Original Research Article

Evaluation of Different varieties of Cowpea (*Vigna unguiculata* (L.) Walp.) in Prayagraj Agro-Climatic Conditions.

ABSTRACT

The experiment was conducted to evaluate the growth parameters, reproductive parameters and yield parameters of fifteen different varieties of cowpea in Prayagraj agro-climatic conditions. It was performed at the Research Field of the Department of Horticulture in the year 2022 between August and December. Simple RBD was used for the analysis, with three replications. The observations were made about several characters. Based on the observations recorded, Red Rose and Selection Hanghama were found to be the best varieties in terms of earliness, viz., days to 1st flowering (33.27 days) and (33.47 days) and days to 50% flowering (37.53 days) and (38.60 days), respectively. In terms of yield, Booster Cowpea and Kashi Kanchan were found to be the best over other varieties, *viz*., yield per plant (473.80g) and (387.87g), pod yield (17.55 t/h) and (14.37 t/h) respectively.

Keywords: *Cowpea, Varieties, Earliness, Yield*

1. INTRODUCTION

A widely grown and eaten grain legume vegetable is the cultivated cowpea, also known as yard long bean (*Vigna unguiculata* (L.) Walp.). It is mostly grown for the seeds and for its sensitive, long, green pods. With a chromosomal number of 2n-2x 22, it is a member of the Leguminosae family and suggests that domesticated cowpea originated in West or Central Africa. The crop is primarily farmed in intercropping systems, where the low plant population prevents the cultivars from reaching their maximum yield potential.Even if this crop is comparatively more adapted to harsh environments, there are still significant obstacles that must be overcome in order to produce it. Cowpeas are legumes, which help to fix atmospheric nitrogen. It utilises part of this for its own growth and development while also leaving some in the soil for companion and succeeding crops to benefit from (Boukar et al., 2019). Over the years, India has grown a variety of vegetables. Our nation is the second largest producer of vegetables after China, with an estimated annual production of about 162.18 million tonnes from an area of 92.05 lakh ha and a productivity of 17.6 MT/ha (Anonymous, 2014).However, India only provides 275g of vegetables per person per day, compared to a minimum requirement of 300g per person per day (Anonymous, 2012).

Due to their distinct climatic requirements, the performance of different Cowpea varieties differs under different agro climatic conditions. In order to increase output, it is crucial to evaluate varieties for their variability in terms of growth, yield, and quality under various situations. In Uttar Pradesh, it is possible to cultivate the varieties created by private and public organisations commercially.

These varieties' effectiveness in the agro climatic zone of Prayagraj has not been assessed. In this context, it is crucial to assess the commercially available varieties in order to find high yielding kinds for raising output and productivity.

2. MATERIALS AND METHODS

Fifteen different cowpea varieties were used in the experiment, which was performed using various sources listed in Table No. 1. At the Vegetable Research Farm, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology And Sciences, Prayagraj (U.P.), the experiment was carried out using a randomised block design with three replications in the kharif season of 2022. The Department provided all of the necessary growing facilities, including labour. This chapter presents a detailed description of the resources used and the methods used for this investigation.

