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## Study the effect of potassium levels on pigeon pea (*Cajanus cajan* L.) yield attributing characters

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### Abstract

An experiment was conducted at Rajaula Agriculture farm, Mahatma Gandhi Chitrakoot Gramodaya Vishwa Vidyalaya, Chitrakoot, Satna (M.P.) during *Kharif* season 2010. Both remained at par in all these growth character, variety UPAS-120 showed higher dry matter accumulation/ plant (151.14 g.), about 75 per cent podding was observed earlier, record higher values of pods/ plant (170.30) pod length (5.66 cm), seeds/pod (3.50), seed weight/ plant (24.19% higher) produced higher seed yield (9.91 q/ha.), stick yield (27.42 q/ha.) and biological yield (49.67 q/ha.), than uday. Which exhibited dry matter (141.93 g), pods/ plant (166.80), pod length (5.36 cm) seeds/ pod (3.20), seed weight (22.16 g/plant), seed yield (9.309/ha.) stick yield (25.55 g/ha) and biological yield (47.35 q/ha.). However, pod length and yield of both the variety were found significant at 40 kg/ ha, potassium dose level. Pigeon pea variety UPAS 120 was found superior over UDAY 2788.

**Keywords:** Biological yield, seed weight, seed weight/ plant and seed yield

### Introduction

Pigeon pea is an important pulse crops of India Pigeonpea in long duration crop sown in *Kharif* season and continued till end of Rabi season, thus single crop is taken in whole year, short duration varieties are also available which compete their life cycle with in khaki season, thus they can be grown in double cropping sequence even in rainfed situation. Pulses play an important role in Indian agriculture. They pigeon pea ranks second only after chickpea. In India pigeon pea is growing on the area of 3.53 millions hectares with 2.31 million toes of annual production and 63 kg/ha. Productivity (Kantar *et al.*, 2005) [6]. Pigeon pea is grown on 0.32 million hectare of area with 737 kg/ ha productivity. (Ali and Kumar, 2007) [7]. In rain fed conditions, mostly single crop of pigeon pea is taken either as pure crop or in different mired cropping. Pigeon pea exhibits disturbances is reproductive phase and fruit setting and yields are poor and uncertain, short durable Pigeon pea variety have provided the opportunity for multiple cropping is imitated and rainfed areas as well. Adoption of short durable variety in different cropping systems may be helpful in increasing the Pigeon pea area in the country and also the total crop production. Along with variety proper nutrition is essential to exploit yield potential of a variety in particular situation, grain legumes in general require high amounts of potassium for normal growth and development. Potash is major nutrient and is different in Pigeon pea field causing field reduction. So, different scientists recommended application of 20 kg/ha. Over control (Kulkarni and Panwr, 1980 and Yadav *et al.*, 1993) [2, 8].

### Material and Methods

The treatments comprised of 10 combinations of 2 Pigeon pea variety of short duration and 5 levels of potassium. Two short durable varieties were UPAS 120 and UDAY 2788. 5 levels of potassium were 0 kg, 20 kg, 40 kg, 60 kg and 80 kg/ha., In this wary total treatment combinations were 10 including control, all the 10 treatments were tested in a factorial randomized block design with three replication gross plot size was 3m x 5m with total experimental area 693.5 m<sup>2</sup> Treatments were allocated randomly to different plots in each replication, soil of the experimental field was prepared by giving cross ploughing with tractor drawn disc grow by cross ploughing with tractor, each plinking was done after each. ploughing. An uniform dose of 110 kg/ha. diammonium phasphate containing 18 percent N and 46 per cent P was applied uniformly in all treatment plots to supply 20 kg N and 50kg P/ha. In experimental crop. Potashic fertilizer was applied in form of marinate of potash as per treatment to supply 20, 40, 60 and 80 kg/ha. Regained quantity of MOP as per treatment was mired with DAP and applied with the help of funnel known as chonga attached with country

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plough used for seed sowing: Treat seeds with thiram @29g/kg seed + carbendazim @1 g/kg were also treated with rhizobium culture as per recommendation, dried in shade for an hour and used in showing, sowing of seeds was done behind country plough in furrows opened 50 cm apart. To save the crop from insect pests, two spraying of monocrotophos 36 EC @ 1 liter/ ha. per spraying were done on crop, crop in each net plot was harvested separately, tied in bundles plot wise and properly tagged were sun dried and weighed plot wise, threshing was done by beating with woodless sticks, seeds were separated from straw by winnowing final stand of plant was maintained after thinning for observation., To individual plant observation 5 sample plants in each net plot are selected randomly plant height of these plants was measured from base to top with meter scale., The sum of 5 plants height was divided by 5 and mean plant height was recorded in arm for different treatment plots.

In this way observation plant dry weight, number of days to flowering and 75% podding was done. For yield attributes; observation on number of pods/ plant, pod length, number of seeds/ pod seed weight / plant, test weight of 100 seed were taken and harvest index was worked out, seed yield, stick yield and straw yields were also investigated by putting observed value in data, statistical analysis was done as per methods compiled by an available.

