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Assessment of seven distinct potato clones in terms of their growth patterns and yield performance

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ABSTRACT

This study evaluated the yield potential and quantitative marketable traits of 7 developing potato clones comparing with 2 check varieties to address the challenges of table potato production in Bangladesh. The research was conducted at the Farm of Horticulture Innovation Lab. BD., Department of Horticulture in Sher-e-Bangla Agricultural University, Dhaka, Bangladesh, focusing on phenotypic characteristics and yield components. The findings revealed that C2-19 and C2-53 had the shortest time to 80% emergence, indicating a higher germination rate and better seedling establishment. Plant height at 30 and 60 days after planting varied significantly among the potato clones, with C2-19 exhibiting the tallest plant at 59.40 cm. C2-95 displayed the highest plant height at 60 days, suggesting robust vegetative growth and potential for higher biomass accumulation. Whereas, C2-53 displayed the highest foliage coverage at 99.27%, outperforming both check varieties crucial for effective photosynthesis and maximizing yield potential. In line, C2-53 exhibited the maximum number of main stems at 8.10, indicating vigorous plant growth and higher yield potential. Morphological characteristics of tubers showed variations among the clones, with some exhibiting red-colored skin and eyes with yellow flesh, while others had white to yellowish skin and eyes. The number of tubers per hill, weight of tubers per hill, and average weight of tubers also showed significant differences among the clones. C2-53 had the highest number of tubers per hill and tuber weight, indicating favorable yield potential and larger-sized potatoes. Overall, C2-53 stood out as the top-performing variety with the highest yield potential, compared with check varieties (check-1 and check-2). This research provides valuable insights into the performance of different potato varieties and their potential for addressing the challenges of table potato production in Bangladesh.

Key Words: *Morphology, Production, Solanum tuberosum, Traits, Table potato and Yield.*

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I. Introduction

Potato (*Solanum tuberosum*), an annual dicotyledonous herbaceous tetraploid plant (2n=28), is a native crop and staple food in South America. Also, potatoes are the second most popular vegetable in Bangladesh, right behind grains. According to Ahmed et al. (2013), in the category of production tonnage, potatoes are currently Bangladesh's third-most significant food item. Because potatoes contain high-quality protein, vitamins, and minerals, they give consumers enough energy (Mehdi et al., 2008). Due to its versatility, both humans and animals use potatoes on a global scale. It also serves as a raw ingredient for starch production (Hassanpanah et al., 2006).

Among the root and tuber crops grown in Bangladesh, sweet potato and potato are the main crops. It mainly serves as a vegetable but can potentially become a staple food. Potatoes are known for their high satiety value, making individuals feel more satisfied compared to the same number of calories from other foods. According to Holt et al. (1995), boiling potatoes had the greatest satiety score out of 38 of Australia's most popular dishes. When comparing potatoes to rice and pasta, Erdmann et al. (2007) found that potatoes were more satiating. They discovered that potatoes had a higher satisfaction level than rice and pasta when consumed with meat.

According to the Food and Agriculture Organization (FAO), potatoes are the world's fourth-largest food crop in production. In 2019, the global potato production was approximately 368 million metric tons, contributing significantly to food security and nutrition. A total of 376 million tons of potatoes were produced globally, with China (94 million tons) and India (54 million tons) the largest potato producing countries (FAO, 2021). The potato harvest for the current year surpassed the government's set goal of 10.65 million tonnes for Fiscal Year 2021-22 (BBS, 2021-22). Additionally, Bangladesh achieved a historic milestone in its potato farming history with an average yield of 23.19 tonnes per hectare.

