Original Research Article

EVALUATION OF THE DIFFERENT VARIETIES OF LOTUS*(Nelumbonucifera) IN* PRAYAGRAJ AGRO CLIMATIC CONDITIONS,UTTARPRADESH

ABSTRACT

Lotus is an aquatic perennial flowering plant that holds significant economic value. The study conducted in Prayagraj, Uttar Pradesh, evaluates the performance of six lotus varieties under local agro-climatic conditions using a Random Block Design replicated four times. Lotus varieties under study, named Yellow Peony, Pastel Pink, Bucha, Rani Red, White Buddha and Pink Cloud, showed significant variations in all the parameters observed. This present research data focuses on various characteristics of Lotus *viz* ., growth, floral, quality, and yield parameters to determine the most suitable variety for cultivation in similar climatic conditions. The variety Bucha reported significantly better performance in terms of plant height (41.31cm), leaf length (14.94cm), leaf width (19.68cm), flower diameter (16.28cm), total number of flowers per plant (38.13), total number of flower per hectare (1525000), yield of rhizome per plant (1.74 kg) and yield of rhizome per hectare (69.73tonne). The most extended vase life was reported in Pink Cloud (6.25 days), followed by Bucha (5.75 days). The best gross return(4444500 Rs.ha^{-1}) was reported in Bucha, with the best net return (3437050 Rs.ha^{-1}) and benefit-cost ratio (4.41). Based on the experiment's findings, Bucha's variety performs best in this agro-climatic region, so it is recommended that Lotus variety Bucha be cultivated for Prayagrajagro-climatic conditions, Uttar Pradesh.

~~Lotus is an aquatic perennial flowering plant holds significant ec conducted in Prayagraj , Uttar Pradesh, evaluets the performance of agro climatic conditions using a Random Block Design replicated under study named: Yellow Peony, Pastel Pink , Bucha, Rani Red, W showed significant variations in all the parameters observed . This pr on various characters of Lotus *viz* ., growth parameters , floral para and yield parameters to determine the most suitable variety for conditions. The variety Bucha reported significantly better perfor (41.31cm) , leaf length (14.94cm) , leaf width (19.68cm),flower diam of flower per plant (38.13),total number of flower per hectare (152 plant (1.74 kg) and yield of rhizome per hectare (69.73tonne) . The the variety Pink Cloud (6.25 days) followed by Bucha (5.75 day) Rs.ha^{-1}) reported in Bucha with best net return (3437050 Rs.ha^{-1}) a Based on the findings of the experiment the variety Bucha perfor region, so it is recommended to cultivate Lotus variety Bucha conditions , Uttar Pradesh.~~

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Keywords *: Lotus, Better performance, varieties, Number of flowers, Rhizome ,Yield.*

1. INTRODUCTION

2. The Lotus *(Nelumbo nucifera)*, an aquatic perennial plant, belongs to the genus Nelumbo renowned for its striking flowers and significant cultural symbolism worldwide. The Lotus is the national flower of India and Vietnam. *N.nucifera* has a long history in cultivation as a vegetable, medicinal and ornamental plant basically in Eastern countries (Wang and Zhang, 2004)[19].Botanically, the Lotus is a member of the Nelumbonaceae family, characterized by its robust rhizomes, the elongated creeping structures anchored in the muddy substrate, which give rise to long, flexible stems. The Lotus grows in shallow, muddy waters. The plant's ability to flourish in less-than-ideal conditions has earned it a revered status in numerous

