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Effect of organic & inorganic seed treatments on yield & yield attributing characters in Brinjal (*Solanum melongena* L.)

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Abstract

A field experiment was conducted during *kharif* season 2017 at field experiment, Department of Genetics and Plant Breeding, Naini Agricultural Institute, SHUATS, Allahabad (U.P.) to study the effect of organic & inorganic seed treatments on yield & yield attributing characters in Brinjal (*Solanum melongena* L.). The field experiments were laid out in a Randomized Block Design. All pre-sowing treatments recorded significantly higher yield parameters over control. However, GA₃ (100ppm) recorded significantly fruit yield (first Picking) 18.41 t/ha than the other pre-sowing treatments except ZnSO₄ (10%) and Cow Urine (20%). Similarly yield components were significantly higher in GA₃ (100ppm) where as control recorded significantly lower yield parameters.

Keywords: brinjal, seed treatment, yield, pre-sowing, organic and inorganic

Introduction

Brinjal (*Solanum melongena* L.) commonly known as egg plant, belongs to the family Solanaceae and referred by different names, viz., egg plant, aubergine, garden egg (French), baigan (Hindi), badanekai (Kannada), vangi (Marathi) and vankaya (Telugu). Brinjal is an important vegetable crop grown in India throughout the year. India is regarded as the center of origin of brinjal (Vavilov, 1931) [15]. Contrary to the common belief, it is quite high in nutritive value and can be well compared with tomato. Brinjal fruit contains high amount of Carbohydrates (6.4%), Protein (1.3%), Fat (0.3%), Calcium (0.02%), Phosphorus (0.02%), Iron (0.0013%) and other mineral matters. Apart from this, it also contains- Carotene (34 mg), Riboflavin (0.05 mg), Thiamine (0.05 mg), Niacin (0.5 mg) and Ascorbic acid (0.9 mg) per 100 g fruit (Choudhary, 1976) [12].

The brinjal plant contains an alkaloid called "solanine" found in roots and leaves. Some medicinal use of egg plant tissues and extract include treatment of diabetes, asthma, cholera, bronchitis and diarrhea, its fruits and leaves are reported to lower blood cholesterol levels. In dryland agriculture, drought resistance of plant is one of the very important factors to get the higher yield. Though, this is largely depends on genetic makeup of the variety, pre-sowing treatments like hardening also practiced to defy the ill effects of drought on emergence and growth of crop. Pre-sowing treatments have done in order to impart resistance against stress conditions viz., drought and cold to the emerging seedlings (Balamurugan *et al.*, 2003) [11].

Pusa Purple Round was developed at IARI, New Delhi. The plants are very tall with a thick stem of greenish purple colour. Leaves are highly serrated and deep green in colour. Fruits are round with purple colour. Each fruit weighs on an average 130-140g with only 6 fruits per plant, resistant to shoot borer and little leaf disease.

Materials and Methods

The field experiment for present investigation entitled was conducted during *kharif* 2017 at field experimental center, Department of Genetics and Plant Breeding, Naini Agricultural Institute, SHUATS, Allahabad U.P. The experiment consisted of 7 treatments involving one control (without pre-sowing treatment). The site of experiment is located at 25.57° N latitude, 81.51° E longitude and 98 meter above the sea level. The experiment was laid out in RBD (Randomized Block Design) with seven treatments replicated thrice. Fresh seeds were soaked in water with required quantity of chemicals and allowed to absorb moisture up to 40 per cent of their weight and kept in imbibed condition for about 24 hours at about 20°C. These were then spread out in a thin layer for drying under shade for two to three days, during this period the seeds get dried almost to the original weight, then taken for nursery sowing.

The experiment consisted of 7 treatments involving one control (without pre-sowing treatment). The details of the treatments are given below.

T₀: Control

T₁: ZnSO₄@ 5%

T₂: ZnSO₄@ 10%

T₃: Gibberellic acid@ 50ppm

T₄: Gibberellic acid@ 100ppm

T₅: Cow urine@ 10%

T₆: Cow urine@ 20%

Results and Discussions

In the present study fresh seeds of brinjal seeds (cv. Pusa Purple Round) was given pre-sowing treatment with ZnSO₄ (5%), ZnSO₄ (10%), GA₃ (50ppm), GA₃ (100ppm), Cow urine (10%), Cow Urine (20%), soaking-drying in addition to various concentration. The treated seeds were evaluated for field performance. The result are discussed here under.

There was remarkable effect on yield parameters under different treatment combination. Number of fruit per plant, fruit length (cm), fruit girth (cm), fruit weight (g), fruit

yield/plant (kg), fruit yield per plot (kg), fruit yield per ha. (t) has shown significant result with the application of different levels ZnSO₄, Gibberellic acid and Cow urine.

The seed treatment, T₄ (GA₃ @100ppm) was recorded maximum number of fruit per plant (6.16), fruit length (8.60cm), fruit girth (8.42cm), fruit weight (140.25g), fruit yield/plant (0.753kg), fruit yield per plot (4.31kg) and fruit yield per ha. (18.41t) followed by T₃ (GA₃ @50ppm). The similar results of higher fruit yield due to pre-sowing treatment with GA₃ 200ppm were reported by Jagadish (1993)^[4] in tomato, chilli, and onion and Tewari *et al.* (2001)^[14] in onion.