To meet the needs of its rapidly expanding population, Bangladesh must raise the yield of potatoes for general use. Potato growers have become accustomed to various challenges, such as bulky tubers, pricey seed tubers, low-quality tubers, a lack of knowledge of cutting-edge technology, and—by far—a scarcity of cold storage facilities. Owing to the massive production of tubers, cultivating potatoes is challenging. The government ensures that production exceeds the goal because potatoes can only be cultivated in a single growing season. This results in a massive production of tubers, leading to low prices and inadequate rewards for farmers in the local market. To tackle this problem, an approach may be taken that involves not only selecting high-yielding varieties so that the demand for potatoes can be met but also setting up better facilities so that the storage and distribution of these high-yielding potatoes can be done without any issues. It has been revealed by many efforts that yield of potato tubers, along with their external and internal characteristics, are influenced by different factors such as soil type, fertilizers application, dates of planting and harvesting in addition to their genetic factor (Hamouz et al., 2005; Herman et al., 1996).

The cultivation of table-type potatoes has substantial economic implications. According to the findings of Griffiths and Zitter (2008), the production of potatoes in countries in Europe and America is around 30 to 40 tons per hectare. For instance, potatoes are a valuable cash crop in the United States. According to the United States Department of Agriculture (USDA) data, the value of the U.S. potato crop exceeded $3.91 billion in 2021, including fresh and processed potatoes. This highlights the economic significance of the crop for farmers, agribusinesses, and the overall economy. With the aforementioned context in mind, this study aims to assess the yield potential of developing potato varieties to help Bangladesh overcome its issues with table potato production.

II. Materials and Methods

The research was conducted in Mid November 2022 to February 2023 at the Farm of Horticulture Innovation Lab. BD., Department of Horticulture in Sher-e-Bangla Agricultural University, Dhaka, Bangladesh, to evaluate the production potential of seven selected potato clones with two check varieties. The clones used in this experiment were labeled as C2-5, C2-77, C2-95, C2-19, C2-88, C2-53, C2-9, Check 1, and Check 2. The experimental layout followed a randomized completely block design (RCBD) with three replications. Where gross plot size was 3 m × 3 m. and spacing between rows to plants were 60cm × 25cm, respectively. There were 12 hills per row and 5 rows per unit plot.

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Intercultural operations

The successful production of potatoes was ensured through meticulous land preparation and achieving good tilth. Well-sprouted whole seed tubers were carefully selected for planting.

To optimize soil fertility, the land was prepared by applying 1 ton/ha of organic fertilizer and 15 kg/ha of Furadan 5G. For proper crop nutrition, the following fertilizers were applied: Urea (350 kg/ha), Triple Super Phosphate (TSP) (220 kg/ha), Muriate of Potash (MoP) (260 kg/ha), Borax (10 kg/ha), Gypsum (120 kg/ha), Magnesium Sulphate (100 kg/ha), and Zinc Sulphate (12.5 kg/ha). The unit plots received full doses of TSP, Gypsum, Borax, Zinc Sulphate, and Magnesium Sulphate before planting. Urea and MoP were applied as top dressing, with 50% of each applied during the first earthing up and the remaining 50% during the second earthing up.

Disease control measures were implemented by applying Pencozeb and Acrobate MZ at 7-day intervals, starting 30 days after planting (DAP) and continuing up to 85 DAP, to inhibit the growth of pathogenic fungi. During each application, 3 ml/L of Imitaf was mixed with the fungicides to address potential aphid infestations. The crop irrigation was carefully managed based on the soil and crop conditions. These comprehensive agricultural practices ensured the optimal growth and health of the potato crop, leading to successful potato production.

Data collection and analysis

During the experiment, data on various growth parameters of the plants were recorded, including the number of days for 80% emergence of seedlings, plant height, number of main stems per hill, number of tubers per hill, weight of tubers per hill, tuber yield in Mt/ha, percentage of biochemical components, tuber size, tuber shape, eye position, eye color, tuber skin color, tuber flesh color, and overall performance of harvested tubers. The recorded data sets were subjected to analysis though statistical software R-programing. To assess differences between the various treatments, the Least Significant Difference (LSD) test was conducted at a significance level of 5%.

