Reprint **ISSN 1991-3036 (Web Version)**

International Journal of Sustainable Crop Production (IJSCP)

(*Int. J. Sustain. Crop Prod.*)

Volume: 15 **Issue: 1** **May 2020**

Int. J. Sustain. Crop Prod. 15(1): 7-12 (May 2020)

EVALUATION ON THE FIELD PERFORMANCE OF DIFFERENT CROPS GROWN UNDER ACIDIC SOIL IN SYLHET REGION OF BANGLADESH

M.I. NAZRUL, S.T. ZANNAT AND M.A. ALI

An International Scientific Research Publisher

Green Global Foundation©

Web address: http://ggfjournals.com/e-journals archive
E-mails: editor@ggfjournals.com and editor.int.correspondence@ggfjournals.com

ISSN-1991-3036 (Online)
Int. J. Sustain. Crop Prod. 15(1):7-12(May 2020)

EVALUATION ON THE FIELD PERFORMANCE OF DIFFERENT CROPS GROWN UNDER ACIDIC SOIL IN SYLHET REGION OF BANGLADESH

M.I. NAZRUL[1*], S.T. ZANNAT[2] AND M.A. ALI[3]

[1&3]Principal Scientific Officer, [2]Scientific Officer, Bangladesh Agricultural Research Institute, Bangladesh.

*Corresponding author & address: Mahmudul Islam Nazrul, E-mail: mi_nazrul@yahoo.com
Accepted for publication on 7 May 2020

ABSTRACT

Nazrul MI, Zannat ST, Ali MA (2020) Evaluation on the field performance of different crops grown under acidic soil in sylhet region of Bangladesh. *Int. J. Sustain. Crop Prod.* 15(1), 7-12.

In course of improving crop production systems, screening for improving varieties for new areas is necessary to address the soil and environment. Hence, a total of seven separate field trials were conducted at farm farmer's field in Sylhet areas for the two consecutive crops seasons of 2017-18 and 2018-19, respectively to evaluate the performance of improved varieties with the existing cultivars at farmers' field. Each experiment was laid out in randomized complete block design with six dispersed replications. The unit plot size was varied with experiments. The result showed that improved varieties of different crops *viz*., lentil ('BARI Mosur-6), black gram (BARI Mash-3), chickpea (BARI Chola-6); potato (Diamant), turmeric (BARI Holud-4), maize (BARI Hybrid Maize-9) and flower gladiolus (BARI Galdiolus-4) performed better under the soil and climatic conditions of Sylhet region.

Key words: *maize, potato, gladiolus, turmeric, lentil, chickpea, linseed, acidic soil*

INTRODUCTION

Bangladesh is one of the most important agrarian's countries in the world; eighty-five percent people are somehow engaged in agriculture (BBS 2010; Rahman and Schmitz, 2007). The Sylhet regions are mostly under the agro-ecological zone 20 (Eastern Surma Kushiyara Floodplain), and the soils of this region are strongly acidic (pH 4.5-5.5). Farmers mainly grow rice under rainfed condition. The climate of this region is suitable for potato, tomato, cabbage, aroids, wheat and different pulse and oilseed crops (Nazrul 2017; Nazrul and Shaheb, 2014; Nazrul *et al*. 2013; Shaheb *et al*. 2012; Sarker *et al*. 2012; Nazrul and Shaheb, 2012; Rahman *et al*. 2013) both in rabi and kharif season, respectively.

Generally, farmers in this region cultivate different crops of local varieties in both seasons under poor management practices. As a result, much lower yield is achieved in Sylhet areas (Nazrul *et al.* 2017; Nazrul *et al*. 2013). So, the introduction of new crops with modern varieties along with appropriate agronomic management practices would boost up the farm products that will reduce the poverty level of resource-poor farmers of that area.

In addition, agriculture is the only economic activity of most small farmers in this region. About 40-45% of lands of the total cultivable area remain fallow due to lack of irrigation and validation test of different crop varieties at the present prevailing agro-climatic situation. Information related to varietal adaptability of different crops like lentil, mustard, potato, hybrid maize, groundnut, sesame and soybean in the study areas of rice-based rainfed eco-system under climate change situation is scanty. Hence, an experiment was undertaken to evaluate the yield performance of improved varieties of aforesaid crops with the existing cultivars at farmers' field of the Sylhet region.

MATERIALS AND METHODS

A total of seven separate trials were conducted at farmer's field in Sylhet areas for two consecutive crops seasons of 2017-18 and 2018-19 to evaluate the performance of improved crop varieties with the existing cultivars at farmers' field. The study areas are located at Latitude 24°29' N and Longitude 91°39' E under the Surma-Kushiyara Floodplain of Bangladesh.