religious and cultural traditions. Lotus became an essential crop in Australia [9] and the United States (Tian *et al*., 2006)[18]. The growth and yield of Lotus flower and rhizomes depend on various factors like genotype (Zhou *et al*. 2004)[21]. , planting time and propagation methods [3], temperature [4] and other environmental factors [9]. The timing of the lotus rhizome planting starts from February last week, mainly late spring to April, specifically in early summer. The Lotus flowers come in different hues, such as white, pink, yellow, and various other colours. Each flower can grow 10 to 30 cm in diameter when fully bloomed. Along with the long stem, the leaves of the Lotus are also long and broad and have an orbicular shape. The leaves have epicuticular wax, which repels the water and prevents them from sinking.Lotus can grow in water at 30 cm to 2.5 meters. The lotus plant's root system consists of long, tuberous rhizomes that extend horizontally in the media, anchoring the plant and facilitating nutrient uptake and storage. These roots possess aerenchyma, specialized tissue that enhances gas exchange and regulation in aquatic environments. The lotus morphology reflects adaptations to its marine habitat, allowing it to thrive in various freshwater ecosystems worldwide.The Lotus native to Asia, *Nelumbo nucifera*, mainly grows in warm temperatures, and tropical regions prefer temperatures of 25 ºC to 30 ºC. Lotus need full sunlight for optimal growth, at least six hours of direct sunlight daily. The lotus plant dorms in winter, with rhizomes surviving underwater until warmer temperatures return. Lotus plants grow from rhizomes and take less time than Lotus, which grows from seeds. Commercial cultivation of Lotus in India holds great potential due to its multifaceted uses and cultural importance. Commercial production is being done in statessuch as Bihar, West Bengal, Uttar Pradesh.Odisha, and Kerala.

The Lotus *(Nelumbo nucifera)*, is an aquatic perennial plant, belongs to the genus Nelumbo renowned for its striking flowers and significant cultural symbolism all over the world. For fact the Lotus is the national flower of India and Vietnam. *N.nucifera* has a long history in cultivation as a vegetable, medicinal and ornamental plant basically in Eastern countries (Wang and Zhang , 2004)[19].Botanically the Lotus is a member of the nelumbonaceae family , characterized by its robust rhizomes ,the elongated creeping structures anchored in the muddy substrate which gives rise to long , flexible stems. The lotus grows in shallow mucky waters. The plants ability to flourish in less than ideal conditions has earned it a revered status in numerous religious and cultural traditions. Lotus became an important crop in Australia [9] and United States (Tian *et al*., 2006)[18]. Growth and yield of Lotus flower and rhizomes depends on various factor like genotype (Zhou *et al*. 2004)[21]. , planting time

and propagation methods [3], temperature [4] and other environmental factors [9]. The timing of the lotus rhizome planting starts from February last week, mainly late spring to April specifically in early summer. The Lotus flowers come in different hues of white, pink, yellow and various other colors. Each flower can grow 10 to 30 cm of diameter when fully bloomed. Along with the long stem the leaves of the lotus also long, broad and have orbicular shape. The leaves have epicuticular wax on it, which repels the water and prevent them from sinking.Lotus can grows in water at the depth of 30 cm to 2.5 meters. The lotus plant's root system consists of long, tuberous rhizomes that extend horizontally in the media anchoring the plant and facilitating nutrient uptake and storage. These roots possess aerenchyma, specialized tissue that enhances gas exchange and regulation in aquatic environments. The lotus morphology reflects adaptations to its aquatic habitat, allowing it to thrive in various freshwater ecosystems worldwide.The Lotus native to Asia, *Nelumbo nucifera* which mainly grows in warm temperature and tropical region prefer the temperature 25 ºC to 30 ºC. Lotus need full sunlight for optimal growth, at least six hours of direct sunlight daily. In winter the lotus plant goes into dormancy, with rhizomes surviving under water until warmer temperatures return. Lotus plant grows from rhizomes take less time to grow compares to lotus grows from seeds. Commercial cultivation of lotus in India holds great potential due to its multifaceted uses and cultural importance's. Commercial production is being done in states*viz.* Bihar, West Bengal, Uttar Pradesh,Odisha, Kerala.

2.3. MATERIALS AND METHODS

The experiment was carried out in the research farm of the Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, from March 2023 to September 2023.The area is in South Prayagraj on the right bank of the Yamuna River at Rewa road, Naini, about 6 km from Prayagraj city. The area is located at 25.8 ºN latitude and 81.50 ºE longitude, 98 meters from the sea level. The area of Prayagraj district comes into the subtropical belt in the South East of Uttar Pradesh. Prayagraj has an extremely hot summer and a relatively cold winter. The maximum temperature reaches up to 45 ºC to 48 ºC, and winter temperatures fall from 4 ºC to 6 ºC. The relative humidity varies between 20 to 94 percent. The average rainfall follows around 1013.4 mm annually. The six varieties included in the experiment were V_1: Yellow Peony, V_2: Pastel Pink, V_3: Bucha, V4: Rani Red, V5:White Buddha and V_6: Pink Cloud. The varieties were arranged in