III. Results and Discussion

In this study, we evaluated a total of seven developed potato variants, labelled C2-5, C2-77, C2-95, C2—19, C2-88, C2-53, C2-9, along with two check varieties named Check-1 and Check-2. The evaluation was based on two main criteria: yield potential and quantitative marketable traits, including appearance and other relevant characteristics. However, the primary focus of the study was on assessing the yield potential of the developed potato clones.

80% emergence

Among all the selected clones and checks, C2-19 and C2-53 have a minimum 80% emergence which is 12 days, which indicates that these potato clones have a higher germination rate and better seedling establishment at minimum DAP. On the other hand, Check-2 has the highest 80% emergence at 18 days after planting, which suggests the moderate seedling establishment that indicates delay in tuber initiation (Table 01).

Plant height (30 DAP & 60 DAP)

Potato clones showed significant variation in terms of plant height at 30 DAP. Tallest plant was found from C2-19 (59.40 cm), whereas smallest plant was found from C2-9 (45.47 cm) compared with check -1 (43.83 cm) and check -2 (51.33), which was statistically identical (Table 01). In addition, plant height at 60 DAP, C2-95 exhibits the highest plant height. This suggests that C2-95 has experienced robust vegetative growth and has the potential for higher biomass accumulation. Check-1, Check-2, and C2-9 exhibit the lowest plant height, ranging from 56.70 cm to 68.10 cm, indicating relatively stunted growth (Table 01).

Foliage coverage at 60 DAP

Foliage coverage directly influences their ability to intercept sunlight and carry out photosynthesis effectively. A dense and healthy foliage canopy is crucial for maximizing yield potential. Foliage coverage is assessed visually, recorded highest for C2-53 (99.27%) at 60 DAP, where both checks were ranging (97.30 to 97.50) % (Table 01).

No. of main stem/hill at 60D AP

The number of main stems per hill directly affects the number of potential tubers produced and, ultimately, the yield of the potato crop. C2-53 have the maximum no. of main stem valued 8.10 compared with check-1 (5.00) and check-2 (5.40), which indicates C2-53 vigorous plant growth and potentially lead to higher yield potential than all potato clones. On the other hand, C2-9 has the minimum no. of main stem/hill (6.60) compared with all selected clones (Table 01).

Leaf area

During the evaluation of selected clones and check varieties, noticeable morphological differences were observed, including variations in leaf area. At 60 DAP the maximum leaf area showed C2-19 (120.70 cm^2) line and minimum was found in C2-95 (78.93 cm^2). While Check-1 and Check-2 have leaf area of 80.54 cm^2 and 64.95 cm^2 respectively (Table 01).

Days to tuber initiation

Minimum tuber initiation days found in C2-77 at 29 days indicate faster crop development and possibly an earlier harvest. C2-5 exhibits an average of 35 days to tuber initiation, suggesting a moderately early tuber formation compared to other clones. Among all the selected clones, C2-19 has a slightly longer time for tuber initiation, taking 40.67 days. Nevertheless, it performs better than check-1 and check–2 which required 42.00 and 41.00 days, respectively (Table 01).