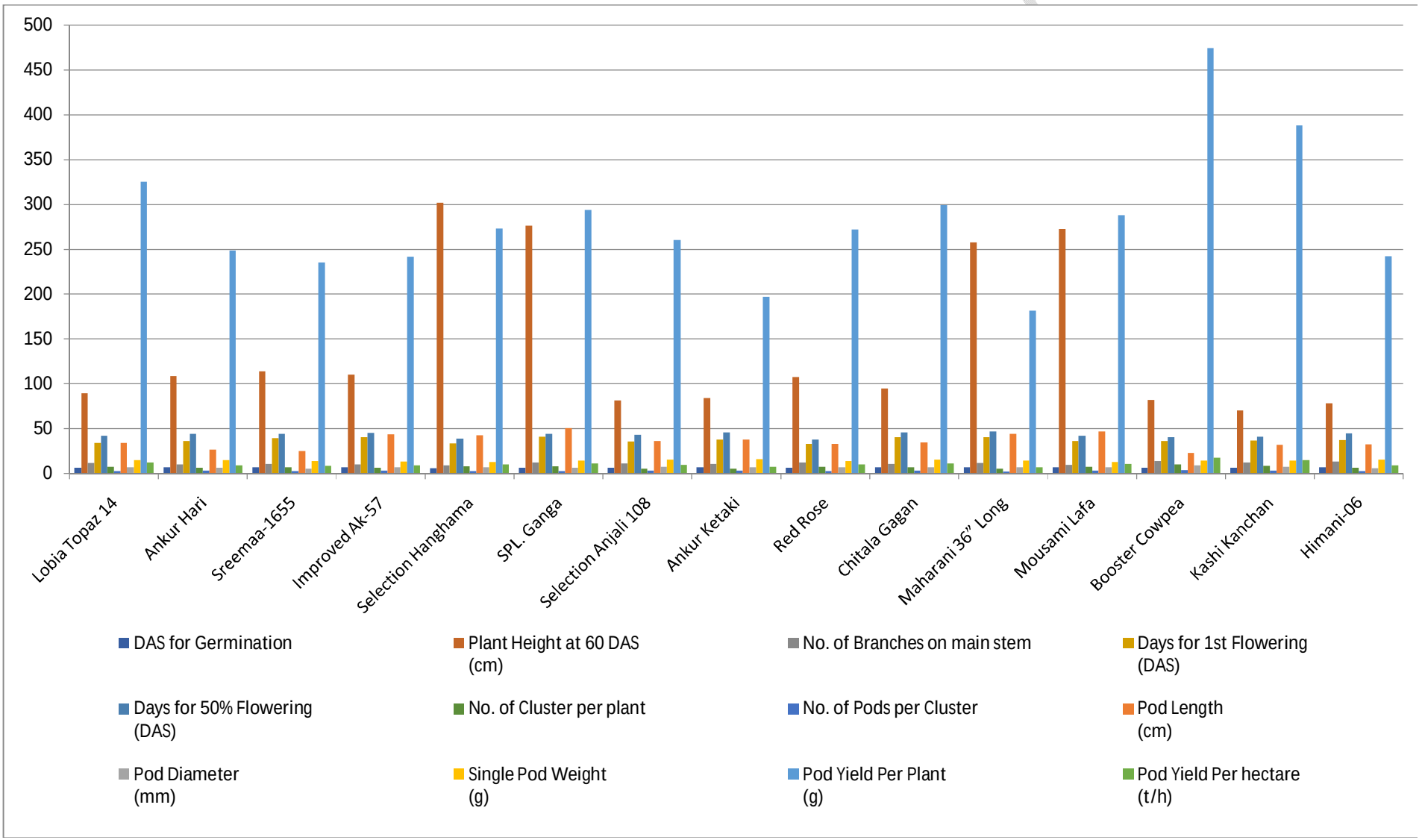
Table 1. Experimental details

Sl no.	Notation of Varieties	Variety Names	Sources
1	V1	Lobia Topaz 14	Sodhai Ram & Sons, Varanasi
2	V2	Ankur Hari	Ankur Seeds, Nagpur
3	V3	Sreemaa-1655	Sreemaa Seeds, Cuttack
4	V4	Improved Ak-57	Sultan Seeds, Srinagar
5	V5	Selection Hanghama	Mahashakti Seeds, Azamgarh
6	V6	SPL. Ganga	Mahashakti Seeds, Azamgarh
7	V7	Selection Anjali 108	Mahashakti Seeds, Azamgarh
8	V8	Ankur Ketaki	Ankur Seeds, Nagpur
9	V9	Red Rose	Comiezo Agri Science Ltd., Raipur
10	V10	Chitala Gagan	Sodhai Ram & Sons, Varanasi
11	V11	Maharani 36” Long	Annapurna Beej Bhandar, Midnapur
12	V12	Mousami Lafa	Annapurna Beej Bhandar, Midnapur
13	V13	Booster Cowpea	Annapurna Beej Bhandar, Midnapur
14	V14	Kashi Kanchan	IIVR, Varanasi
15	V15	Himani-06	Pearl Seeds, Delhi