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Random Block Design (RBD) with six varieties in 4 replications. Lotus plants were planted in 56 cm diameter tubs with 30cm height, and in each tub, one rhizome was planted. For each variety in a replication, there are two tubs. In this experiment, different characteristics of Lotus, likegrowth parameters, floral parameters, quality parameters and yield parameters, were observed in the intervals of 30, 60, 90, and 120 days. The data on growth, quality, and yield components were analyzed using Fisher's variance analysis method (ANOVA), as recommended by Panse and Sukhatme.

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~~3.~~4. RESULTS AND DISCUSSION

In the present study “Evaluation of the different varieties of Lotus *(Nelumbo nucifera)* inPrayagrajagro climatic conditions ,Uttar Pradesh” data were recorded for numerous characters , which are described below:

3.1 Growth Parameters

Significant variations were observed among six varieties, as presented in Table 1 and Table 2 for growth parameters and graphically presented in Fig 1.

For the plant height (cm), the maximum plant height of Lotus was observed with V_3:Bucha on all the days, i.e., 30,60,90,120days (18.13cm,24.13cm,39.78cm,41.31 cm, respectively), followed by the variety V_6: Pink Cloud (16.25cm, 18.20cm, 35.31cm, 37.59cm respectively). The lowest plant height observed in V_2:Pastelpink(8.16cm,10.53cm,16.21cm,16.56cm) different plant heights may be due to the varietal character and vigour of the genotypes under study. Similar results in Lotus were reported by Sahu *et al*. (2017)[13].

Among all six tested varieties, a maximum number of leaves was observed at the interval of 30, 60, 90,120 days with V_5: White Buddha (17.25,34.38,36.38,37.50 respectively) followed by V_3: Bucha (16.50, 22.25,30.38,32.25 respectively). A minimum number of leaves was observed in V_2: Pastel Pink (8.25, 12.25, 18.38, 19.25, respectively). The number of leaves in lotus plants can vary due to genetic factors, environmental conditions, and developmental stages. Different varieties may have evolved to produce varying numbers of leaves as an adaptation to their specific habitats and ecological niches.Among all six tested varieties, the maximum leaf length was observed in V_3:Bucha (8.28cm,13.38cm, 14.51cm, 14.94cm). For the first 30 days, the leaf length of the Yellow Peony(7.26 cm) was the second highest, but for 60,90 and 120 days, V_6: Pink Cloud(12.49 cm, 13.18 cm,13.39 cm) occupied the second position. However, the minimum leaf length observed in V_4: Rani Red (5.13cm,11.30cm,11.58cm,11.68cm). Environmental factors such as sunlight, temperature, soil nutrients, and water availability play significant roles in determining leaf length, as they influence the growth and development of the plant. Additionally, the stage of development of the plant can affect leaf length. Similar results were recorded in Lotus by Mukherjee and Bera (2016) [5].The maximum leaf width observed at 30, 60, 90,120 days was V_3: Bucha (13.30cm, 17.30 cm, 19.33 cm, and 19.68cm, respectively). For the first 30 days and 60 days, the V_6: Pink Cloud (12.23 cm, 16.28 cm respectively) performed second best, but for the 90 and 120 days, V1: Yellow Peony (17.30 cm,17.15 cm respectively) performed second best. The minimum leaf width observed in V_4: Rani Red (9.08cm, 13.20cm, 13.46 cm, 13.75 cm).

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30,60,90,120days (18.13cm,24.13cm,39.78cm,41.31 cm respectively) followed by the variety V_6 : Pink Cloud (16.25cm, 18.20cm, 35.31cm, 37.59cm respectively) .The lowest plant height observed in V_2:Pastelpink(8.16cm,10.53cm,16.21cm,16.56cm) different plant height may be due to the varietal character and vigor of the genotypes under study . Similar results in Lotus reported by Sahu *et al*. (2017)[13].

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3.2 Floral Parameters

Significant variations were observed among six varieties, as presented in Table 3 and Table 4 for floral parametersand graphically presented in Fig 2.