Table 01. Phenotypic parameters of selected clones and check varieties

Clones	Days to 80% emergence	Plant height (cm)		Foliage coverage at 60 DAP	No. of main stem/hill at 60 DAP	Leaf area (cm^2) at 60 DAP	Days to tuber initiation
		At 30 DAP	At 60 DAP				
C2-5	14.33 ± 0.58	47.23 ± 1.41	80.40 ± **1.36**	98.00 ± 0.00	7.67 ± 0.24	93.22 ± 1.30	35.00 ± 1.00
C2-77	14.00 ± 0.57	56.73 ± 1.19	72.97 ± 0.64	98.67 ± 0.47	7.33 ± 0.24	89.64 ± 1.31	29.00 ± 0.58
C2-95	13.33 ± 0.57	48.73 ± 1.09	88.20 ± 1.17	98.33 ± 0.47	7.67 ± 0.24	78.93 ± 1.24	31.00 ± 0.58
C2-19	12.00 ± 0.57	59.40 ± 3.75	86.90 ± 0.52	98.33 ± 0.47	7.33 ± 0.24	120.70 ± 1.79	40.67 ± 1.15
C2-88	15.67 ± 0.57	45.53 ± 0.38	74.00 ± 1.38	98.67 ± 0.47	6.67 ± 0.24	82.83 ± 0.80	36.00 ± 0.58
C2-53	12.00 ± 0.57	53.00 ± 2.48	81.60 ± 0.79	99.27 ± 0.00	8.00 ± 0.24	111.70 ± 1.83	40.00 ± 1.00
C2-9	14.00 ± 1.15	45.47 ± 9.15	68.10 ± 1.43	98.33 ± 0.47	6.33 ± 0.24	87.07 ± 1.44	39.00 ± 2.08
Check-1	15.00 ± 0.57	43.83 ± 1.09	58.40 ± 0.60	97.33 ± 0.47	5.00 ± 0.94	80.54 ± 1.22	42.00 ± 1.00
Check-2	18.00 ± 1.15	51.33 ± 3.13	56.70 ± 1.34	97.67 ± 0.47	5.33 ± 0.58	64.95 ± 0.68	41.00 ± 0.58
Mean	14.26	50.14	74.14	98.29	6.81	89.95	37.07
p-value	ns	ns	ns	ns	ns	ns	ns

Means followed by (s) within a column are significantly different or (ns) are not significantly different at 5 % level of significance.

Morphological characteristics

Table 02a represents different clones and their corresponding characteristics of the tubers. Line C2-5, C2-95, C2-19 and C2-9 exhibit red-colored skin and eyes with yellow-colored flesh (except C2-5); the rest of the clones have white to yellowish skin and eyes. Most of these selected clones, tuber shapes were oblong to long, except C2-5 and C2-95 (round). Whereas, Check-1 presents white-skinned tubers with white flesh, an oblong shape, white eyes, and shallow eye depth. Lastly, Check-2 exhibits red-skinned tubers with yellow flesh, a long shape, red eyes, and shallow eye depth (Figure 01).

Phenotypic characteristics

The color analysis of the potato's outer surface was conducted using the IWAVE WF32 model from Shenzhen Wave. The CIELab scale, comprising L* for lightness and a* and b* for two Cartesian coordinates, was the basis for measuring the color. The hue angle (hab) and chroma (C*) were derived from these coordinates. The measurements were carried out using the standard observer 100 and standard illumination D65. For skin color assessment, C2-5 exhibited the highest L* value at 64.43, surpassing even the highest check value by Check-1. C2-77 had the highest a* value at 24.67, while C2-53 demonstrated the highest b* and chroma (C*) values at 31.07 and 31.90, respectively. However, C2-5 had the highest hue angle at 81.08. Regarding flesh color, C2-88 displayed the highest L* value among the developed varieties at 59.07, with Check-1 scoring the highest overall L* value at 60.57. C2-5 recorded the highest a* value of 2.65 among all developed and checked variants. On the other hand, C2-9 had the highest b* value at 30.98, which was the highest across all variants in the study. Additionally, C2-9 exhibited the highest chroma (C*) value at 31.07, closely followed by C2-5 at 30.06.

C2-19 had the highest hue angle at 86.13, surpassing all other developed and checked variants in the study (Table 02b.).