3. RESULTS AND DISCUSSIONS

Table 2. Performance of different cowpea varieties for growth and pod yield

Notations	Varieties	DAS for Germination	Plant Height at 60 DAS (cm)	No. of Branches on main stem	Days for 1st Flowering (DAS)	Days for 50% Flowering (DAS)	No. of Cluster per plant	No. of Pods per Cluster	Pod Length (cm)	Pod Diameter (mm)	Single Pod Weight (g)	Pod Yield Per Plant (g)	Pod Yield Per hectare (t/h)
V1	Lobia Topaz 14	6.00	88.87	11.71	34.07	41.80	7.58	2.67	33.87	7.13	14.43	325.40	12.05
V2	Ankur Hari	6.40	108.53	9.80	36.20	44.20	5.96	2.82	26.53	6.00	14.47	248.08	9.19
V3	Sreemaa-1655	6.40	113.77	10.47	39.13	43.93	6.64	2.67	25.17	5.20	13.30	235.17	8.71
V4	Improved Ak-57	6.93	110.17	10.24	39.80	45.27	5.87	3.11	43.75	6.27	13.10	241.51	8.94
V5	Selection Hanghama	5.73	301.68	8.87	33.47	38.60	8.22	2.69	42.58	6.73	12.50	272.61	10.10
V6	SPL. Ganga	5.87	276.10	12.22	41.20	44.13	7.93	2.56	50.31	6.20	13.97	293.99	10.89
V7	Selection Anjali 108	5.87	80.94	11.02	35.73	42.93	5.24	3.20	36.01	7.33	15.23	260.50	9.65
V8	Ankur Ketaki	7.00	83.89	10.64	37.47	45.33	5.09	2.76	37.49	6.93	15.83	196.56	7.28
V9	Red Rose	6.00	107.53	12.07	33.27	37.53	7.67	2.62	33.09	6.47	13.63	271.61	10.06
V10	Chitala Gagan	6.33	94.78	10.47	40.47	45.40	6.67	2.87	34.61	6.67	15.73	298.76	11.07
V11	Maharani 36" Long	6.33	257.29	11.71	40.73	46.60	4.84	2.13	44.11	6.53	13.87	181.33	6.72
V12	Mousami Lafa	6.33	272.17	9.64	35.80	41.80	7.33	3.14	46.39	6.87	12.37	287.70	10.66
V13	Booster Cowpea	5.87	81.54	13.62	36.00	40.20	9.91	3.56	22.51	8.80	13.93	473.80	17.55
V14	Kashi Kanchan	6.07	70.24	12.20	36.53	41.13	8.56	3.24	31.94	7.60	14.23	387.87	14.37
V15	Himani-06	6.73	78.09	12.87	36.80	44.33	5.84	2.64	32.74	5.40	15.50	242.36	8.98
F- test		**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
SE(m)		**0.204**	**2.989**	**0.485**	**0.69**	**0.61**	**0.294**	**0.186**	**0.512**	**0.025**	**0.862**	**11.151**	**0.413**
C. D. (@5%)		**0.593**	**6.155**	**1.411**	**2.01**	**1.78**	**0.856**	**0.542**	**1.492**	**0.072**	**1.283**	**32.469**	**1.202**
CV		**5.63**	**2.584**	**7.515**	**3.20**	**2.56**	**7.386**	**11.306**	**2.461**	**6.375**	**10.554**	**6.869**	**6.863**


500
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Lobia Topaz 14
Ankur Hari
Sreemaa-1655
Improved Ak-57
Selection Hanghama
SPL. Ganga
Selection Anjali 108
Ankur Ketaki
Red Rose
Chitala Gagan
Maharani 36" Long
Mousami Lafa
Booster Cowpea
Kashi Kanchan
Himani-06
DAS for Germination
Plant Height at 60 DAS (cm)
No. of Branches on main stem
Days for 1st Flowering (DAS)
Days for 50% Flowering (DAS)
No. of Cluster per plant
No. of Pods per Cluster
Pod Length (cm)
Pod Diameter (mm)
Single Pod Weight (g)
Pod Yield Per Plant (g)
Pod Yield Per hectare (t/h)

Fig 1. Performance of different cowpea varieties for growth and pod yield

3.1 Number of days to germination

Number of days to germination was varied from 7.00 to 5.73 DAS. The maximum days to germination was recorded in Ankur Ketaki (7.00 DAS), followed by (6.93 DAS) in the Improved Ak-57and minimum days to germination (5.73 DAS) was recorded in the Selection Hanghama.

