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Research Paper

Response of Nitrogen Levels on the Growth, Yield and Quality of High Yielding Potato Varieties in Tista Meander Floodplain Soil of Bangladesh

M.W. Rahman[1], M.M. Islam[2], M.Z. Masud[1], M.M. Rahman[1], Akbar Hossain[3] and Sagar Maitra[4*]

[1]Breeder Seed Production Centre, Bangladesh Agricultural Research Institute (BARI), Debiganj, Panchagarh, Bangladesh
[2]Tuber Crops Research Centre, Bangladesh Agricultural Research Institute, Gazipur, Bangladesh
[3]Department of Agronomy, Bangladesh Wheat and Maize Research Institute, Dinajpur, Bangladesh
[4]Department of Agronomy, Centurion University of Technology and Management, Odisha, India

*Corresponding author: sagar.maitra@cutm.ac.in (**ORCID ID:** 0000-0001-8210-1531)

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ABSTRACT

An experiment was conducted at Breeder Seed Production Centre (BSPC), Debiganj, Panchagarh, during the *rabi* season of 2015-2016, 2016-2017 and 2017-2018 to study the response of nitrogen levels on the growth, yield, and quality of wide yielding potato varieties in Tista Meander Floodplain Soil of Bangladesh. There were five treatments comprising different levels of nitrogen such as T_1 (100% RDN), T_2 (125% RDN), T_3 (150% RDN), T_4 (175% RDN), and T_5 (75% RDN). Three newly released potato varieties such as BARI Alu 31 (Sagitta), BARI Alu 41 (5.183), and BARI Alu 45 (Steffi) were used in this experiment. The experiment was laid out in a randomized complete block design (RCBD) with three replications. The tuber yield and yield contributing characters were significantly influenced by the application of nitrogen. The highest tuber yield (47.71 t/ha) was recorded in T_3 (150% RDN) treatment, which was statistically identical to T_4 (175% RDN) treatments. In the case of variety, there were no significant variations in the tuber yield of potato. On the other hand significant variation was observed in different potato varieties for quality attributes. Highest dry matter content, starch content, lowest number of scab-infected tuber, and senescence% were found in BARI Alu41 (5.183), which was followed by BARI Alu31 (Sagita). Nitrogen application in potato varieties showed an insignificant influence on quality attributes. Combined effect showed insignificant influences between varieties and nitrogen levels. BARI Alu41 (5.183) was found superior over other varieties regarding quality attributes. Treatment T_3 (150% RDN) was found superior over other treatments in terms of yield. The storage performance of potato tuber under T_3 (150% RDN) treatment was also found to be encouraging having the minimum weight loss. Bari Alu41 (5.183) showed minimum weight loss among three varieties at different days after storing.

HIGHLIGHTS

- Three potato varieties, namely BARI Alu 31 (Sagitta), BARI Alu 41 (5.183), and BARI Alu 45 (Steffi) were tested in Tista Meander Floodplain Soil of Bangladesh under graded nitrogen levels.
- The potato variety BARI Alu41 (5.183) showed superiority over BARI Alu 31 (Sagitta) and BARI Alu 45 (Steffi).
- The nitrogen dose of 150% performed a greater tuber yield with promising quality parameters.

Keywords: Nitrogen, potato varieties, tuber yield, dry matter, starch, scab%, and weight loss

