (0.6467), fruit weight (0.8552) and fruit yield/plant (0.6072) during the year 1989-90. In the same year, significant positive associationship was found between the characters number of fruits/plant and main stem diameter (0.5437), days to edible fruit size and days to flower (0.8222), fruit width and fruit size index (0.6467), fruit width and fruit weight (0.8552) and fruit yield/plant and fruit width (0.6072) and fruit yield/plant and fruit size index (0.6817). During consecutive year, fruit size index showed its positive correlation with the characters plant height (0.3393), main stem diameter (0.3675), branch number (0.2394), length of laterals (0.2088), days to flower (0.3653), days to growth of edible fruit size (0.4522), fruit width (0.5220) and fruit yield (0.8126). Similar correlations have also been reported by Singh and Khanna (1978), Kalyanasundaram (1979) and Mishra (1980).

Regarding the environmental correlations, it was found that only few characters were positively associated to each other. Such type of
associationship was found between the characters main stem diameter and fruit width (0.2780), diameter of laterals and fruit weight (0.2943), days to flower and diameter of laterals (0.2850), fruit length and fruit size index (0.3221), fruit length and first yield/plant (0.1715), fruit width and main stem diameter (0.2780) in the first year of the investigations. However, during successive year plant height showed positive associationship with the characters namely main stem diameter (0.1233), branch number (0.3170), number of fruits/plant (0.2999) fruit width (0.2677), and fruit size index (0.1307). Fisher (1918), Srivastava and Sachan (1973), Singh and Khanna (1978), Kalyanasundaram (1979) and Mishra (1980) also conducted research trials and obtained results of such correlation coefficients. Their results are in conformity with the results of present investigations. Besides, correlation studies have also been carried out by many other research workers and they also obtained similar results in other crops (Crusteva, 1985; Mishra, 1980; Hiremath and Rao, 1974; Kumar and Lal, 1989; Kalyan, 1979; Khurana et al., 1988; Vijay et al., 1978).

**PATH COEFFICIENT ANALYSIS**

Regarding phanotypic path coefficient
it was found that character days to flower showed positive relationship with the characters namely plant height (0.4299), main stem diameter (0.1671), diameter of laterals (0.1529), days to edible fruit size (0.4299), number of fruits/plant (0.3372), fruit size index (0.1523), fruit weight (0.1841), and fruit yield/plant (0.1958) during previous year of these investigations. But during second year of the investigations fruits yield/plant showed its positive relationship with the characters such as main stem diameter (0.2528), branch number (0.1588), length of laterals (0.1476) and number of fruits/plant (0.3612). Dherm Gowda (1977) and Singh et al. (1978) have also mentioned similar findings in their experiments.

As regards genotypic path coefficient it was observed that fruit length had positive relationship with the characters diameter of laterals (0.3934), days to flower (0.8080), days to edible fruit size (0.3063) and fruit size index (0.2990). Similarly number of fruits/plant had its positive relationship with the characters such as plant height (1.3069), branch number (0.7105) diameter of laterals (0.2625), days to flower (0.2878), fruit length (1.3069) and fruit width (0.5567) in the year 1989-90. In the year 1990-91
fruit size index showed positive relationship with the characters such as plant height (0.3714), main stem diameter (0.1260), branch number (0.1565), days to edible fruit size (0.1357), number of fruits/plant (0.1680), fruit size (0.1357), number of fruits/plant (0.1680), fruit width (0.0698) and fruit weight (0.3714). These results are in confirmity with the findings reported by Tiwari (1966), Singh et al. (1978) and Singh and Singh (1980).

When environment path coefficient was taken into consideration it was observed that characters which were positively related to each other were main stem diameter and plant height (0.1798), main stem diameter and branch number (0.1798), main stem diameter and fruit size index (0.0336) and main stem diameter and fruit weight (0.0302) during previous year of the investigation. But during next year number of fruits/plant showed its positive relationship with the characters namely plant height (0.7141), main stem diameter (0.2142), branch number (0.1743), length of laterals (0.1687), days to flower (0.5550), days to edible fruit size (0.1034), fruit length (0.7141), fruit width (0.1352), fruit weight (0.2943) and fruit yield/plant (0.8421), and Kide (1926), Schimdt
Maytong (1936), Kamechi (1963), Empig et al. (1964) and Dherm Gowda (1977) also carried out similar trials and obtained almost similar results. Besides, many other scientists also conducted research trials in this direction and it was observed that these results are in conformity with their findings (Allard, 1956; Dhesi et al., 1964; Tiwari, 1966; Srivastava and Sachan 1973; Singh et al., 1978; Singh and Singh, 1980; Khan et al., 1989; Khurana et al., 1988; Vijay et al., 1978).