

In respect of main plot treatments mammuty digging upto 30 cm depth registered higher values for hydraulic conductivity than the other treatments.

From the foregoing results it becomes evident that organic amendments

like coir dust, FYM and groundnut shell powder favourably increased the available NPK contents of soil besides improving the physical characters like infiltration rate, total porosity and hydraulic conductivity of red soil with distinct hard pan.

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EFFECT ON DATES OF SOWING AND GROWTH PATTERNS OF PIGEONPEA [*Cajanus cajan* (L) Millsp.] IN WINTER SEASON

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ABSTRACT

The investigation was carried out during winter seasons of 1980-81 and 1981-82 at the University Farm, Kalyani to study the response of 20(105), 5(124), HY3C and Bahar varieties of pigeonpea to different dates of sowing (September 29, October 14 and 29 and November 14 and 30). Variety Bahar recorded maximum LAI, leaf, stem, pod, total dry matter per plant and also CGR, whereas variety 20(105) had the minimum LAI, leaf, stem, pod, total dry matter per plant and CGR. Date of sowing significantly influenced the dry matter production of leaf, stem and pod, LAI and CGR. September 29 sowing was found superior to other dates of sowing in respect to all the characters studied.

KEY WORDS : Pigeonpea, Sowing date, Growth pattern

Pigeonpea is one of the most promising legumes but the yield potentiality of this crop is very low in India. The main

reasons of low level of production are non-availability of high yielding disease resistant varieties and non-adoption of

proper agro-techniques for cultivation with inadequate fertilizer application (Ram and Giri, 1973). Pigeonpea is generally sown with the onset of monsoon in June - July (kharif) and occupies the field for over nine months. The duration of this crop is reduced by about 16 - 24 per cent in different varieties when grown during rabi (winter) season as compared to their normal duration in kharif season (Sengupta and Sen, 1980). The time of sowing of pigeonpea is one of the most important factors influencing the yield as well as maturity of the crop. Very early sowing encourages vegetative growth whereas delayed sowing decreases growth (Dhingra et al., 1983). The information on the growth pattern of pigeonpea grown during winter months is very limited. Hence an attempt has been made to investigate the effect on dates of sowing, growth pattern and to determine the optimum time of sowing during winter season.

MATERIALS AND METHODS

The investigation was carried out in sandy loam soil having 0.07% total nitrogen, 36.0 and 112.0 kg/ha of available P_2O_5 and K_2O respectively and pH 7.4 at University Farm, Kalyani, West Bengal during winter seasons of 1980 - 81 and 1981 - 82. The experiment was laid out in a randomised block design with three replications and the treatments consisted of twelve combinations of four dates of sowing (September 29, October 14 and 29 and November 14 in 1980 - 81 and October 14 and 29 and November 14 and 30 in 1981 - 82) and three varieties of pigeonpea (5(124), 20(105) and Bahar in 1980 - 81 and HY3C, 20(105) and Bahar in 1981 - 82). The crop was fertilized with 20 kg of N, 50 kg of P_2O_5 and 30 kg of K_2O /

ha as basal dressing. The plot size was 4 m x 5 m with a spacing of 20 x 15 cm. The crop was harvested on 27th March to 13th April. For growth analysis, the destructive samples (leaf, stem, pod) from randomly selected ten plants from each plot were taken 30 days after sowing (DAS) at 15 days interval upto harvesting and for the calculation of crop growth rate of plants, Watson's (1952) method was followed and for leaf area index (LAI), leaf margin of ten leaves were traced on plain paper and the leaf area was worked out with the help of a Planimeter and LAI was then calculated. The minimum and maximum temperatures of the crop seasons varied from 10.77 to 25.67°C and 26.10 to 36.43°C respectively. The maximum and minimum relative humidity were from 79.61 to 91.63 and 41.7 to 67.25 respectively.

RESULTS AND DISCUSSION

Leaf area index (LAI) was increased with the growth of the crop upto 120 DAS (2.3 - 2.8), thereafter a decline was observed due to leaf senescence. This trend was observed for all varieties. Bahar maintained higher LAI throughout the growth period whereas minimum was recorded by 20(105).