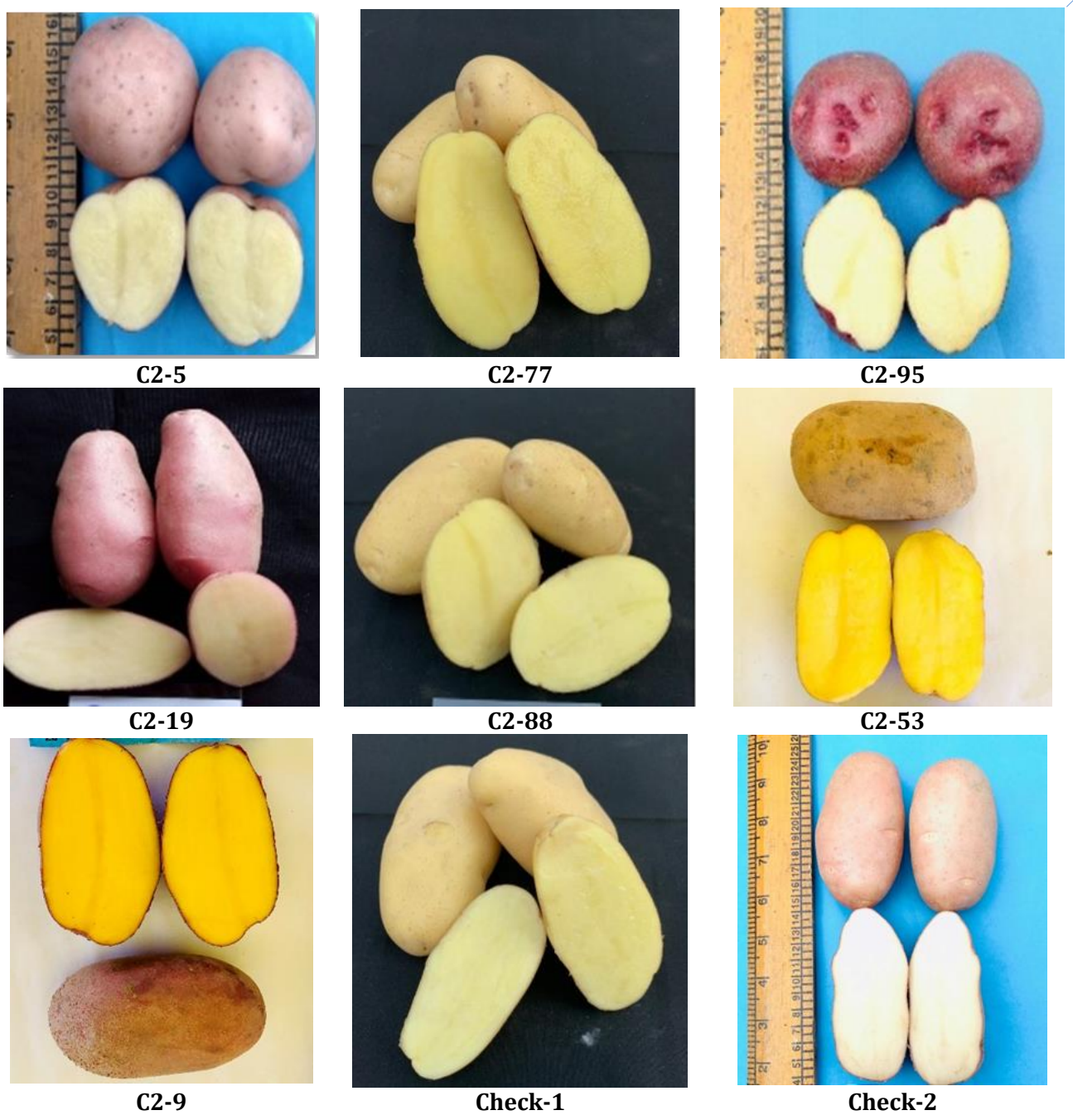

Figure 01. A visual compilation featuring seven potato clones and two check varieties through photography

Table 02a. Morphological attributes of 7 selected clones with 2 check varieties

Clones	Color of skin	Color of flesh	Shape of tuber	Color of eye	Depth of eye
C2-5	Light red	White	Round	Red	Deep
C2-77	White	Yellow	Oblong	White	Shallow
C2-95	Red	Yellow	Round	Red	Moderate Deep
C2-19	Attractive red	Light Yellow	Long	Red	Shallow
C2-88	White	Light Yellow	Long	White	Shallow
C2-53	yellow	Yellow	Oval to Long	Yellow	Shallow
C2-9	Red	Yellow	Oval to Long	Red	Shallow
Check-1	White	White	Oblong	White	Shallow
Check-2	Red	Yellow	Long	Red	Shallow