It is concluded from the present study different pre sowing seed treatments showed significant effect on yield parameters, treated with (T₄) Gibberellic acid@ 100ppm (Soaking) 24 hours recorded higher and followed by (T₃) Gibberellic acid@ 50ppm (Soaking) 24 hours. Gibberellic acid@ 100ppm (T₄) recorded significantly higher fruit length, fruit girth, fruit weight, fruit yield/plant(kg), fruit yield per plot (kg), fruit yield per ha.(t), it was the best treatment. These conclusions are based on the result of field investigation.

Table 1: Effect of pre-sowing seed treatments on fruit yield parameters in Brinjal.

Treatments	No. of fruit Per plant	Fruit Length (%)	Fruit Girth (%)	Fruit Weight (g)	Fruit yield Per plant (kg)	Fruit yield Per plot (kg)	Fruit yield Ha. (t)
Control	4.67	7.12	6.54	123.54	0.538	2.88	12.30
ZnSO ₄ @ 5%	5.16	7.50	6.57	125.24	0.646	3.23	13.80
ZnSO ₄ @ 10%	5.50	7.90	7.30	131.90	0.714	3.35	14.31
Gibberellic acid@ 50ppm	5.83	8.11	7.49	137.19	0.718	3.99	17.05
Gibberellic acid@ 100ppm	6.16	8.60	8.42	140.25	0.753	4.31	18.41
Cow urine@ 10%	5.00	7.90	6.31	130.89	0.554	3.27	13.97
Cow urine@ 20%	5.33	8.10	7.45	134.11	0.625	3.70	15.81
F-Test	S	S	S	S	S	S	S
S.Ed.±	0.028	0.026	0.028	0.044	0.005	0.262	0.017
C.D. (P=0.05)	0.060	0.056	0.062	0.096	0.010	0.571	0.037

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References

- Balamurugan P, Balasubramani V, Sundaralingam K. Nutrient coating and foliar application on seed yield and quality of sesame. ICAR short course on seed hardening and pelleting technologies for rainfed/garden land ecosystems, Tamil Nadu Agricultural University, Coimbatore, 2003, 192.
- Choudhury B. Vegetables (4th Edn.). National book trust, New Delhi, 1976, 50-58.
- Hore JK, Paria NC, Sen SK. Effect of pre-sowing seed treatment of germination, growth and yield of onion (*Allium cepa* L.) Var. Red globe. Haryana Journal of Horticultural Sciences. 1988; 17(1-2):83-87.
- Jagadish GV. Seed storability, ageing and effect of pre-sowing treatment on the performance of some vegetable crops. M.sc. (agri.) Thesis, University of Agricultural Sciences, Dharwad, 1993.
- Kumar AV, Dharmalingam C, Sambandamurthi S. Effect of pre-sowing treatment on seed yield and quality in bhendi. South Indian Horticulture. 1988; 36(3):118.
- Kumar K, Basavegowda, Sharnkumar. Effect of pre-sowing treatments on seed quality and field performance of brinjal hybrid cv. arka navneet (*Solanum Melongena* L.). International Journal of Agricultural Sciences. 2014; 10(1):441-445.
- Mitra R, Basu RN. Seed treatment for viability, vigour and productivity of tomato. Scientia Horticulturae. 1979; 11:365-369.
- Omran AF, Elbakry AM, Gawish RA. Effect of soaking seeds in some growth regulator solutions on the growth, chemical constituents and yield of okra. Seed Science and Technolog. 1980; 8(2):161-168.
- Rao SNK, Bhatt RM, Anithanaren. Effect of pre-sowing treatment on germination and seedling growth in *capsicum annum* cv. (*California wonder*) under different moisture levels. Vegetable Science. 2000; 27(1):51-53.
- Reddy SD, Palaniappan SP. Effect of seed soaking on the performance of greengram (*Vigna Radiata* L.). Madras Agricultural Journal. 1987; 74(3):175-176.
- Renugadevi J, Jacqueline A, Selvaraj. Effect of pre-sowing treatment on germination and vigour in bitter gourd (*Momordica Charantia* L.) cv. Co-1. Seed Research. 1994; 22(1):64-65.
- Sharma AK, Rattan RS, Pathania NK. Effect of plant growth regulators on yield and morphological traits in brinjal (*Solanum Melongena* L.). Agricultural Science Digest. 1992; 12:219-222.
- Tawab S, Ayub G, Tawabfaiza Khan O, Bostan N, Ruby G, Ahmad S *et al.* Response of brinjal (*Solanum Melongena* L.) Cultivars to zinc levels. Arpn Journal of Agricultural and Biological Science. 2015; 10(5):172-178.

14. Tewari N, Singh P, Lal, C, Katiyar PK, Vaish CP. Effect of pre-sowing seed treatment on germination growth and yield of onion (*Allium Cepa* L.). Seed Research. 2001; 29(2):238-239.
15. Vavilov NI. The role of Central Asia in the origin of cultivated plants. Bull. of Appl. Botany, 1931.