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Evaluation of Different Pigeon Pea Hybrids and Varieties for Yield Trait under Central Dry Zone of Karnataka, India

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A B S T R A C T

Pigeonpea (*Cajanus cajan* L.) is the second most important pulse crop after Chickpea which constitutes a major protein-rich food supplement for most Indians. Among pulses, pigeonpea observed to be a major source of protein for about 20 % of the world population and with rich source of minerals and vitamins. Pigeonpea *dal* is playing a vital role as a staple food across the country and playing an important role in National Economic and Nutritional Security. Pigeonpea is widely grown in India with 3.56 m ha, which contributes 76 % of global area and 2.31 m tonnes of global production. But present rate of consumption and demand of pulses is increasing annually by 3.3 %. In this endeavour, the use of hybrid pigeonpea technology has potential to increase the yield. The present investigation consists of 16 entries sponsored by IIPR, Kanpur was conducted at Zonal Agricultural and Horticultural Research Station, Hiriyur, Chitradurga district, Karnataka during 2015-16 *kharif* season to study their potentiality mainly with respect to yield and yield attributing traits. The results revealed that there was a significant difference among all the parameters; which indicates that the existence of sufficient variation for effective selection. NTL 30 entry recorded higher yield of 1719 kg/ha followed by SKNP 1216 entry of 1555 kg/ha. The reason behind this higher yield might be because of more number of branches and pods per plant (154) and 100 seed weight (12g).

Introduction

Pigeonpea (*Cajanus cajan*) is a legume crop with diploid chromosome number of 2n=22, belongs to family Fabaceae, one of the oldest protein source of human food, in the form of green pods as well as grains since centuries. It is an excellent source of protein, minerals and vitamins and has multiple uses *viz.*, food, feed, fuel, soil enricher, soil binder etc. It also used in fencing, roofing and basket making (van der Maesen, 2006). Although, India produces 2.4 million tons of pigeonpea, the per capita availability of pigeonpea is gradually declining (Saxena, 2005) and one of the main reason for this is widening of demand and supply gap due to mismatch in the growth of human population and production of protein rich pulses. In order to maintain self-sufficiency in pulses production for the ever-increasing population, a proportionate increase in their production is essential. The present investigation was conducted at the Zonal Agricultural and Horticultural Research Station, Hiriyur, Chitradurga district, Karnataka during 2015-16 *kharif* season to study their potentiality with respect to yield trait mainly.

Materials and Methods

The material for the present study comprised of 16 different entries sponsored by IIPR, Kanpur. The seed material was sown in Randomized Complete Block Design with recommended Agronomic and Plant Protection practices were followed during crop growth period to raise a good crop. The application of recommended dose of fertilizer (25:50:25 NPK kg/ha) applied to the plot. Several yield and yield attributing traits were recorded in pigeon pea crop (Table 1). Each plot consisted 6 rows of 4 m length with inter and intra row spacing of 60 and 20 cm, respectively. To avoid border effect, one border row plants in all the 4 sides of the plot were excluded from the plot yield and yield kg/ha, it was calculated considering net plot area 8.6 m^2. The Agronomic practices included like Basal application of Recommended Dose of Fertilizers (RDF), two hand weedings and two irrigations were practiced. Data were recorded on days 50% flowering, Plant height (cm), plant stand at the time of harvesting, Number of primary branches/plant, Number of secondary branches/plant, Number of pods/plant, 100 seed weight (g) and yield (kg/ha). The statistical analysis was performed using AGROBASE GEN-II software.

Results and Discussion

The results revealed that there was a significant difference among all the parameters; which indicates that the existence of sufficient variation for effective selection among the entries. Increase in seed yield was due to better synchronization of flowering resulted in higher number of pod set. Among the entries NTL 30 entry recorded higher yield of 1719 kg/ha followed by SKNP 1216entry with an yield of 1555 kg/ha.

Table.1 Yield and yield attributing traits in pigeonpea hybrids

Entries	Yield (kg/ha)	Days to 50 % flowering	Plant height (cm)	Number of primary branches/plant	Number of secondary branches/plant	Number of pods /plant	100 seed weight (g)
WRGE 90	934	74.7	154.0	6.3	3.3	181.0	9.9
AH 12-09	340	54.3	82.0	5.3	2.3	104.0	8.5
LRG 160	816	74.3	199.7	4.3	2.3	132.7	10.6
SKNP 1216	1555	66.3	195.3	3.7	3.7	118.0	10.0
PT 04-378	1115	75.7	193.3	3.3	3.7	165.3	11.5
WRGE 92	1038	79.7	215.3	3.7	2.7	147.3	10.4
PT 0705-3-1-1	1267	77.3	191.7	4.7	3.7	150.7	11.4
BRG 15-4	1226	55.7	222.3	5.7	2.7	102.3	12.7
AH 12-11	372	55.0	89.0	4.7	4.0	102.3	9.3
RKPV 310-07	1142	63.0	122.3	3.3	4.7	104.7	9.4
GRG 177	1010	82.7	147.3	3.3	2.7	104.0	11.5
BRG 15-3	1062	80.0	200.0	4.7	4.7	144.7	11.4
NTL 30	1719	75.7	195.7	3.7	2.7	153.7	11.6
RKPV 449-02	826	70.3	173.0	3.3	2.7	144.0	10.5
UPAS 120 (C)	906	61.0	112.3	3.3	3.0	101.7	8.4
PT 0012 (C)	1233	74.7	182.3	3.7	2.3	146.3	11.0
SEm±	100.5	1.7	6.3	0.4	0.4	4.8	0.2
CD (0.05P)	308.0	5.0	18.3	1.1	1.3	13.9	0.7
CV (%)	18.0	4.3	6.6	16.2	23.8	6.3	3.8

The reason behind the higher yield might be because of more number of pods per plant (154) and 100 seed weight (12g). Early to medium duration Redgram hybrids with resistance to major diseases and pests are most likely to acceptable by farming community (Saxena, 2015).

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