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Table 02b. Phenotypic tuber characterization of selected clones through a precision colorimeter, IWAVE WF32 (Shenzhen Wave)

Clones	Skin color					Flesh Color				
	L*	a*	b*	c*	hab	L*	a*	b*	c*	hab
C2-5	64.43	4.17	26.58	26.90	81.08	56.15	2.65	30.94	31.06	85.10
C2-77	44.03	24.67	10.87	26.96	23.79	39.36	1.86	25.01	25.08	85.74
C2-95	49.10	20.83	10.09	23.15	25.85	58.96	2.34	24.52	24.63	84.54
C2-19	41.17	18.43	12.79	22.43	34.75	56.02	1.62	19.04	19.11	86.13
C2-88	52.77	7.21	27.52	28.45	75.33	59.07	2.21	29.22	29.30	85.68
C2-53	58.53	7.22	31.07	31.90	76.92	58.48	2.08	29.96	30.03	86.04
C2-9	49.13	20.39	12.71	24.03	31.95	41.74	2.33	30.98	31.07	85.69
Check-1	61.57	8.05	30.73	31.77	75.32	60.57	2.14	30.65	30.73	86.01
Check-2	53.64	14.72	16.88	22.40	48.90	58.74	2.43	28.25	28.35	85.08

Dry mater and reducing sugar

All the studied clones had higher dry matter content than the check varieties, with C2-9 and C2-19 having the maximum percentages of 22.27 and 22.13, respectively. All seven of the selected clones also had lower reducing sugar content than the check variants, with C2-77 and C2-95 scoring the lowest at 0.20%. (Table 03).

Table 03. Assessment of specific traits between check varieties and 7 selected clones

Clones	Dry matter (%) (St.>20%)	Reducing sugar (%) (St. <0.5%)
C2-5	20.70 ± 0.44	0.39 ± 0.01
C2-77	21.37 ± 0.44	0.20 ± 0.01
C2-95	20.37 ± 0.33	0.20 ± 0.01
C2-19	22.13 ± 0.33	0.21 ± 0.00
C2-88	20.20 ± 0.26	0.23 ± 0.01
C2-53	20.77 ± 0.26	0.31 ± 0.01
C2-9	22.27 ± 0.21	0.34 ± 0.01
Check-1	18.70 ± 0.25	1.09 ± 0.01
Check-2	19.53 ± 0.39	0.98 ± 0.01
Mean	20.67	0.44
p-value	ns	ns

Means followed by (s) within a column are significantly different or (ns) are not significantly different at 5 % level of significance.

Tuber length and breadth

At 90 DAP, the C2-53 had the highest value in tuber length among all the selected clones with a length of 87.33mm, which is longer than check -1 (81.23 mm), while Check-2 had the highest overall value of 92.03 mm. On the other hand, C2-19 (71.80 mm) had the minimum tuber length of all the clones. C2-88 had the highest value of 66.57 mm in tuber breadth, which was the highest overall value even in comparison with check -1 (55.43 mm) and check -2 (49.07mm) (Table 04).

Number of tuber/hill

Number of tuber/hill showed significant variations of selected potato clones at 90 DAP. Maximum tuber/hill was found from C2-95 (22.00), while minimum from C2-77 (13.67) among the selected clones. In comparison, all selected clones had more tuber than check -1 and check-2, 11.00 and 10.30, respectively (Table 04).