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Potato *(Solanum tuberosum L.)* belongs to the family Solanaceae and genus *Solanum* (Thompson and Kelly, 1972). It is one of the major world food crops in its ability to produce high food per unit area per unit time (FAOSTAT, 2010). Potato is an important cash crop in Bangladesh. It is also used as a food and cash crop in cool countries. It can meet up vegetable demand and provide necessary nutrients for the people of the low-income group (Islam *et al*. 2009; Hossain and Miah, 2012; Das *et al*. 2021). The average yield of potatoes in Bangladesh is 19.55 t/ha; which is much below the crop's potential productivity (BBS, 2013). Potato is the most sensitive crop to nutrient stress because of its sparse root system. Thus, it needs a high dose of fertilizers to get full yield potential. Soil nutrient stress is the most significant factor controlling crop yield (Tamirie, 1989). Nitrogen is an essential nutrient that affects the yield and quality of potatoes. Proper N fertilization is critical for optimizing potato yield and quality (Millard and Marshall 1986; Porter and Sisson 1991; Rykbost *et al.* 1993; Miller and Rosen 2005). An adequate amount of N is required for best growth and potato plant development (Goins *et al.* 2004). Insufficient N leads to reduced growth (Roberts *et al*.1982; Millard and Marshall 1986), limited yields (Lauer 1986b; Porter and Sisson 1991), and early crop senescence (Kleinkopf *et al.* 1981). It ensures optimal photosynthetic production in leaves. When nitrogen in deficient, potato leaves are a pale yellow/green, small in size, and drop prematurely, yields become low as few tubers are formed. Potato demands a high level of soil nutrients due to relatively poorly developed and shallow root systems about yield (Perrenoud, 1983). The use of animal manure and crop residues for fuel and erosion coupled with low inherent fertility are among the leading causes of decreasing soil fertility (Taye *et al.* 1996; Tdahune *et al.* 2007). Nitrogen and phosphorus fertilizers have shown good yield responses for different crops across different locations, indicating low nitrogen and phosphorus status of the soils (Berga *et al.* 1994a; Yohannes, 1994). This situation would become more critical in potato production because the potato crop is one of the heavy feeders of plant nutrients (Powon, 2005). Current fertilization rates are insufficient to sustain high yields and replenish nutrient removal by the crop (Imas and Bansal, 2012). Potato produces much more dry matter in a shorter cycle (Singh and Trehan, 1998) than cereal crops. This high dry matter production results in large amounts of nutrient removal per unit time. In most cases, imbalanced fertilizers are being used per the farmers' decision. They are using very high doses of urea, resulting in deterioration of soil health and reduction of yield and quality of potato. Fertilizer practices in the region have been mainly based on the experience of other regions. Moreover, farmers face hollow heart diseases and black heart disease from potato in the field and after cold storage due to excess use of urea. Larger size potato tubers are needed for export quality and processing purposes. For sustainable production of potatoes nitrogen management is very important. Therefore, the present study was undertaken to determine the optimum doses of nitrogen for newly released potato varieties and to observe the influence of nitrogen on the quality of potatoes.

MATERIALS AND METHODS

Experimental site and soil characteristics

The experiment was conducted at BSPC, Debiganj, Panchagarh under AEZ-3 (Tista Meander Floodplain soil) during the Rabi season to study the response of nitrogen levels on the growth yield, and quality of high-yielding potato varieties in Tista Meander Floodplain Soil of Bangladesh. The soil was acidic (pH=5.65) in nature and had low organic matter content (1.10%). Total N content was (0.06%) and exchangeable K (0.18 meq per 100g). Phosphorus (P) and Iron (Fe) content of this soil is very high. Sulphar (s), Boron (B), and Zinc (Zn) were below the critical level. Calcium (Ca and Magnesium (Mg) were below the critical level. The chemical properties of the initial soils of BSPC, Debiganj, and Panchagarh have been shown in table 1.

Treatments and method of fertilizer application

Three newly released potato varieties such as BARI Alu31 (Sagitta), BARI Alu41 (5.183), BARI Alu45 (Steffi) were evaluated under different levels of nitrogen. There were five treatments comprising different levels of nitrogen presented in table 2.

The experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications. Fertilizers were used as a soil test

Table 1: The chemical properties of initial soils of the experimental fields

Location	Soil texture	pH	O.M%	Ca	Mg	K	Total N%	P	S	B	Cu	Fe	Mn	Zn
				Meq/100g				μg/ml						
BSPC, Debiganj	Sandy Loam	5.65	1.10	1.30	0.45	0.18	0.06	80.28	5.47	0.18	1.8	72	15	0.53
Critical level		—	—	2.0	0.5	0.12	—	7.0	10	0.2	0.2	4.0	1.0	0.6

Table 2: The levels of nitrogen under different treatments

Treatments	Levels of nitrogen (N)
T_1	100% RDN
T_2	125% RDN
T_3	150% RDN
T_4	175% RDN
T_5	75% RDN

RDN = Recommended doses of nitrogen.*

basis except for Urea. Urea, TSP, MoP, Gypsum, Magnesium sulphate, Zinc sulphate, and Boric acid were used as a source of N, P, K, S, Mg, Zn, and B, respectively. Entire phosphorus, potassium, Sulphar, magnesium, zinc, boron, and half of the nitrogen were applied when planting and mixed with soil. Remaining half of the nitrogen was applied by the row side at 30 DAP (days after planting) followed by earthing up.

