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Studies based on performance of different genotypes of yard long bean (*Vigna unguiculata* ssp. *Sesquipedalis* (L.) Verdic.)

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Abstract

Twelve genotypes of yard long bean based on performance under growth and yield were evaluated in Allahabad Agro-climatic condition under Randomized Block Design with three replications. The experiment was conducted on crop research farm of Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology & Sciences. Two genotypes were recorded superior over other genotypes COPBVAR -3 and LOLA-C for growth and yield respectively. COPBVAR -3 recorded highest in plant height (189.67 cm), number of branches (10.33), number of flowers per cluster (4.67) and early to days to 50% flowering (47.67). Similarly, LOLA-C recorded maximum total pod yield (264.67 q/ha).

Keywords: Yard long bean, agroclimatic, performance, total pod yield

Introduction

Yard long bean (*Vigna unguiculata* ssp. *sesquipedalis* (L.) Verdic.) is known as vegetable cowpea, asparagus bean. Yard long bean is widely grown in Southeast Asia, South China and West Africa for immature pods which are used as a vegetable. Yard long bean are day-neutral and tolerate heat and relatively dry conditions better than the pole bean. However, it does require a higher rainfall than the more drought-tolerant black-eyed pea. Yard long beans do not have a long shelf life. Decreased postharvest acceptability is the result of high respiration and wilting of the pods. Although low-temperatures storage will prolong shelf life, the pods are chilling-sensitive and are injured even after a few days at temperatures below 10°C. Darkening, rusty brown lesions, seed discoloration, and increased susceptibility to decay can occur if pods are stored between 5 and 7.5 °C. (Cantwell and Kasmire, 2002) [3].

It is a highly nutritive vegetable containing high percentage of digestible protein (23.52-26.27%) (Ano and Ubochi 2008) [1], calcium (72.0 mg), phosphorus (59 mg), iron (2.5 mg), carotene (564 mg), thiamine (0.07 mg), riboflavin (0.09 mg) and vitamin C (24 mg) per 100 g of edible pods. It is also a good source of micronutrients containing 102.69-120.02 mg kg⁻¹ of iron, 32.58-36.66 mg kg⁻¹ of zinc, 2.92-3.34 mg kg⁻¹ of manganese, and 0.33-0.57 mg kg⁻¹ of cobalt (Ano and Ubochi 2008) [1].

As Yardlong are rich in Vitamin C, it also lowers the risk of gout which is painful condition that afflicts big toe. It is caused due to the high uric acid that forms crystals in joints. In the study, those who intake 1000-1499 mg of Vitamin C, their chances of gout was decreased by 31%. Vitamin C is an antioxidant that prevents the damage of free radicals, pollutants and toxic chemicals. The buildup of free radicals results the health ailments such as heart disease, cancer and arthritis. The free radicals are created during the breaking down of food or when exposed to tobacco, smoke or radiation. The study shows that those who intake high amount of Vitamin C, it reduce the appearance of wrinkles, skin dryness and slows down the aging process. Vitamin C is essential for the skin, ligaments, blood vessels and tendons. It speeds up the healing process. The deficiency of folate increase the chances of colon, breast, cervical, lung and brain cancer. The evidences show that the intake of foods rich in folate prevents the cancer development. Folate assist to lower the homocysteine which is the protein build up that increase the chances of stroke and heart attacks. Those who intake high amount of folate, it helps to reduce the chances of cardiovascular disease. It reduces the risk of heart disease by improving the cardiovascular health. Thiamine tones the wall muscles of the digestive tract. Thiamine assists in hydrochloric acid secretion that is required for the food particle digestion and nutrient absorption. The healthy digestion assist to absorb the nutrients properly. It is a rich and inexpensive source of vegetable protein. It enriches soil fertility by fixing atmospheric nitrogen. Because of its quick growth habit it has become an essential component

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of sustainable agriculture in marginal lands of the tropics. But the productivity and quality of produce is low during the monsoon periods due to heavy rainfall and incidence of pests and disease resulting in increased vegetative growth and reduction in yield and quality of the produce. Selection of suitable varieties is an important step for successful and economic cultivation of vegetables.

The crisp, tender pods are eaten both fresh and cooked. They are at their best when young and slender. They are sometimes cut into short sections for cooking uses. As a West Indian dish, they are often stir-fried with potatoes and shrimp. In Odisha, India, they are used to make a variety of dishes, especially a sour dish Judunga Besara cooking along with mustard sauce and lime. They are also used in stir-fries in Chinese cuisine and Kerala cuisine.

