



EVALUATION OF IVY GOURD (*Coccinia cordifolia* L.) GENOTYPES IN ALLAHABAD AGRO-CLIMATIC CONDITION

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ABSTRACT: An evaluation trial on ivy gourd (*Coccinia cordifolia* L.) genotypes in Allahabad agro climatic condition was conducted at vegetable research farm, Department of Horticulture, SHIATS Allahabad for 16 characters *i.e.* days to first female flower anthesis, plant height, internodal length, petiole length, fruit length, fruit diameter, average fresh fruit weight, number of seeds/fruit, number of fruits per plant, yield per plant, yield per hectare, TSS (°Brix) and ascorbic acid content. Eight genotypes of ivy gourd, namely Arka Neelachal Sabuja, Arka Neelachal Kunkhi, AAIIG – 1, AAIIG – 2, AAIIG – 3, AAIIG – 4, AAIIG – 5 and AAIIG – 6 were evaluated in randomized block designed in three replication during 2011. The genotype AAIIG – 1 and Arka Neelachal Sabuja showed minimum days to female flower anthesis. The highest fruit length and fruit diameter were obtained by Arka Neelachal Kunkhi and AAIIG – 1, respectively and maximum fruit weight was exhibited by genotypes AAIIG – 1. The most promising genotype was AAIIG – 1 for maximum number of fruit per plant and fruit yield per plant followed by Arka Neelachal Sabuja.

Keywords: Ivy gourd evaluation, high yielding, genotypes, anthesis.

Ivy gourd (*Coccinia cordifolia* L.) is an underexploited cucurbitaceous perennial vegetable crop. It is an aggressively climbing vine that spread quickly over trees, shrubs, fences or other supports. It is grown mostly in homestead farms for tender fruits in almost all regions of the country. Immature fruits are used for cooking which are rich sources of carbohydrates, protein and vitamin A & C, Medicinally this vegetable is gaining importance among diabetic patients. It bears fruits almost throughout the year where mild winter prevails. In regions where severe winter occurs, it bears fruit for 8-9 months. Although this is considered as an underutilized vegetable, it is grown extensively in Chhattisgarh, West Bengal, Bihar and Karnataka on a commercial scale and giving remunerative returns to farmers. Availability of better cultivars and knowledge of many other preparations and uses of this crop can propel its evolution from an underutilized species to an important horticultural crop in Indian agriculture. But unfortunately till today no systematic research has been initiated in university and private institutions. Hence the evaluation trial on ivy gourd (*Coccinia cordifolia* L.) genotypes was initiated at Department of

Horticulture, SHIATS, Allahabad to help the vegetable growers.

MATERIALS AND METHODS

The investigation was carried out during 2011 at Department of Horticulture, Allahabad School of Agriculture, SHIATS, Allahabad. Eight genotypes were collected from Orissa, Chhattisgarh and Allahabad and planted in single row planting in randomized block design with three replications on vegetable research farm. Each experimental unit was represented 10 plants spaced at 1 meter, row spaced 1.5 meter and the plants were trained on trellis system. The fertilizer dose of 60:40:40 kg NPK/ha was given in 3 equal installments at every 30 days. Observation on growth parameters-days to first female flower anthesis, plant height, internodal length, petiole length (Table 1), yield parameters fruit length, fruit diameter, average fresh fruits weight, number of seed/fruit, number of fruits per plant, yield per plant, yield per hectare (Table 2) and quality parameters-TSS and ascorbic acid (Table 3) were recorded on 5 plants from every genotype in each replication. The data was subjected to statistical analysis as suggested by Panse and Sukhatme (4).

Table 1: Mean performance of Ivy gourd genotypes for growth parameters.

S. No.	Genotype	Days to first female flower anthesis	Plant height (cm)	Internodal length (cm)	Petiole length (cm)
1	Arka Neelachal Sabuja	39.33	369.00	11.10	3.90
2	Arka Neelachal Kunkhi	56.67	296.67	07.83	2.53
3	AAIIG-1	39.33	289.77	10.10	4.10
4	AAIIG-2	46.00	318.55	12.47	6.63
5	AAIIG-3	44.00	322.00	11.77	5.73
6	AAIIG-4	51.33	293.67	08.57	3.57
7	AAIIG-5	43.33	255.00	06.60	6.60
8	AAIIG-6	41.00	310.00	08.17	8.17
	C.D. (P = 0.05)	7.16	54.59	1.01	0.77

Table 2: Mean performance of Ivy gourd genotypes for yield parameters.

S. No.	Genotype	Fruit length (cm)	Fruit diameter (cm)	Average fresh fruit weight (g)	Number of seeds/ fruit	Number of fruits / plant	Yield per plant (kg)	Yield per hectare (t)
1	Arka Neelachal Sabuja	6.17	2.80	26.00	206.00	365.33	5.98	14.95
2	Arka Neelachal Kunkhi	8.27	1.97	18.00	182.67	210.00	3.10	07.76
3	AAIIG-1	5.40	3.05	27.67	243.33	428.00	7.81	19.51
4	AAIIG-2	4.50	2.70	20.64	165.33	251.33	3.45	08.63
5	AAIIG-3	5.30	2.94	26.67	188.00	272.33	4.11	10.27
6	AAIIG-4	5.67	2.24	18.00	149.33	286.00	4.07	10.23
7	AAIIG-5	5.93	2.09	16.00	176.67	188.00	2.82	07.06
8	AAIIG-6	4.33	2.04	09.67	143.67	218.67	3.03	07.59
	C.D. (P=0.05)	0.45	0.24	4.99	18.14	53.59	0.56	1.40

Table 3: Mean performance of Ivy gourd genotypes for quality parameters.