Planting, harvesting and intercultural operation

Potato variety BARI Alu 31 (Sagitta), BARI Alu 41 (5.183) and BARI Alu 45 (Steffi) were used as a test crop. The unit plot size was 3m × 3m. Whole potato tubers were planted with a spacing of 60 cm × 25cm on 24th November of each year. Potato was harvested on 23th February of each year. Intercultural operations and other agronomic practices were done as per requirement.

Soil sampling and chemical analysis

After collection, soil samples were analyzed following standard laboratory methods (Page *et al*. 1989). Core sampler method (Blake, 1965) and the wet oxidation method (Walkley & Black, 1935) were used to determine the bulk density and organic carbon, respectively. Glass electrode pH meter (1:2.5) was used to determine soil pH. According to Page *et al.* (1989), 0.5M $NaHCO_3$ (pH 8.5), NH_4OAc, and $CaCl_2$ extraction procedures were used to determine the available P, exchangeable K, and S, respectively. The Kjeldahl method was used to determine the total N.

Data collection

Data were taken on plant height (cm), foliage coverage, a number of stems per hill, tuber per hill, the weight of tuber per hill, tuber yield and dry matter, starch, specific gravity, scab, and senescence of potato plant. Plant height, foliage coverage, and Stem per hill were assessed at 60 days after planting using green method (Groves *et al*. 2005). For determination of dry matter (DM), five whole tubers were randomly selected from each treatment and cut into small slices (1-2 mm) and mixed thoroughly. Dry weight of samples was then determined by drying at 70°C for 72 h in a forced air oven. The following formula was used for determining DM content:

$$DM\,(\%) = \frac{Dry\ weight}{Fresh\ weight} \times 100$$

Storage data

The potato tubers were collected after harvest, and the weight of the tubers was recorded. Weighing of tubers continued at 15 days intervals up to 150 days, started from 30 DAS (days after storing). Rotted tubers were discarded after weighing.

Statistical analysis

Data that were taken from the field experiment has been analyzed by MSTATC program, and means

separation was done by Duncan's Multiple Range Test (DMRT) (Steel and Torrie 1960). One way ANOVA table was used to perform this analysis.

RESULTS AND DISCUSSION

Effects of variety on the tuber yield and yield contributing characters of potato

Results revealed that yield contributing characteristics of potatoes were significantly influenced by the variety (Table 3). The highest plant heights (80.09cm), foliage coverage (92.20%), and stem per hill (6.96) were observed from BARI Alu 41 (5.183), and the lowest was observed in BARI Alu 45 (Steffi). In the case of tuber per hill, the maximum tuber per hill was found in BARI Alu41(5.183), and the minimum number was recorded in BARI Alu31 (Sagita). Kumar *et al.* (2007) reported that the crop growth traits (stem number, plant height, and compound leaf number) of potato cultivars, 'Kufri Chipsona-1' and 'Kufri Chipsona-2' responded positively to an increase in N application rate up to 270 kg N/ha. On the other hand, there was no significant variation between tuber weight per hill and tuber yield of potato due to the varietals effect.

Effect of variety on dry matter, starch, specific gravity, scab and senescence's of potato

Results revealed significant variation among dry matter, starch, scab, and senescence's of potato due to varietal effect (Table 4). The highest dry matter and starch were observed in BARI Alu 41 (5.183), which was statistically identical to BARI Alu31 (Sagita). The lowest was recorded in BARI Alu 45 (Steffi). In the case of scab % by number and senescence's % the highest was found in BARI Alu 45 (Steffi), and the lowest was recorded in BARI Alu 41 (5.183). On the other hand, in the case of specific gravity, there was no significant variation among the varieties.