Weight of tuber per hill and average weight of tubers

Among all the studied potato clones, C2-53 had the highest tuber weight/hill during harvest at 90 DAP weighing 736.00 grams. All the clones had heavier tuber weight/hill in comparison to Check-1 (633.0 g), while C2-77 (643.0 g) and C2-95 (667.0 g) were the only varieties that had values less than Check-2 (686.0 g). The average weight of tubers at 90 DAP reflects the yield potential and size of the harvested potatoes. C2-53 stands out with the largest average tuber weight (80 grams), indicating a favorable yield potential and larger-sized potatoes. C2-95 and Check-2 demonstrate average tuber weights of 71.50 and 66.67 grams, respectively, suggesting moderately sized potatoes with acceptable yield potential. C2-77 has the smallest average tuber weight (65.67 grams) among the tested clones (Table 04).

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Duration

Among all the selected clones, C2-95 have a minimum duration range of 67.33 days, while C2-9 shows the longest duration of 92.50 days. Hence, C2-95 mature relatively faster compared to other varieties and can be preferred shorter growing seasons (Table 04).

Yield

The results indicate significant differences in the yield at 90 DAP among different potato clones. C2-53 showed the maximum yield with 44.0 Mt/ha, outperforming all other clones, including the check varieties. While C2-95 showed minimum yield (31.80 Mt/ha) among all the selected clones, which is lesser than both check varieties. All the other selected clones except C2-95, C2-19 and C2-9 had higher yield values than Check-1 (38.20 Mt/ha). However, only C2-5 (40.54 Mt/ha) and C2-77 (42.59 Mt/ha) had higher yield values against Check-2 (40.63 Mt/ha) (Table 04).

Table 04. Mean values of growth and yield components of selected clones and check varieties

Clones	Tuber (mm)		No. of tuber/hill at 90 DAP	Wt. of tuber (g)/hill at 90 DAP	Av. Wt. of tuber (g) at 90 DAP	Yield Mt/ha	Duration (Days)
	Length	Breadth					
C2-5	81.70 ± 0.20	61.57 ± 0.34	15.67 ± 1.18	716.57 ± 12.05	67.67 ± 1.00	40.59 ± 0.99	82.33 ± 3.06
C2-77	76.33 ± 1.00	58.33 ± 0.85	13.67 ± 1.17	643.67 ± 15.60	65.67 ± 1.00	42.53 ± 0.98	72.33 ± 2.52
C2-95	75.10 ± 2.69	57.40 ± 0.31	22.00 ± 1.18	667.00 ± 12.29	71.50 ± 0.58	31.80 ± 1.03	67.33 ± 0.47
C2-19	71.80 ± 1.20	62.77 ± 0.49	19.67 ± 1.13	703.33 ± 0.76	69.67 ± 0.58	32.13 ± 1.05	87.33 ± 0.58
C2-88	80.30 ± 0.38	66.57 ± 0.46	14.67 ± 1.18	719.20 ± 0.65	77.67 ± 1.00	39.28 ± 0.99	82.33 ± 0.47
C2-53	87.33 ± 0.38	65.40 ± 0.30	17.33 ± 0.89	736.67 ± 9.07	80.00 ± 1.00	44.00 ± 0.96	87.33 ± 0.58
C2-9	86.73 ± 0.28	63.67 ± 0.46	16.67 ± 0.90	688.40 ± 3.24	78.67 ± 0.58	36.89 ± 1.05	92.33 ± 0.58
Check-1	81.23 ± 0.38	55.43 ± 0.29	11.00 ± 1.14	633.00 ± 1.73	58.33 ± 1.00	38.20 ± 0.98	87.33 ± 0.47
Check-2	92.03 ± 1.06	49.07 ± 0.00	10.33 ± 0.96	686.00 ± 3.06	66.67 ± 1.00	40.63 ± 0.96	87.33 ± 0.47
Mean	81.40	60.02	15.67	688.20	70.65	38.45	82.89
p-value	ns	ns	s	s	s	s	ns

Means followed by (s) within a column are significantly different or (ns) are not significantly different at 5 % level of significance.