The maximum number of flower buds was observed in the first 30 and 60 days with V_1: Yellow Peony (4.25, 9.13), and for the next 90 and 120 days, it was observed with V_3: Bucha (13.50 & 17.75). The second

highest number of flower buds observed in 30 days was V_2: Pastel Pink (2.88); for 60, 90 and 120 days, the second highest number of buds was recorded in V_6: Pink Cloud (7.25,10.25,16.23 respectively). However, a minimum number of buds observed in 120 days after planting was V_2: pastel pink (1.13, 4.00, 4.13, 7.63, respectively).The maximum number of days to open the flower bud observed in V_3: Bucha (17.25 days), followed by Pink Cloud (15.50 days) and Rani Red (14.25 days). Minimum days to open the flower bud observed in V_2: Pastel Pink (10.63 days).Similarly, the maximum flower diameter(cm) was recorded in the variety V_3: Bucha (16.28 cm), followed by V6: Pink Cloud (14.25 cm) and White Budhha (13.11 cm), respectively. However, the minimum flower diameter was recorded inV_4: Rani Red (10.13 cm).

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The maximum number of flower buds was observed in first 30 and 60 days with V_1: Yellow Peony (4.25, 9.13) and for next 90 and 120 days, it was observed with V_3: Bucha (13.50 & 17.75) .The second highest numbers of flower bud was observed in 30 days was V_2 : Pastel Pink (2.88), for 60, 90 and 120 days the second highest number of buds was recorded in V_6 : Pink Cloud (7.25,10.25,16.23 respectively) . However minimum number of buds observed in 120 days after planting was V_2: pastel pink (1.13, 4.00, 4.13, 7.63respectively).The maximum number of days to open the flower bud observed in V_3 : Bucha (17.25 days), followed by Pink Cloud (15.50 days) and Rani Red (14.25 days). Minimum days to open the flower bud observed in V_2: Pastel Pink (10.63 days).Similarly, maximum flower diameter(cm) recorded in the variety V_3: Bucha (16.28 cm) followed by V6 : Pink Cloud (14.25 cm) and White Budhha (13.11 cm) respectively. However, minimum flower diameter was recorded inV_4: Rani Red (10.13 cm) .

3.3 Quality Parameters

Significant variations were observed among six varieties, as presented in Table 4 for quality parameters.

The maximum duration of flowering observed in V_1: Yellow Peony (115.13 days), followed by V_6: Pink Cloud (113.00 days) and White Budhha (111.75 days). However, the minimum flower duration was recorded in V_4: Rani Red (108.00 days). The flowering duration of lotus varieties can vary due to genetics, environmental conditions, and cultivation practices. Some varieties may have been bred to bloom for longer, while others may have natural variations in their flowering cycles.Among all six tested varieties, the maximum vase life of flowers was observed in the array V6: Pink Cloud (6.25 days), followed by V_3: Bucha (5.75 days) and V_1: Yellow

Peony (4.88 days). However, the minimum vase life was recorded in V_4: Rani Red (3.0 days). Some varieties may naturally have longer-lasting blooms or sturdier stems, while others might be more delicate or sensitive to environmental stressors. Similar findings were recorded bySalaemae*et al.* (2018)[16] and Sahu (2023) [14].

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3.4 Yield Parameters

Significant variations were observed among sixvarieties, as presented in Table 5 for yield parameters.

The maximum number of flowers per plant was observed in V_3: Bucha (38.13), followed by V_1: Yellow peony (36.63). However, the minimum number of flowers per plant was observed in V_2: Pastel pink (20.00). Significantly, among all six tested varieties, a maximum number of flowers per hectare was observed in V_3: Bucha (1525000), followed by V_1: Yellow peony (1465000) and V_6: Pink Cloud (1440000). However, the minimum number of flowers per hectare was observed in V_2 (800000). Among all six tested varieties, the maximum yield of rhizome per plant was observed in V_3: Bucha (1.74 kg) followed by V_6: pink cloud (1.55 kg). However, the minimum yield of rhizomes per plant was observed in V_2: pastel pink (1.00 kg).Similar results in Lotus were reported by Sahu *et al*. (2017)[13].The maximum yield of rhizome per hectare was observed in V_3: Bucha (69.73 t), followed by V_6: Pink Cloud (61.83 t). However, the minimum rhizomes yield per hectare was observed in V_2: Pastel Pink (39.8 t).