LAI went on increasing with increase in age of the plant upto 120 DAS (1.9 - 3.1) in September and October planting and upto 105 DAS (1.5 - 1.9) in November planting and a decline was observed thereafter due to leaf senescence. Similar results were observed in LAI due to variation in dates of sowing by Battacharyya and Bandyopadhyay (1983) in the horse gram.

The leaf dry weight was increased upto 120 DAS (7.5 - 10.5 g/plant) and

then a decline was observed due to leaf senescence. This trend was observed in all varieties but Bahar maintained higher dry matter accumulation over other varieties which has been reflected positively on the attitude of LAI. Earlier sowing encouraged better vegetative growth of plant and so the leaf dry matter was higher in plants sown early as compared to the plants sown late which was very much similar with LAI.

Dry matter accumulation in stem went on increasing in all varieties upto harvest during both years. Among the varieties tested, 20(105) produced the least whereas Bahar maintained its superiority over other varieties. Irrespective of age of the crop, September and October sown plants accumulated more dry matter in stem over November sown plants. Among dates of sowing, stem dry matter accumulation was found to increase upto harvest.

Variety 20(105) maintained higher dry weight of pods over other varieties at 105 and 120 DAS. Thereafter Bahar attained its superiority over other varieties upto harvest. The rate of dry matter accumulation in pod was maximum during 150 to 165 DAS (0.24 - 0.39 g/plant/day) in all varieties. September sown plants accumulated food materials in larger amounts and consequently September sown arhar plants produced more dry weight in pod as compared to that planted during October and November because early sown plants produced more dry weight of leaf and also recorded maximum LAI which helped the plants to produce more food for the sink. Among the dates of sowing, dry weight of pod

was found to increase with age of the plant.

Variety 20(105) produced the lowest dry matter of all varieties because this variety accumulated the least dry weights in leaf and stem throughout the growing period in comparison with other varieties. Bahar maintained its superiority in total dry matter production due to higher dry weights of leaf, stem and pod. Variation in dry matter production of pigeonpea varieties was also observed by Dhingra et al. (1980). Effect of sowing dates on the total dry matter production followed the trend of leaf, stem and pod dry weight. The maximum and minimum total dry matter production were observed from plants sown during September and November respectively in both years. The results indicate that the crop is sensitive to variation in day length and temperature. Significant reduction in total dry matter production due to delay in sowing time was noted as observed by Kaul and Sekhon (1975) in pigeonpea.

Irrespective of variety, crop growth rate (CGR) went on increasing upto 90-105 DAS (0.33 to 0.45 g/plant/day) during 1980 - 81 and upto 105 - 120 DAS (0.37 to 0.43 g/plant/day) during 1981 - 82 and then a decline was observed. Among the varieties tested, Bahar produced higher CGR as compared to other varieties in almost all dates of observation because Bahar had the highest LAI which increased total photosynthesis in plants. Among the dates of planting, CGR went on increasing upto 90 - 105 DAS during 1980 - 81 and upto 105 - 120 DAS during 1981 - 82. CGR was found greater near the time of maximum LAI and tended to decrease as

LAI decreased. The sowing in September 29th was found superior to other dates of sowings in respect of all the

characters studied. This is in conformity with the findings reported by Major (1977) on rape.

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VHC 2 A NEW T X D HYBRID COCONUT FOR TAMIL NADU

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ABSTRACT

A new coconut hybrid VHC 2 was synthesised by combining ECT X MDY. This hybrid possessed high yield potential than the local ECT in terms of nut and copra yields. VHC 2 is characterised by low values for bunch buckling and leaf drooping which are the disadvantages commonly met in T x D hybrids. VHC 2 is recommended for commercial cultivation in Tamil Nadu.

KEY WORDS : Coconut hybrid, Nut yield.

The manifestation of hybrid vigour in coconut was first reported in India during 1932 (Patel, 1937). In intervarietal combination involving 'Tall' as male parent and 'Dwarf Green' as pollinator palms, hybrid vigour was found expressed in seedling characters. Heterosis was also observed

in other economic characters at adult palm stage, such as high rate of growth, leaf production, nut yield and nut quality. Precocity was the most advantageous feature contributed by the dwarf pollinator. Since then, several hybrid combinations were synthesised in different parts