The soil of experimental plots was non-calcareous gray with low organic matter content (1.23%), low soil pH (4.5-5.4), very low total N (0.06%), low content of P (9.46), K (0.14) and S (10.07) whereas Zn (1.13) and Boron (0.51) medium and optimum, respectively. Each experiment was laid out in randomized complete block design with six dispersed replications. The unit plot size was varied with the experiments.

The monthly average, maximum and minimum temperature of the experimental site are indicated in Fig. 1. The average climatic data of Sylhet shows that the mean annual minimum temperature is 11.55^0C and the mean annual maximum temperature is 34.23^0C and the annual mean temperature nearly 17.54^0C.

As indicated in Fig. 2, rainfall of the area is uni-modal, usually occurring during April to October, and total annual rainfall reached to 4217 mm; whereas in January, no rain at all and the lowest amount of rainfall occurred in December followed by November. However, in the rest of the months, total rainfall was ranged from 100 to just below 800 mm. Rainfall increased gradually from March and continued up to October.

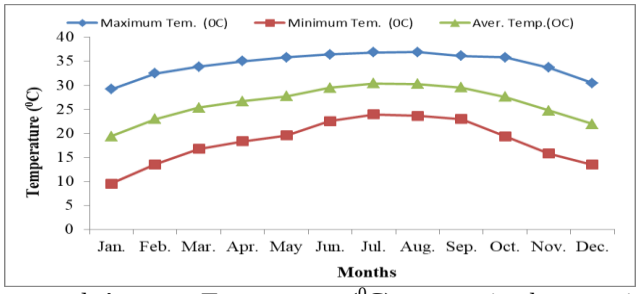

Fig. 1. Minimum, Maximum and Average Temperature (^{0}C) pattern in the experimental location of Sylhet. **Source:** Bangladesh Metrological Department, Sylhet

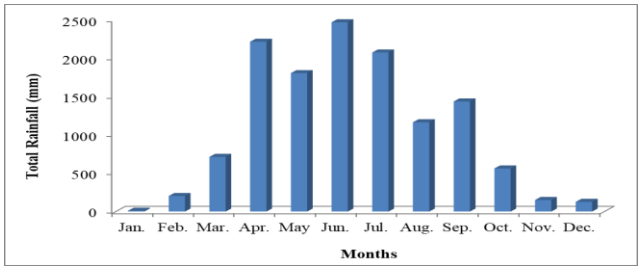

Fig. 2. Rainfall (mm) pattern in the experimental location in Sylhet during experimentation. **Source:** Bangladesh Metrological Department, Sylhet

Lentil

Four lentil varieties such as BARI Mosur-5, BARI Mosur-6, BARI Mosur-7, and BARI Mosur-8 were used in this field trial. The crop was fertilized with 19-17-21-13-1.0-0.5 kg ha^{-1} of NPKSZnB (FRG 2012). All fertilizer nutrients were applied as basal during final land preparation. The seeds were sown on 18-22 November in the broadcast method. The unit plot size was 8 m × 5 m. The crop was harvested on 15-18 March in both years. The fungicide Bavistin 70 WP (0.2%) was applied for controlling foot rot disease of lentil.

Black gram

Three different blackgram varieties *viz.* BARI Mash-1, BARI Mash-2 and BARI Mash-3 were used in this field trial. The crop was fertilized with 24-15-18-9 kg ha^{-1} of NPKS (FRG 2012). All fertilizer nutrients were applied during final land preparation. The seeds were sown on 15-20 November in the broadcast method. The unit plot size was 8 m × 5 m. The crop was harvested on 20-25 February in both years. The pesticides Rovral 50 WP (0.2 %) for controlling gray blight and Nitro 505 EC @ 0.5 ml L^{-1} of water was used against hairy catter piller.

Chickpea

Five chickpea varieties *viz.* BARI Chola-5, BARI Chola-6, BARI Chola-7, BARI Chola-8 and BARI Chola-9 was evaluated. The crop was fertilized with 25-15-35-13-1.0-0.5 kg ha^{-1} of NPKSZnB (FRG 2012). All fertilizer nutrients were applied during final land preparation. The seeds were sown on 25-28 November with maintaining the spacing of 40 cm × 10 cm. The unit plot size was 8 m × 5 m. The crop was harvested on 15-18 March in both years. Seeds were treated with Provax-200 @ 3g kg^{-1} before sowing.

Potato

Five potato varieties *viz*. BARI Alu-7, BARI Alu-8, BARI Alu-13, BARI Alu-25 and BARI Alu-28 were used in this field trial. The crop was fertilized with 180-40-180-15-1.0-0.5 kg ha^{-1} of NPKSZnB (FRG 2012) along with poultry manure 3 t ha^{-1}. All organic manure, phosphorous, sulpher, zinc and boron and half of nitrogen and potassium were applied during final land preparation. The remaining half nitrogen and potassium were applied as side-dressing at 30-35 days after planting during earthing up operation. The seed tubers were sown on 20-25 November with maintaining the spacing of 60 cm × 15 cm. The unit plot size was 10 m × 10 m. The potato tuber was harvested at maturity on 18-22 February in both years. Intercultural operations *viz.* once earthing up at 25 DAS, once weeding and irrigation were applied at 40 DAS. Fungicides Ridomil gold and Meledeo duo (0.2%) was sprayed thrice for controlling late blight of potato. Dursbarn (0.2%) was applied twice times for controlling cutworm insect to support normal plant growth.

