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Evaluation trial on ridge gourd (*Luffa acutangula*) under Prayagraj agro climatic condition

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Abstract

The present investigation entitled "Evaluation Trial on Ridge gourd (*Luffa Acutangula*) Under Prayagraj agro Climatic Condition" was conducted during *Rabi* season of 2022-23 at Central Research Farm, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Naini, Prayagraj. The present study was laid out in simple randomized block design with 8 varieties which were replicated thrice. The varieties were V₁ (2021/RIGVAR-1), V₂ (2021/ RIGVAR -2), V₃ (2021/ RIGVAR -3), V₄ (2021/ RIGVAR -4), V₅ (2021/ RIGVAR -5), V₆ (2021/ RIGVAR -6), V₇ (Faizabadi Long), V₈ (Jaipuri Long). On the basis of our experimental finding it is concluded that the Hybrid H8 was found to be best in the terms of Germination parameters, vegetative parameters, quality parameters, disease and pest incidence and. It was also found that the Hybrid H5 was found to be superior in the terms of yield and yield attributes and economics with highest B:C ratio with (2.48).

Keywords: Varieties, ridge-gourd, growth, development, yield and quality

Introduction

Ridge Gourd (*Luffa acutangula*) is a genus of tropical and subtropical vines in the family Cucurbitaceae. In everyday non-technical usage, the luffa, also spelled loofah, usually refers to the fruits of the species *Luffa aegyptiaca* and *Luffa acutangula*. It is cultivated and eaten as a vegetable, but must be harvested at a young stage of development to be edible.

The vegetable is popular in India, China, Bangladesh and Vietnam. When the fruit is fully ripened, it is very fibrous. The fully developed fruit is the source of the loofah scrubbing sponge which is used in bathrooms and kitchens. The name *luffa* was taken by European botanists in the 17th century from the Egyptian-Arabic.

In Hindi-speaking North Indian states, it is called *torai* and cooked as vegetable. In eastern-UP it is also called *nenua*. But in central/Western India, specially in Madhya Pradesh, it is called *gilki*. *Torai* is reserved for ridge gourd and is less popular than *gilki* in central western India.

The fruit of ridge gourd is elongated, cylindrical, and covered with ridges, hence the name "ridge gourd." It starts off green and matures to a yellowish-brown color. The flesh is white and spongy when young, but it becomes fibrous and sponge-like as it matures. Ridge gourd is harvested while still young for culinary purposes, as it becomes too fibrous for consumption as it matures. Ridge gourd is a warm-season crop that thrives in well-drained, fertile soil with plenty of sunlight. It requires regular watering and is susceptible to certain pests and diseases typical of cucurbitaceous plants. With its nutritional value and versatile culinary uses, ridge gourd remains a popular choice in many cuisines worldwide.

Materials and Methods

The present investigation entitled "Evaluation Trial on Ridge gourd under Prayagraj agro Climate Condition" was conducted at the central research farm of Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences Prayagraj during 2022-2023. The present study was laid out in simple randomized block design with 8 varieties which were replicated thrice. The varieties were V₁ (2021/RIGVAR-1), V₂ (2021/ RIGVAR -2), V₃ (2021/ RIGVAR -3), V₄ (2021/ RIGVAR -4), V₅ (2021/ RIGVAR -5), V₆ (2021/ RIGVAR -6), V₇ (Faizabadi Long), V₈ (Jaipuri Long). The research was carried out with an objective of evaluating growth and yield of ridge gourd.

Results and Discussion

The minimum number of days to germination in V1 (2021/RIGVAR-1) with (10.23) days, followed by V2 (Jaipuri Long) with (10.57) days which were significantly superior over V4 (2021/ RIGVAR -4) with (11.86) days.

The maximum Survivability % in V1 (2021/RIGVAR-1) with (88.65) %, followed by V2 (Jaipuri Long) with (86.29) % which were significantly superior over V4 (2021/ RIGVAR -4) with (76.58) %.

The maximum length of vine in V1 (2021/RIGVAR-1) with (213.56) cm, followed by V2 (Jaipuri Long) with (195.82) cm which were significantly superior over V4 (2021/RIGVAR -4) with (136.67) cm.

The minimum number of Days to 1st male flowering in V1 (2021/RIGVAR-1) with (44.89) days, followed by V4 (Jaipuri Long) with (44.92) days which were significantly superior over V8 (2021/ RIGVAR -4) with (45.89) days.

The minimum number of Days to 1st female flowering in V1 (2021/RIGVAR-1) with (46.25) days, followed by V4 (Jaipuri Long) with (47.21) days which were significantly superior over V8 (2021/ RIGVAR -4) with (47.29) days.

The minimum number of Days to harvesting in V1 (2021/RIGVAR-1) with (60.58) days, followed by V2 (Jaipuri Long) with (60.92) days which were significantly superior over V4 (2021/ RIGVAR -4) with (63.48) days.

The maximum number of Number of fruit/vine in V1 (2021/RIGVAR-1) with (13.62), followed by V4 (Jaipuri Long) with (13.05) which were significantly superior over H4 (2021/ RIGVAR -4) with (9.67). The maximum Fruit length in V1 (2021/RIGVAR-1) with (23.17) cm, followed by V8 (Jaipuri Long) with (21.72) which were significantly superior over V4 (2021/ RIGVAR -4) with (14.80).

The maximum Fruit diameter in V1 (2021/RIGVAR-1) with (4.90) cm, followed by V8 (Jaipuri Long) with (4.82) which

were significantly superior over V4 (2021/ RIGVAR -4) with (4.43).