Table 3: Effect of variety on the tuber yield and yield contributing characters of potato

Variety	Plant height (cm)			Foliage coverage (%)			Stem/hill (No.)			Tuber/hill (No)			Tuber weight/hill (Kg)			Tuber yield (t/ha)		
	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018
BARI Alu 31 (Sagitta)	64.1^{b}	66.9^{b}	44.55^{b}	87.7^{ab}	90.7^{a}	64.0^{b}	6.5^{a}	6.8^{a}	6.3^{a}	9.3c	8.5^{c}	7.6^{c}	0.64	0.63	0.48	42.62	41.62	32.40
BARI Alu 41 (5.183)	82.8^{a}	80.1^{a}	54.0^{a}	90.1^{a}	92.2^{a}	77.2^{a}	6.0^{b}	7.0a	5.0^{c}	14.3a	13.4^{a}	11.3^{a}	0.67	0.65	0.50	45.02	42.99	33.17
BARI Alu 45 (Steffi)	61.8^{b}	64.2^{c}	41.7^{c}	85.3^{b}	85.5^{b}	60.6^{b}	4.7^{c}	5.4b	5.7^{b}	10.6b	11.2^{b}	9.6^{b}	0.65	0.67	0.49	43.42	44.09	32.48
CV%	7.46	4.93	6.62	4.51	3.06	7.62	12.56	12.99	13.13	10.89	10.13	8.51	9.14	7.76	5.05	9.14	7.40	5.06

Means followed by the same or no letter in the same column do not differ significantly each other at 5% level of DMRT.

Table 4: Effect of variety on the dry matter, starch, specific gravity, Scab and Senescence's of potato

Variety	Dry matter (%)			Starch (%)			Specific gravity			Scab% by No.			Senescence's % at 90 DAP		
	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018
BARI Alu 31 (Sagitta)	18.40^{b}	19.44^{ab}	18.47^{b}	13.28^{b}	14.28^{ab}	13.36^{b}	1.074	1.079	1.075	6.77 ^{b}	7.41^{b}	2.85^{b}	84.00^{a}	91.66^{b}	76.00^{a}
BARI Alu 41 (5.183)	19.80^{a}	20.17^{a}	20.61^{a}	14.65^{a}	15.00^{a}	15.44^{a}	1.081	1.083	1.085	4.26^{c}	5.38^{b}	3.62^{b}	75.87^{b}	87.06^{c}	57.33^{b}
BARI Alu 45(Steffi)	18.46^{b}	18.90^{b}	19.01^{b}	13.36^{b}	13.76^{b}	13.90^{b}	1.075	1.077	1.077	11.86^{a}	13.91^{a}	7.52^{a}	85.00^{a}	96.86^{a}	75.33^{a}
CV%	7.31	7.28	5.06	9.94	9.70	6.78	0.59	0.60	0.42	40.82	43.15	53.58	3.33	4.01	9.83

Means followed by the same or no letter in the same column do not differ significantly each other at 5% level of DMRT.

Effect of Nitrogen dose on the tuber yield and yield contributing characters of potato

Results revealed that significant variations were observed in plant height, foliage coverage, tuber weight per hill, and tuber yield of potato. On the other hand, there was no significant variation between stem per hill and tuber per hill due to the application of different doses of nitrogen (Table 5). The highest plant height was observed in T_4 (175% RDN), which was statistically identical to T_1, T_2, and T_3 treatments. The lowest plant height was observed in T_5 (75% RDN). Maximum foliage coverage was found in T_4 (175% RDN) treatment, which was statistically identical to T_2 and T_3. Minimum foliage coverage was found in T_5 treatment. This is because an increased concentration of nitrogen fertilizer can increase nitrogen uptake, and this increase has a positive effect on the photosynthetic rate, leaf expansion, and the total number of leaves. Nitrogen fertilizer plays a vital role in canopy development, especially on the shoot dry matter (Najm *et al.* 2010).

The highest tuber weight per hill and tuber yield of potato was recorded in T_3 (150% RDN), which was statistically identical to T_4 treatments. The lowest weights of tubers per hill and tuber yield of potato were recorded in the treatment T_5 which received 75% recommended doses of nitrogen. Soliman *et al.* (2000) mentioned that the highest potato yield was obtained with an increasing N application rate from 140 to 180 kg N/fed. These findings matched the obtained results from Barakat *et al.* (1991). Besides, this result is in line with the finding of Zelalem *et al.* (2009) and Mulubrhan (2004), who reported that the application of nitrogen increased the total tuber yield.