V. Conclusion

In conclusion, this study evaluated nine selected potato clones' yield potential and quantitative marketable traits. The results demonstrated significant variation in growth parameters and tuber characteristics among the different clones. C2-53 was the most promising variety, exhibiting a higher emergence rate, robust vegetative growth, and excellent foliage coverage. It also showed larger and heavier tubers, leading to the highest overall yield of 44.0 Mt/ha. C2-95, on the other hand, had a shorter duration to maturity but a lower yield than other clones. Overall, the findings highlight the potential for developing high-yielding potato varieties suitable for cultivation in Bangladesh. These results can aid in overcoming the challenges faced by potato growers and contribute to food security and economic development in the country. Further research and investments in improved agricultural practices and storage facilities are necessary to utilize the potential of table potato production in Bangladesh.

References

[1]. Ahmed, M. A. Z., Rayhan, S. J. and Hassan, M. (2013). Farmer's profitability of potato cultivation at rangpur district: the socio-economic context of Bangladesh. Russian Journal of Agricultural and Socio-Economic Sciences, 19(7). https://doi.org/10.18551/rjoas.2013-07.03

[2]. BBS (2021-22). Statistical Year Book: Agricultural Statistics of Bangladesh. Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.

[3]. Erdmann, J., Hebeisen, Y., Lippl, F., Wagenpfeil, S. and Schusdziarra, V. (2007). Food intake and plasma ghrelin response during potato-, rice-, and pasta-rich test meals. European Journal of Nutrition, 46, 196-203. https://doi.org/10.1007/s00394-007-0649-8

[4]. FAO. (2021). FAOSTAT: Crops. http://www.fao.org/faostat/en/#data/QC. Accessed 20 Jan 2021.

[5]. Griffiths, H. M. and Zitter, T. A. (2008). Production, post-harvest and storage of potato 2007. Vegetable MD online.

[6]. Hamouz, K., Lachman, J., Dvorák, P. and Pivec, V. (2005). The effect of ecological growing on potato yield and quality. Plant, Soil and Environment, 51(9), 397. https://doi.org/10.17221/3603-PSE
[7]. Hassanpanah, D., Shahriari, R. and Khorshidi, M. B. (2006). Evaluation of the quality characteristics of potato cultivars suitable for processing. Acta Horticulturae, 699, 213-218. https://doi.org/10.17660/ActaHortic.2006.699.24
[8]. Herman, T. J., Love, S. L., Shafii, B. and Dwelle, R. B. (1996). Chipping performance of three processing potato cultivars during long-term storage at two temperature regimes. American Potato Journal, 73(9), 411-425. https://doi.org/10.1007/BF02849514
[9]. Holt, S. H. A., Miller, J. C., Petocz, P. and Farmakalidis, E. (1995). A satiety index of common foods. European Journal of Clinical Nutrition, 49, 675-690.
[10]. Mehdi, M., Saleem, T., Rai, H. K., Mir, M. S. and Rai, G. (2008). Effect of nitrogen and FYM interaction on yield and yield traits of potato genotypes under Ladakh condition. Potato Journal, 3, 126-129.

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Hasan, M., Afreen, M., Bari, M. M., Eusufzai, T. K., Rahman, M. A., Nahiyan, A. S. M., Khan, T. and Uddin, A. F. M. J. "Assessment of seven distinct potato clones in terms of their growth patterns and yield performance". Asian Journal of Crop, Soil Science and Plant Nutrition, 08(02), (2023): 316-323.

Harvard

Hasan, M., Afreen, M., Bari, M. M., Eusufzai, T. K., Rahman, M. A., Nahiyan, A. S. M., Khan, T. and Uddin, A. F. M. J. 2023. Assessment of seven distinct potato clones in terms of their growth patterns and yield performance. Asian Journal of Crop, Soil Science and Plant Nutrition, 08(02), pp. 316-323.

Vancouver

Hasan M, Afreen M, Bari MM, Eusufzai TK, Rahman MA, Nahiyan ASM, Khan, T and Uddin, AFMJ. Assessment of seven distinct potato clones in terms of their growth patterns and yield performance. Asian Journal of Crop, Soil Science and Plant Nutrition, 2023 September, 08(02), 316-323.