

PLANT POPULATION RESPONSES IN DETERMINATE AND
INDETERMINATE CULTIVARS OF PIGEONPEA
(cajanus cajan (L) Mill sp)

By

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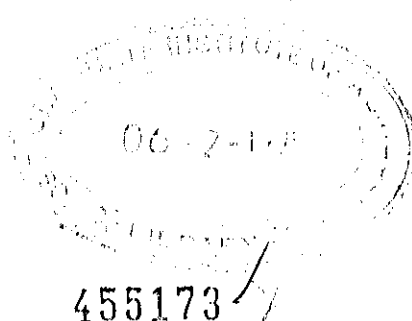
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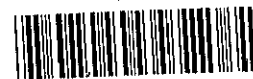
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ABSTRACT

Pigeonpea (Cajanus cajan, (L) Mill sp) locally called as Turdhal is a potential crop which could be used as a substitute for Lentils (Lens culnaris). It can be grown successfully under rainfed conditions in Sri Lanka. Since the introduction of this crop to Sri Lanka, little research has been conducted in relation to its agronomy. Therefore field experiments were carried out at the Regional Agricultural Research Centre, Maha Illuppalama during the Yala 1991, Maha 91/92 and Yala 1992 seasons to estimate the plant population responses in pigeonpea. The preliminary experiment was carried out with determinate (ICPL 87 and ICPL 151) and indeterminate (ICPL 2 and ICPL 84045) varieties. Row spacing of 30, 36, 42, 48, 54, 60 and 66cm were used with 5, 8, 11, 14, 17, 20 and 23cm spacings between plants within rows. The optimal level of inter and intra row spacings were 66 and 23 cm respectively.

The second experiment was carried out with cultivars ICPL 87 and ICPL 84045. Row spacings of 30, 45 and 60cm for ICPL 87 and 30, 60 and 75cm for ICPL 84045 were used with 10, 20, 25 and 30cm spacings between plants within rows. Vegetative and reproductive characters of different pigeonpea varieties indicated no interaction between inter and intra row spacing. Plant density had no significant influence on the plant height, node number and canopy

width. However, ICPL 84045 had the greatest canopy width and node number at wider spacing. The dry matter content of plants at early stages was not influenced by population densities. However, a significant difference was observed at harvest for ICPL 87 and ICPL 84045.

The number of seeds per pod and hundred seeds weight were not affected by density. The number of pods per plant declined with closer spacing. Yields per plant also declined with decreased spacing along with pod number per plant. However, grain yield per hectare significantly increased and reached a maximum value at closer spacings in Maha planting. Yala yield did not differ among the different inter row spacings except for ICPL 2 (main crop) and ICPL 87 (ratooned crop). The plant size and grain yield of main crop (maha plants) was lower than that of (yala) ratooned crop.

Based on the above studies at Maha Illuppalama inter row spacings of 65cm and 45cm and intra row spacings of 23cm and 10cm could be recommended for pigeonpea varieties ICPL 87 and ICPL 84045 for Yala and Maha planting respectively. However, due to the variation in soil and climate, further studies should be carried out in different locations of the dry zone of Sri Lanka.