The maximum fruit weight in V5 (2021/RIGVAR-5) with (111.28) g, followed by V3 (2021/RIGVAR-3) with (88.76) g which were significantly superior over V6 (2021/ RIGVAR -6) with (67.50) g.

The maximum yield/plant in V5 (2021/RIGVAR-5) with (1211.86) g, followed by V3 (2021/RIGVAR-3) with (1091.63) g which were significantly superior over V6 (2021/ RIGVAR -6) with (780.05) g.

Discussion

The minimum days to germination of a ridge gourd hybrid are influenced by various factors such as seed quality, soil conditions, temperature, and moisture levels. Hybrids may possess traits like disease resistance, adaptability to varying climates, and tolerance to stressors, affecting their survivability. Adequate spacing, soil fertility, and irrigation management can further influence vine length. Breeding programs aim to develop hybrids with desirable vine characteristics for specific regions and cultivation systems. Hybrids with genetic predispositions for early flowering exhibit shorter timeframes from planting to bloom initiation. Additionally, cultivation practices like soil fertility management and irrigation scheduling can affect flowering timing. Early maturing hybrids will be ready to harvest in less time than those bred for larger fruit or higher yields. Light, temperature, and water availability can all affect the growth rate of ridge gourd. Plants grown in warm, sunny conditions with consistent moisture will generally mature faster than those in cooler or drier environments. The increasing fruit weight of different hybrids of ridge gourd involves several mechanisms. These include enhanced cell division and elongation, increased water and nutrient uptake, and efficient carbohydrate metabolism.

Table 1: Evaluation of different varieties of ridge gourd for days to germination, survivability %, Vine length and Days to 1st flowering.

Symbol	Varieties	Days to Germination	Survivability %	Vine Length (cm)			Days to 1 st flowering	
				30 DAT	45 DAT	At Harvest	Male	Female
V1	2021/RIGVAR-1	10.23	88.65	95.62	162.35	213.56	44.89	46.25
V2	2021/ RIGVAR -2	11.78	82.72	71.68	90.46	154.67	46.00	48.62
V3	2021/ RIGVAR -3	11.39	84.19	68.12	88.92	147.26	45.00	47.62
V4	2021/ RIGVAR -4	11.86	76.58	52.38	78.19	136.67	45.89	47.29
V5	2021/ RIGVAR -5	11.78	83.29	65.48	86.14	150.78	45.56	48.28
V6	2021/ RIGVAR -6	11.11	82.61	61.82	107.32	169.67	45.44	46.92
V7	Faizabadi Long	11.53	81.09	72.35	95.68	170.08	46.11	48.67
V8	Jaipuri Long	10.57	86.29	88.29	148.29	195.82	44.92	47.21
	F Test	S	S	S	S	S	S	S
	CD@5%	0.243	0.625	2.524	2.689	2.715	0.652	0.841
	SE(d)	0.482	0.312	1.26	1.34	1.36	0.375	0.421
	CV	1.164	1.341	5.30	5.65	5.70	1.253	1.262

Table 2: Evaluation of different varieties of ridge gourd for days to harvesting, number of fruit/vine, fruit length, fruit diameter, fruit weight, yield/plant, and yield/ha

Symbol	Varieties	Days to harvesting	Number of fruit/vine	Fruit length (cm)	Fruit Diameter (cm)	Fruit Weight (g)	Yield/plant (g)	Yield/ha (ton)
V1	2021/RIGVAR-1	60.58	13.62	23.17	4.90	70.44	959.38	76.75
V2	2021/ RIGVAR -2	63.11	12.56	16.95	4.59	76.30	958.04	76.64
V3	2021/ RIGVAR -3	62.35	12.30	19.11	4.41	88.76	1091.63	87.33
V4	2021/ RIGVAR -4	63.48	9.67	14.80	4.43	84.90	821.03	65.68
V5	2021/ RIGVAR -5	61.89	10.89	17.88	4.47	111.28	1211.86	96.95
V6	2021/ RIGVAR -6	63.22	11.56	16.00	4.69	67.50	780.05	62.40
V7	Faizabadi Long	61.56	11.67	16.11	4.59	73.02	851.85	68.15
V8	Jaipuri Long	60.92	13.05	21.72	4.82	71.08	927.62	74.21
	F Test	S	S	S	S	S	S	S
	CD@5%	2.354	1.134	2.242	0.702	3.36	7.912	3.242
	S.E(d)	1.214	0.567	1.121	0.351	1.68	3.956	1.562
	CV	4.892	2.268	4.259	1.334	5.38	13.846	5.892

Conclusion

On the basis of our experimental finding it is concluded that the Hybrid H8 was found to be best in the terms of Germination parameters, vegetative parameters, quality parameters, disease and pest incidence and It was also found that the Hybrid H5 was found to be superior in the terms of yield and yield attributes.

Future Aspects

The future aspects of the research "Evaluation Trial on Ridge gourd (*Luffa acutangula*) Under Prayagraj Agroclimatic Conditions" are promising. Continued investigation may delve deeper into optimizing cultivation techniques to enhance yield and quality. Research may focus on identifying specific nutrient requirements, pest and disease management strategies, and efficient irrigation methods tailored to the unique climatic conditions of Prayagraj. Furthermore, the study could explore the potential for organic and sustainable farming practices to minimize environmental impact while maintaining productivity. Collaboration with local farmers and agricultural experts could facilitate the adoption of research findings, leading to improved ridge gourd cultivation practices and potentially contributing to the socio-economic development of the region.

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