S. No.	Genotype	TSS (°Brix)	Ascorbic Acid	B : C ratio
1	Arka Neelachal Sabuja	3.70	14.70	2.74
2	Arka Neelachal Kunkhi	2.90	12.70	1.42
3	AAIIG-1	4.06	15.37	3.58
4	AAIIG-2	3.28	14.33	1.58
5	AAIIG-3	3.07	13.90	1.89
6	AAIIG-4	2.75	13.27	1.88
7	AAIIG-5	3.28	12.87	1.30
8	AAIIG-6	2.87	12.27	1.39
	C.D. (P=0.05)	0.26	0.42	



AAIIG - 1



Arka Neelachal Sabuja



Arka Neelachal Kunkhi

RESULTS AND DISCUSSION

Growth attributing characters of Ivy gourd (Table 1) like days to first female flower anthesis was significantly more in Arka Neelachal Kunkhi (56.67 days) and least was noticed in AAIIG - 1 (39.33 days) and Arka Neelachal Sabuja (39.33 days). Plant height was significantly more in Arka Neelachal Sabuja (369 cm), whereas in AAIIG - 1 it was 289.11 cm and least was noticed in AAIIG - 5 (255 cm). The variation in plant height might

have been due to internodal length, petiole length, genetic characters and morphological characters. Similar result was recorded by Dharmatti *et al.* (2).

Internodal length was significantly more in AAIIG - 2 (12.47 cm) followed by AAIIG - 1 (10.1 cm) and least was noticed in AAIIG - 5 (6.6 cm). Petiole length was significantly more in AAIIG - 6 (8.17 cm) and least was noticed in Arka Neelachal Kunkhi (2.53 cm). Similar opinions were expressed by Maharana *et al.* (3) in spine gourd.

The yield attributing characters (Table 2) like fruit length, fruit diameter, average fresh fruit weight, number of seeds per fruit, number of fruits/plant directly influence on the yield/plant and yield/ha. The fruit length was significantly more in Arka Neelachal Kunkhi (8.27 cm) followed by Arka Neelachal Sabuja (6.17 cm) whereas in AAIIG - 1 it was 5.4 cm and least was noticed in AAIIG-6 (4.33 cm). Fruit diameter was significantly more in AAIIG - 1 (3.05 cm) and least was noticed in Arka Neelachal Kunkhi (1.97 cm). The variation in fruit length might have been due to internodal length, plant height, genetic characters and morphological characters. Similar results were recorded by Dharmatti *et al.* (2).

The data indicate that average fresh fruit weight of AAIIG - 1 (27.67 g) was significantly superior than the other genotypes and less fruit weight was observed in AAIIG - 6 (9.67 g) confirming to results of Dharmatti *et al.* (2).

Number of seeds/fruit was significantly more in AAIIG - 1 (243.33) followed by Arka Neelachal Sabuja (206) and least was noticed in AAIIG - 6 (143.67) supporting the finding Bhave *et al.* (1) in bitter gourd.

Number of fruits/plant was significantly more in AAIIG - 1 (428) followed by Arka Neelachal Sabuja (265.33) and least was noticed in AAIIG - 5 (188). The variation in number of fruits per plant might have been due to internodal length, plant height, genetical variation and morphological characters. Similar result was recorded by Dharmatti *et al.* (2).

Among the 8 genotypes, AAIIG – 1 produced significantly higher fruit yield/plant during first 15 harvesting. The average fruit yield/plant of AAIIG – 1 genotypes was 7.81 kg followed by Arka Neelachal Sabuja (5.98 kg) and least was noticed in AAIIG – 5 (2.82 kg). Similar trend was noticed for yield/ha. The genotype AAIIG – 1 was recorded significantly higher yield/ha as compared to other genotypes. The average yield/ha of AAIIG – 1 genotype was 19.51 t/ha followed by Arka Neelachal Sabuja (14.95 t/ha) and least was noticed in AAIIG – 5 (7.06 t/ha). These results were in accordance with Dharmatti *et al.* (2).

The quality parameters of Ivy gourd fruit (Table 3) revealed that the genotype AAIIG -1 was significantly superior for all the traits. The more TSS and ascorbic acid were observed in AAIIG – 1 (4.06 °Brix, 15.37 mg/ 100 g fruit pulp) followed by Arka Neelachal Sabuja (3.70 °Brix, 14.7 mg/ 100 g fruit pulp). The least TSS was observed in AAIIG – 4 (2.75 °Brix) and least ascorbic acid was observed in AAIIG – 6 (12.27 mg/ 100 g fruit pulp). Similar results were reported by Ramchandaran and Gopalakrishnan (5) in bitter gourd.

CONCLUSION

From the present investigation it was concluded that the ivy gourd genotype “AAIIG – 1”

resulted in the highest fruit diameter, fresh fruit weight, number of fruits per plant, yield per plant, yield per hectare, TSS, ascorbic acid and Benefit Cost ratio (3.58) followed by genotypes Arka Neelachal Sabuja giving higher yield per plant and yield per hectare, respectively.

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