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3.5 Economic Parameter

The variations were observed among six varieties, as presented in Table 6 for economic parameters. The cost of cultivation was recorded as maximum among all six tested varieties: Yellow Peony, Bucha and Pink Cloud (1007450 Rs . ha $^{-1}$). At the same time, the minimum cost of cultivation was recorded in the variety Rani Red (847450 Rs.ha^{-1}). Maximum gross returns (Rs.ha^{-1}) were recorded in the array V3: Bucha (4444500 Rs . ha $^{-1}$), followed by V_6: Pink Cloud (4116500Rs.ha^{-1}). Minimum gross returns (Rs.ha^{-1}) were recorded in V 2: Pastel Pink (1998000 Rs.ha^{-1}). The net returns (Rs.ha^{-1}) were observed maximum in the variety Bucha (3437050 Rs . ha $^{-1}$), followed by Pink Cloud (3109050Rs.ha^{-1}). Minimum net returns (Rs.ha^{-1}) were observed in Pastel Pink (1090550 Rs.ha^{-1}). The benefit-cost ratio was maximum with the variety Bucha (4.41:1), followed by Pink Cloud (4.09:1) significantly, whereas the minimum benefit-cost ratio was observed in the array V_2: Pastel Pink (2.20:1).

The variations were observed among six varieties as presented in Table 6 for economic parameters. The cost of cultivation was recorded maximum among all six tested varieties are Yellow Peony , Bucha and Pink Cloud (1007450 Rs . ha $^{-1}$). Whereas minimum cost of cultivation was recorded in the variety Rani Red (847450 Rs.ha $^{-1}$).Maximum gross returns (Rs.ha $^{-1}$) was recorded in the variety V_3 : Bucha (4444500 Rs . ha $^{-1}$) , followed by V_6 : Pink Cloud (4116500Rs.ha $^{-1}$) . Minimum gross returns (Rs.ha $^{-1}$) was recorded in the variety V_2 : Pastel Pink (1998000 Rs.ha $^{-1}$). The net returns (Rs.ha $^{-1}$) was observed maximum in the variety Bucha (3437050 Rs . ha $^{-1}$) , followed by Pink Cloud (3109050Rs.ha $^{-1}$) . Minimum net returns (Rs.ha $^{-1}$) was observed in the variety Pastel Pink (1090550 Rs.ha $^{-1}$). The benefit cost ratio was maximum with the variety Bucha (4.41:1), followed by Pink Cloud (4.09:1) significantly whereas the minimum benefit cost ratio observed in the variety V_2: Pastel Pink (2.20:1).

Table 1: Varietal evaluation of different varieties of Lotus based on growth parameters ~~Varietal~~

Notation	Variety names	Plant height (cm)				Number of leaves			
		30 dap	60 dap	90 dap	120 dap	30 dap	60 dap	90 dap	120 dap
V_1	Yellow Peony	13.13	15.45	20.30	22.39	12.25	20.25	27.25	28.13
V_2	Pastel Pink	8.16	10.53	16.21	16.56	8.25	12.25	18.38	19.25
V_3	Bucha	18.13	24.13	39.78	41.31	16.50	22.25	30.38	32.25
V4	Rani Red	10.44	13.14	18.30	20.56	9.13	14.38	22.38	23.13
V_5	White Buddha	14.19	16.23	22.69	24.66	17.25	34.38	36.38	37.50
V_6	Pink Cloud	16.25	18.20	35.31	37.59	10.25	17.25	24.25	25.13
F – TEST		S	S	S	S	S	S	S	S
SEd		0.177	0.521	0.563	0.231	0.138	0.204	0.149	0.213
CD (5%)		0.381	1.12	1.21	0.497	0.297	0.439	0.321	0.459
CV%		1.872	4.526	3.128	1.203	1.593	1.434	0.796	1.094

~~evaluation of different varieties of Lotus on basis of growth parameters~~

Table 2:

Varietal evaluation of different varieties of Lotus based on growth parameters

~~Varietal evaluation of different varieties of Lotus on basis of growth parameters~~