Effect of Nitrogen doses on dry matter, starch, specific gravity, scab, and senescence's of potato

Results revealed no significant variation among dry matter, starch, specific gravity, and scab % by number due to the application of a different dose of nitrogen (Table 6). (Sharifi *et al.* 2005) have shown

Table 5: Effect of nitrogen dose on growth parameters, yield attributes and tuber yield of potato

Treatment	Plant height (cm)			Foliage coverage (%)			Stem/hill (No.)			Tuber/hill (No)			Tuber weight / hill (Kg)			Tuber yield (t/ha)		
	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018
T_1	70.1^{ab}	71.7^{a}	45.93^{b}	88.8^{a}	88.8^{b}	66.0^{b}	5.97	6.73	5.62	11.79^{ab}	11.48	9.41	0.6^{b}	0.61^{bc}	0.47^{c}	41.26^{b}	39.73^{c}	31.42^{c}
T_2	72.5^{a}	71.5^{a}	47.5^{ab}	88.6^{a}	90.9^{ab}	67.9^{ab}	5.62	6.35	5.44	11.52^{ab}	10.60	9.65	0.68^{a}	0.65^{b}	0.50^{bc}	45.48^{a}	43.37^{b}	33.38^{b}
T_3	71.4^{a}	70.9^{a}	48.4^{ab}	90.8^{a}	90.9^{ab}	71.7^{a}	5.64	6.26	6.06	12.38^{a}	10.61	9.73	0.71a	0.71^{a}	0.53^{a}	47.56^{a}	47.71^{a}	35.62^{a}
T_4	68.5^{ab}	71.9^{a}	49.8^{a}	90.4^{a}	92.7^{a}	71.8^{a}	5.82	6.75	5.60	10.65^{b}	11.54	9.26	0.69^{a}	0.70^{a}	0.52^{ab}	45.70^{a}	47.17^{a}	34.96^{ab}
T_5	65.2^{b}	65.9^{b}	42.1^{c}	79.8^{b}	84.1^{c}	59.0^{c}	5.55	5.88	5.47	10.63^{b}	10.89	9.49	0.58^{b}	0.56^{c}	0.42^{d}	33.44^{b}	36.53^{d}	28.02^{d}
CV%	7.46	4.93	6.62	4.51	3.06	7.62	12.56	12.99	13.13	10.89	10.13	8.51	9.14	7.76	5.05	9.14	7.40	5.06

Treatment derails: T_1 = 100% RDN, T_2 = 125% RDN, T_3 = 150% RDN, T_4 = 175% RDN and T_5 = 75% RDN.

Means followed by the same or no letter in the same column do not differ significantly from each other at 5% level of DMRT.

Table 6: Effect of Nitrogen dose on dry matter, starch, specific gravity, Scab and Senescence's of potato

Treatment	Dry matter (%)			Starch (%)			Specific gravity			Scab% by No.			Senescence's % at 90 DAP		
	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018	2015-2016	2016-2017	2017-2018
T_1	18.97	19.90	19.11	13.87	14.74	13.98	1.08	1.08	1.08	7.51	9.30	4.12	84.89^{b}	95.88^{ab}	75.56^{b}
T_2	18.71	18.67	18.75	13.56	13.54	13.62	1.08	1.08	1.08	6.24	10.06	5.57	81.89^{c}	93.77^{b}	66.11^{c}
T_3	18.38	19.07	19.55	13.27	13.91	14.43	1.07	1.08	1.08	9.15	8.97	5.39	76.89^{d}	89.11^{c}	63.33^{c}
T_4	19.42	19.83	19.28	14.28	14.68	14.16	1.08	1.08	1.08	8.11	9.22	4.41	73.33^{e}	81.88^{d}	56.11^{d}
T_5	18.93	20.04	20.10	13.80	14.86	14.96	1.08	1.08	1.08	7.14	6.94	3.80	91.11^{a}	98.66^{a}	86.67^{a}
CV%	7.31	7.28	5.06	9.94	9.70	6.78	0.59	0.60	0.42	40.82	43.15	53.58	3.33	4.01	9.83

Treatment derails: T_1 = 100% RDN, T_2 = 125% RDN, T_3 = 150% RDN, T_4 = 175% RDN and T_5 = 75% RDN.

Means followed by the same or no letter in the same column do not differ significantly each other at 5% level of DMRT.

that increasing N rates from 0 to 150 kg N/ha had no significant effect on tuber dry matter. However, increasing N rate from 70 to 140 or 210 kg, N/ha resulted in a non-significance increase in tuber dry matter (Mussaddak, 2007). On the other hand, significant variation was observed in senescence's % at 90 DAP (Table 6). The highest senescence's % was observed in T_5 (75% RDN), which was statistically identical to T_1 (100% RDN) in the case of 2016-2017. The lowest was observed in T_4 treatment. The general trend was that vegetative growth values increased with increasing application rate. Previous investigations showed that increasing N application rate linearly increased vegetative growth (Ibrahim *et al*. 1987; Mandy and Munshi 1990; Barakat *et al.* 1991; Maler *et al.* 1994; Abdel-Razik, 1996). As a result, senescence's % would be decreased with increased nitrogen application.