3.2 Plant height at 60 DAS

Plant height at 60 days was varied from 301.68 cm to 70.24 cm. The maximum Plant height at 60 days (301.68 cm) was recorded in Selection Hanghama, followed by SPL. Ganga (276.10cm) and minimum plant height at 60 days (70.24 cm) was recorded in the Kashi Kanchan. Similar findings were previously reported by **Kandel P *et al.,* (2019).**

3.3 Number of branches on main stem

The number of branches per plant was varied from 12.87 to 8.87. The Maximum Number of Branches on main stem per plant (12.87) was recorded in the Himani-06, followed by Red Rose (12.07) and minimum Number of Branches per plant (8.87) was recorded in the Selection Hanghama. Similar findings were previously reported by **Sharma P *et al.,* (2019).**

3.4 Days to first flowering

The number of days to first flowering was varied from 40.73 to 33.27 DAS. The minimum day to first flowering (33.27 DAS) was recorded in Red Rose, followed by Chitala Gagan (40.47 DAS). And the Maximum number of days to First Flowering (40.73 DAS) was recorded in the Maharani 36" Long. Similar findings were previously reported by **Sharma P *et al., (*2019).**

3.5 Days to 50% flowering

The number of days to first flowering was varied from 46.60 to 37.53 DAS. Minimum days to 50% flowering (37.53 DAS) was recorded in Red Rose, followed by Chitala Gagan (45.40 DAS). And the Maximum number of days to 50% Flowering (46.60 DAS) was recorded in the Maharani 36" Long. Similar findings were previously reported by **Sharma P *et al., (*2019).**

3.6 Clusters per plant

Number of cluster per plant was varied from 9.91 to 4.84. Maximum number of pods per cluster (9.91) was recorded in the Booster Cowpea, followed by Kashi Kanchan (8.56) and minimum number of pods per cluster (4.84) was recorded in Maharani 36" Long. Similar findings were previously reported by **Subedi S *et al.,* (2019).**

3.7 Pods per cluster

Number of cluster per plant was varied from 9.91 to 4.84. Maximum number of pods per cluster (9.91) was recorded in the Booster Cowpea, followed by Kashi Kanchan (8.56) and minimum number of pods per cluster (4.84) was recorded in Maharani 36" Long. Similar findings were previously reported by **Subedi S *et al.,* (2019).**

3.8 Pod length (cm)

Length of the pod was varied from 50.31 cm to 22.51 cm. Maximum pod length (50.31cm) was recorded in the SPL. Ganga followed by Mousami Lafa (46.39 cm) and minimum pod length (22.51 cm) was recorded in the Booster Cowpea. Similar findings were previously reported by **Gupta S *et al., (*2019).**

3.9 Pod diameter (mm)

Pod diameter was varied from 8.80 mm to 5.20 mm. Maximum pod diameter (8.80 mm) was recorded in the Booster Cowpea, followed by Kashi Kanchan (7.60 mm) and minimum pod diameter (5.20 mm) was recorded in the Sreemaa-1655. Similar findings were previously reported by **Gupta S *et al., (*2019).**

3.10 Single Pod weight (g)

Weight of single pod was varied from 15.83 g to 12.37 g. Maximum weight of single pod (15.83 g) was recorded in the Ankur Ketaki, followed by Chitala Gagan (15.50 g) and minimum single pod weight (12.37 g) was recorded in the Mousami Lafa. Similar findings were previously reported by **Gupta S *et al., (*2019).**

3.11 Pod Yield Per Plant (g)

Maximum yield per plant (473.80 g) was recorded in the Booster Cowpea, followed by Kashi Kanchan (387.87 g). Minimum Yield per plant (181.33 g) was recorded in the Maharani 36" Long. Similar findings were previously reported by **Kandel P *et al., (*2019).**

3.12 Pod Yield Per hectare (t/h)

Maximum yield per plant (473.80 g) was recorded in the Booster Cowpea, followed by Kashi Kanchan (387.87 g). Minimum Yield per plant (181.33 g) was recorded in the Maharani 36" Long. Similar findings were previously reported by **Kandel P *et al., (*2019).**

4. CONCLUSION

The analysis of variance found significant variations between varieties, showing that all of the features have a sufficient level of variability. The Cowpea varieties Booster Cowpea and Kashi Kanchan were found as desired with a high fruit output per plant based on the mean replicated data on fifteen varieties quantitative traits.

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