Notation	Variety names	Leaf length (cm)				Leaf width (cm)			
		30 dap	60 dap	90 dap	120 dap	30 dap	60 dap	90 dap	120 dap
V_1	Yellow Peony	7.26	11.36	12.81	13.26	11.20	15.33	17.15	17.30
V_2	Pastel Pink	6.16	12.18	12.10	12.40	10.18	14.18	14.63	14.78
V_3	Bucha	8.28	13.38	14.51	14.94	13.30	17.30	19.33	19.68
V4	Rani Red	5.13	11.30	11.58	11.68	9.08	13.20	13.46	13.75
V_5	White Buddha	5.45	11.55	12.34	12.73	9.75	13.68	13.88	14.10
V_6	Pink Cloud	6.43	12.49	13.18	13.39	12.23	16.28	16.70	17.08
F – TEST		**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**

SEd	0.104	0.065	0.085	0.065	0.066	0.043	0.069	0.065
CD (5%)	0.225	0.14	0.182	0.139	0.142	0.092	0.149	0.14
CV%	2.289	0.767	0.939	0.701	0.854	0.404	0.617	0.569

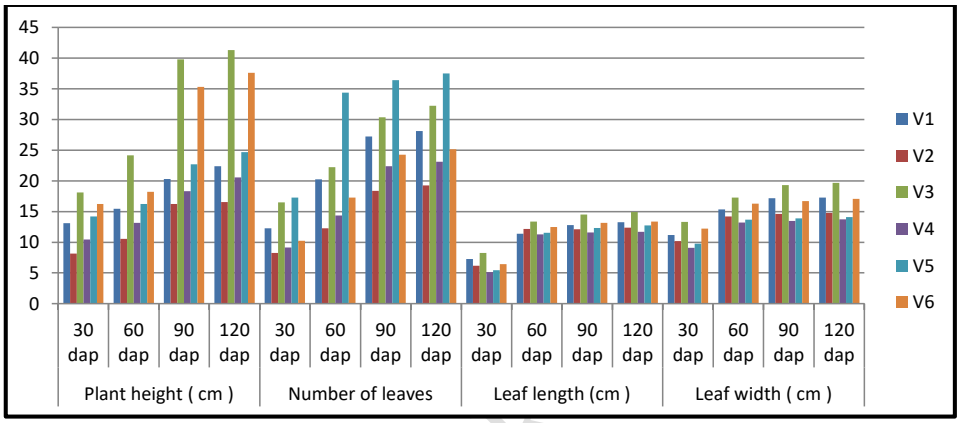

Fig 1: Varietal evaluation of different varieties of Lotus on basis of growth parameters

Table 3: Varietal evaluation of different varieties of Lotus on basis of floral parameters

Notation	Variety names	Number of flower bud per plant				Days to open the flower bud
		30 dap	60 dap	90 dap	120 dap	
V_1	Yellow Peony	4.25	9.13	12.13	11.125	12.00
V_2	Pastel Pink	2.88	5.38	4.13	7.625	10.63
V_3	Bucha	2.50	4.38	13.50	17.75	17.25
V4	Rani Red	1.38	4.00	6.25	8.75	14.25
V_5	White Buddha	1.13	6.38	7.25	12.375	11.50
V_6	Pink Cloud	2.38	7.25	10.25	16.125	15.50
F – TEST		**S**	**S**	**S**	**S**	**S**
SEd		0.224	0.569	0.186	0.194	0.247
CD (5%)		0.481	1.224	0.401	0.417	0.53

CV%	13.085	13.809	2.955	2.228	2.578

Table 4: Varietal evaluation of different varieties of Lotus on basis of floral parameters and quality parameter

Notation	Variety names	Flower diameter (cm)	Vase life	Duration of flowring
V_1	Yellow Peony	12.14	4.88	115.13
V_2	Pastel Pink	11.40	3.38	109.63
V_3	Bucha	16.28	5.75	110.63
V4	Rani Red	10.13	3.00	108.00
V_5	White Buddha	13.11	4.25	111.75
V_6	Pink Cloud	14.25	6.25	113.00
F – TEST		**S**	**S**	**S**
SEd		0.04	0.179	0.339
CD (5%)		0.086	0.384	0.729
CV%		0.439	5.515	0.431