Combined effect of variety and nitrogen levels

Combined effect showed insignificant influences between varieties and nitrogen levels.

Storage behavior of potato tuber

Weight loss

The weight loss was variable among the different nitrogen concentrations, varieties, and days after storing (DASt) (Table 7). At 150 DASt, the minimum weight loss (85.39 %) was found in T_3 followed by T_5 (86.07%), and the maximum value was recorded in the T_2 (92.04 %). Among the five observations, maximum weight loss was found at 150 DASt. 30 DASt showed the minimum weight loss. Among the three varieties, BARI Alu41 (5.183) showed minimum weight loss (82.76%), and the maximum weight loss was recorded (92.46%) in BARI Alu45 (Steffi) at 150 DASt (Table 8). On the other hand, maximum weight loss was found at 150 DASt. 30 DASt showed the minimum weight loss. It was observed that weight loss increased with the increase in days after storing. Similar results were also observed by Kanbi and Bhatnagar (2005) where potato cultivar Kufri Badshah was evaluated under integrated nutrient management, and the highest

Table 7: Weight loss of potato under ambient temperature at different days after storing (DASt) as influenced by nitrogen fertilizer management

Treat.	Cumulative weight loss (%) at different DASt					
	Initial (0)	30 days	60 days	90 days	120 days	150 days
T_1		5.360 A	16.03 A	38.34 A	60.91 B	86.42 BC
T_2		5.597 A	14.43 B	38.38 A	63.92 A	92.04 A
T_3		3.633 B	12.33 D	30.06 D	54.28 D	85.39D
T_4		4.442 B	13.47 C	36.69 B	58.20 E	87.10 B
T_5		5.783 A	12.81 D	34.31 C	59.18 C	86.07 CD
CV (%)		17.38	4.64	1.96	1.31	0.89

Treatment derails: T_1 = 100% RDN, T_2 = 125% RDN, T_3 = 150% RDN, T_4 = 175% RDN and T_5 = 75% RDN

Figure (s) in a column having a common letter (s) do not differ significantly at 5% level.

Table 8: Weight loss of potato varieties under ambient temperature at different days after storing (DASt)

Treat	Cumulative weight loss (%) at different DASt					
	Initial (0)	30 days	60 days	90 days	120 days	150 days
V_1		6.249 A	14.82 A	35.70 B	56.19 B	86.99 B
V_2		4.576 B	11.54 B	32.78 C	55.82 B	82.76 C
V_3		4.064 B	15.09 A	38.19 A	65.89 A	92.46 A
CV (%)		17.38	4.64	1.96	1.31	0.89

Figure (s) in column having common letter (s) do not differ significantly at 5% level.

V_1= BARI Alu 31(Sagitta), V_2= BARI Alu 41(5.183), V_3= BARI Alu 45 (Steffi).

weight loss was found in 105 DASt. Weight loss during storage was mainly due to evaporation and contribution of respiratory carbon loss to total weight loss (El-Sayed *et al*. 2007; Mehta and Ezekiel, 2010).

CONCLUSION

From the above discussion, it may be concluded that Bari Alu41 (5.183) was found superior over other varieties as far as quality attributes. Significant variation was not observed in tuber yield of potato due to the varietal effect. Nitrogen application in potato varieties showed an insignificant influence on quality attributes. Treatment T_3 (150% RDN) was found superior to other treatments in yield. Combined effect showed insignificant influences between varieties and nitrogen levels. Storability is very important for long-term and commercial use of potatoes. The storage performance of potato tuber under T_3 (150% RDN) treatment was also found to be encouraging having the minimum weight loss. Bari Alu41 (5.183) showed minimum weight loss among three varieties at different days after storing. Therefore, treatment T_3 (150% RDN) can be recommended for a desirable higher yield and better quality of potato. Bari Alu41 (5.183) was found superior among three varieties in terms of quality attributes in Tista Meander Floodplain Soil of Bangladesh.

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