Materials and Methods

The present experiment was carried out under randomized block design (RBD) at Departmental research field, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, during 2017 – 2018. The material for the study comprised of 12 cowpea genotypes, of which 6 were collected from IIVR, Varanasi and 6 were collected locally. Growth and yield data were collected throughout the experimental period from five randomly selected plants from each plot. Following observation were recorded Plant height (cm), Number of branches, Number of flowers per cluster, Days to 50% flowering, Total pod yield (q/ha). The analysis of variance technique was applied for drawing conclusions from the data. The recorded value of F was compared with tabulated value of F 5% level of probability for the appropriate degree of freedom. If calculated value exceeded the table value, the effect was considered to be significant.

Results and Discussion

The present investigation was carried out entitled “Studies based on Performance of different genotypes of Yard Long Bean (*Vigna unguiculata* ssp. *Sesquipedalis* (L.) Verdic.)”. The mean replicated data collected on twelve genotypes of Yard long bean were subjected to the appropriate statistical analysis for drawing valid conclusions. Table-1: Maximum plant height was recorded in COPBVAR-3 (189.67 cm) followed by COPBVAR-4 (167.33 cm), COPBVAR-5 (165.67 cm), check variety LOLA C (131.33 cm) and minimum for LOBIA YB-9 (104.33 cm). The highest number of branches was recorded in the genotype COPBVAR-3 (10.33), which was more with the genotypes IMPROVED AK-57 (8.67), COPBVAR-5 (8.33), NS-634 (8.33), COPBVAR-1 (7.67) and COPBVAR-6 (7.67), the lowest number of primary branches reported in genotype LOLA-C (5.67). The highest number of Flower per cluster was recorded in genotype COPBVAR-3 (4.67) was followed by COPBVAR-5 (4.33) and COPBVAR-1 (3.67). The lowest number of Flower per cluster was noticed in IMPROVED AK-57 and LOLA-C (2.67). days), ANDE (35.33 days) COPBVAR-4 (37.67 days) and COPBVAR-1 (37.67 days). The lowest days for fifty per cent flowering were recorded in the genotype COPBVAR-3 (47.67 days), followed by genotype COPBVAR-4 (48.33 days) and was significantly superior over rest of the treatments. Maximum days taken to fifty per cent flowering were recorded by the genotypes RICHA (53.67 days).

The highest pod yield per hectare was recorded in genotype LOLA-C (264.67 q/ha), followed by genotypes COPBVAR-1 (208.33 q/ha), COPBVAR-5 (170.67 q/ha), IMPROVED AK-57 (167.67 q/ha). The genotype NS-634 (95.67 q/ha) noticed the lowest pod yield per hectare.

Table 1: Mean performance of yard long bean for growth and yield

S. No.	Name of Genotypes	Plant height	Number of branches	Number of Flower per cluster	Days to 50% flowering	Total pod yield
01	COPBVAR-1	155.33	7.67	3.67	52.33	208.33
02	COPBVAR-3	189.67	10.33	4.67	47.67	130.33
03	COPBVAR-4	167.33	7.33	3.67	48.33	124.67
04	COPBVAR-5	165.67	8.33	4.33	51.33	170.67
05	COPBVAR-6	120.33	7.67	3.67	51.33	128.33
06	LOLA-C	131.33	5.67	2.67	52.67	264.67
07	IMPROVED AK-47	139.67	8.67	2.67	50.67	167.67
08	TS-18 LONG YARD	116.33	7.33	3.33	51.67	112.67
09	NS-634	124.67	8.33	3.33	52.33	95.67
10	RICHA	117.33	7.33	3.67	53.67	156.33
11	ANDE	126.33	7.33	3.67	49.67	113.67
12	LOBIA YB-9	104.33	7.33	3.33	50.67	128.33
13	Mean	138.19	7.78	3.56	51.03	150.11
14	Results	S	S	S	S	S
15	SE.d	1.15	0.74	0.47	1.95	1.38
16	C.D (5%)	2.39	1.53	0.97	4.05	2.85

Conclusion

Based on the present investigation it is concluded that the genotype COPBVAR – 3 were found to be best in terms of maximum plant height, Number of Branches, Number of Flower per cluster, Days to 50% flowering and Pod Yield/ha was recorded in genotype Lola C. and minimum was recorded in genotypes NS-634.

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