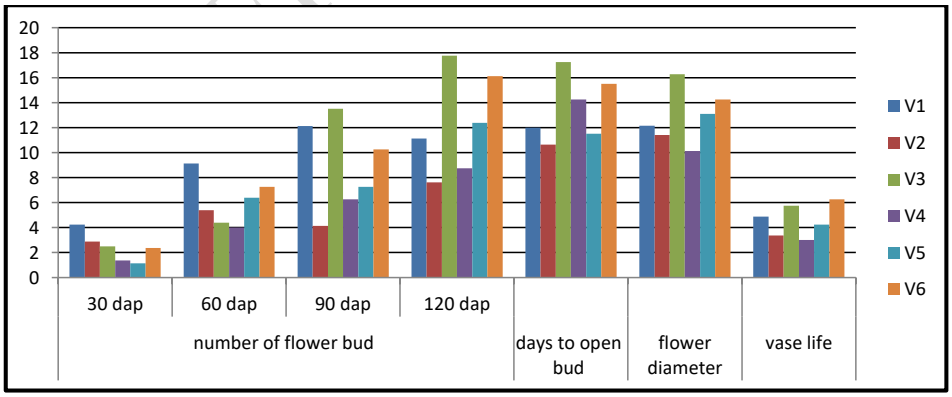

Fig 2: Varietal evaluation of different varieties of Lotus on basis of floral parameters and quality parameter

Table 5: Varietal evaluation of different varieties of Lotus on basis of yield parameters

Notation	Variety names	Total number of flower plant	Yield of rhizome per plant(kg)	Yield of rhizome per hectare(t)
V_1	Yellow Peony	36.63	1.15	45.88
V_2	Pastel Pink	20.00	1.00	39.80
V_3	Bucha	38.13	1.74	69.73
V4	Rani Red	20.38	1.10	43.83
V_5	White Buddha	27.13	1.50	59.88
V_6	Pink Cloud	36.00	1.55	61.83
F – TEST		S	S	S
SEd		0.42	0.003	0.119
CD (5%)		0.903	0.007	0.256
CV%		1.999	0.325	0.314

Table 6: Economic evaluation of different varieties of Lotus

Notation	Variety names	Variable cost of cultivation	Gross return	Net return	C: B ratio
V_1	Yellow Peony	1007450	3847500	2840050	1:3.82
V_2	Pastel Pink	907450	1998000	1090550	1:2.20
V_3	Bucha	1007450	4444500	3437050	1:4.41
V4	Rani Red	847450	2068250	1220800	1:2.44
V_5	White Buddha	907450	2768750	1861300	1:3.05
V_6	Pink Cloud	1007450	4116500	3109050	1:4.09

4.5. CONCLUSION

Based on the results, it is concluded that out of the 6 Lotus varieties, variety V_3: Bucha excelled over others in growth parameters like plant height, leaf number, leaf lengthand leaf width, followed by the variety V_6: Pink cloud and V_1:Yellow peony. The variety V_3: Bucha also performed better in all the floral parameters studied. The maximum vase life was recorded in V_1: Yellow Peony. As per yield parameters and economic parameters V_3 : Bucha performed better in the number of flowers per plant, number of flowers per hectare(1525000) , yield of rhizome per plant, yield of rhizome per hectare and gross return, net return, benefit and cost ratio. Hence, the variety V_3: Bucha gave the best performance under the agro-climatic conditions of Prayagraj, so this variety could be recommended and promoted for cultivation in open field conditions in Prayagraj.

~~Based on the results ,it is concluded that out of the 6 Lotus varieties ,variety V_3 : Bucha excelled over others in growth parameters like plant height, leaf number, leaf lengthand leaf width, followed by the variety V_6 : Pink cloud and V_1 :Yellow peony . The variety V_3: Bucha also performed better in all the floral parameters studied . The maximum vase life was recorded in V_1: Yellow Peony. As per yield parameters and economic parameters V_3 : Bucha performed better in number of flower per plant, number of flower per hectare(1525000) , yield of rhizome per plant , yield of rhizome per hectare and gross return, net return , benefit and cost ratio . Hence, the variety V_3 : Bucha gave the best performance under the agro climatic conditions of Prayagraj so this variety could be recommended and promoted for cultivation in open field conditions in Prayagraj.~~

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