### Results and Discussion

The important results were obtained after perusal of data presented in table-1 on growth character, yield attributes and yield. Plant height at 135 days was recorded higher in variety UDAY 2788 (160.80 cm) than UPAS 120 (153.38 cm). Number of days to 50 percent flowering was similar in both variety but 75 per cent podding was observed earliest in variety UPAS 120 (115.47 days) than variety UDAY 2788 (122.34 days), variety UPAS 120 recorded higher values of pods/plant

(170.30), pod length (5.66 cm.) seed/ pod (3.50), seed weight/ plant (24.19%), than UDAY 2788 which produced 166.80 pods/ plant, 5.36 pod length, 3.20 seeds/ pod, 22.16 g/ plant seed weight, 7.30 g/100 seed weight and harvest index 19.07% variety UPAS 120 produced highest seed yield (9.91 Q/ha.), stick yield (27.42 q/ha) and biological yield (49.67 q/ha) than UPAY 2788 which record 9.30 q/ha. seed yield, 25.55 q/ha stick yield and 47.35 q/ha. Biological yield, however straw yield was produced higher in UDAY 2788 (12.78 q/ha) than UPAS 120 (12.34 q/ha). Dry matter accumulation was not found significant at various levels of K application but both variety produced higher dry matter at various levels of K application, 50 per cent flowering was not effected by K levels significantly but 75 per cent podding was delayed with increasing K level. Number of pods/ plant in both variety were found significant at 40 kg dose level/ha only pod length was significant at 40 kg/ha. In both of variety. Seed weight/plant increased significantly in both of the variety at 20 kg/ha K level over control. Number of seeds/pod and 100 seed weight were recorded numerically highest (3.40 seed/pod and 7.55 g 100 seed weight) at 20 kg/ha. K application. Harvest index was not influenced by K application significantly but numerically it decreased with increasing K levels. Seed yield increase beyond 40 kg/ha. Was not found significant, straw and stick yields were found at same pattern in both variety of Pigeon pea and did not significantly differ. It can be concluded that Pigeon pea variety UPAS 120 was found superior ones UDAY 2788 from production point of view, optimum dose of potassium for highest seed production of UPAS 120 was worked out to be 64.03 kg/ha with highest yield estimate of 10.94 q/ha. Results of most of the parameter are in conformity of the results of Ali and Kumar 2008 <sup>[1]</sup>; Kulkarni and Panwar 1980 <sup>[2]</sup> and Singh 2009 <sup>[4]</sup>.

**Table 1:** Effect of different level of potash and varieties on various parameter of pigeonpea

Yield attributing characters parameter							
Variety/K level	No. of pod/plot	Pod length (cm)	No. of seeds/pod	seed weight/plant	Seed yield (q/ha.)	Stick yield (q/ha.)	Biological yield (q/ha.)
UPAS 120	170.30	5.66	3.50	24.14	9.91	27.42	49.67
UDAY 2788	166.80	5.36	3.20	22.16	9.03	25.55	47.35
Factor V (S.Ed.)	3.32	0.05	0.04	0.75	0.29	0.70	1.21
Factor K (S.Ed.)	5.25	0.08	0.06	1.19	0.40	1.11	1.92
Factor VxK (S.Ed.)	7.45	0.12	0.09	1.68	0.66	1.57	2.72
CD (P=0.05)	NS	0.11	0.08	1.58	0.62	1.48	NS
CD K	11.03	0.18	NS	2.50	0.98	2.33	4.04
CD VxK.	NS	NS	NS	NS	NS	NS	NS

### Conclusion

Among the higher values of pods/ plant (170.30) pod length (5.66 cm), seeds/pod (3.50), higher seed weight/ plant (24.19 g) produced higher seed yield (9.91 q/ha.), stick yield (27.42 q/ha.) and biological yield (49.67 q/ha.), than uday. Which exhibited dry matter (141.93 g), pods/ plant (166.80), pod length (5.36 cm) seeds/ pod (3.20), seed weight (22.16 g/plant), seed yield (9.309/ha.) Stick yield (25.55 g/ha) and biological yield (47.35 q/ha.).

### References

1. Ali M, Kumar S. Pulses: wide array of improved varieties. The Hindu Survey of Indian Agriculture, National prass. Kasturei Buildings, Chennai; c2008 p. 43-

45.

- Kulkarni KR, Panwar KS. International pigeonpea workshop, 15-19 Dec., 1980 at ICRISAT/ ICAR, India; c1980.
- Mishra MK, Singh M. Potassium nutrition of pigeonpea journal of potassium research. 1991;7:132-149.
- Singh SS. Functions of essential plant nutrients: potassium soil fertility and nutrient management kalyani publishers, New Delhi; c2009. p. 176-197.
- Yahiya M, Khan ST, Hayat S. Influence of potassium on growth and yield of pigeonpea (*Cajanus Cajan*). Indian Journal of Agronomy. 1996;41(3):25-31.
- Elkoca E, Kantar F, Zengin H. Weed control in lentil (*Lens culinaris*) in eastern Turkey. New Zealand Journal

- of Crop and Horticultural Science. 2005 Sep 1;33(3):223-231.
7. Kumar Malik D, Baboota S, Ahuja A, Hasan S, Ali J. Recent advances in protein and peptide drug delivery systems. *Current drug delivery*. 2007 Apr 1;4(2):141-151.
  8. Yadav MS, Monroe KB. How buyers perceive savings in a bundle price: An examination of a bundle's transaction value. *Journal of Marketing Research*. 1993 Aug;30(3):350-358.