Turmeric

Four turmeric varieties *viz.* BARI Holud-3, BARI Holud-4, BARI Holud-5 including local one (Basanti) were used in this field trial. The crop was fertilized with 160-36-100-15 kg ha^{-1} of NPKS and 5 t ha^{-1} of cowdung (FRG 2012). The full dose of cowdung, phosphorous, potassium and sulpher were applied during final land preparation. The nitrogen was applied in twice equal splits as top-dressing at 80 and 110 days after planting. The seed rhizomes were planted on 15-20 March with maintaining the spacing of 50 cm × 25 cm. The unit plot size was 8 m × 5 m. The rhizomes were harvested on 15-20 January in both the years. Fungicides Tilt (0.2%) was sprayed twice for controlling leaf blight of turmeric.

Maize

Three hybrid maize varieties *viz.* BARI Hybrid Maize-9, BARI Hybrid Maize-12 and BARI Hybrid Maize-13 were used in this field experimentation. The crop was fertilized with 250-55-110-40-5-1.5 kg ha^{-1} of NPKSZnB (FRG 2012). One-third of nitrogen and all of phosphorous, potassium, sulpher, zinc and boron were applied during final land preparation. The remaining nitrogen was applied in two equal splits as top-dressing at the time of 8-10 leaf stage and at the tasselling stage. The seeds were sown on 15-20 November with maintaining the spacing of 75 cm × 20 cm. The unit plot size was 8 m × 5 m. Intercultural operations *viz*. once weeding and twice irrigations were applied each at 45 and 80 days after emergence (DAE). Insecticides, Dursbarn and Furadan 5G (0.2%) were applied thrice for controlling cutworm and stem borer to support normal plant growth.

Gladiolus

Three gladiolus varieties *viz*. BARI Gladiolus-3, BARI Gladiolus-4 and BARI Gladiolus-6 were used in this field trial. The crop was fertilized with 200-50-90-20-2.0-1.0 kg ha^{-1} of NPKSZnB (FRG 2012). All phosphorous, potassium, sulpher, zinc, boron and organic manure (5 t ha^{-1}) were applied during final land preparation. The nitrogen was applied in twice equal splits as top-dressing at 30 and 60 days after planting. The corms were planted on 20-25 November with maintaining the spacing of 60 cm × 20 cm. The unit plot size was 8 m × 5 m. The harvest of spikes was started from 15-20 February in both the years. For controlling tip burn disease a mixture of Bavistin (l g L^{-1}) and Tilt (0.5 ml L^{-1}) was sprayed twice at 45 DAS and 60 DAS. Bioneem plus 1 EC (Azadiractin) and Admire @ 1 ml L^{-1} was sprayed for controlling trips.

The yield data were recorded from the whole plot basis and the collected data were analyzed statistically using "STAR" software (Gulles *et al*. 2014) package and means were separated by LSD.

RESULTS AND DISCUSSION

Lentil

Yield and yield contributing characters of lentil varieties are presented in Table 1. Plant population m^2 of different lentil varieties were statistically different and significantly higher number of plants (53.83) was recorded in BARI Mosur-6 followed by BARI Mosur-5. Maximum plant height (24.63 cm) was observed in BARI Mosur-4; on the contrary, minimum height (20.10 cm) was recorded in BARI Mosur-6. The number of pods $plant^{-1}$ of different lentil varieties varied significantly. The maximum number of pods $plant^{-1}$ (67) was recorded in BARI Mosur-6, which was statistically identical to BARI Mosur-5 (65). The lowest number of pods $plant^{-1}$ was observed in BARI Mosur-3 variety. The highest number of pods $plant^{-1}$ in BARI Masur-6 was contributed due to profuse pod setting. Thousand seed weight i.e. seed size is a genetically controlled trait of lentil. The maximum 1000-seed weight was recorded in BARI Masur-6 (20.00 g) which was statistically identical with BARI Masur-3 (19.33 g), followed by BARI Masur-5 (18.00 g). The lowest 1000-seed weight (16.00 g) was observed in BARI Mosur-4. Seed yield of lentil varieties also differed significantly. The maximum seed yield was recorded in BARI Masur-6 (960 kg ha^{-1}); on the other hand, statistically similar amount of seed was produced by BARI Mosur-4 and BARI Masur-5, i.e. 650 kg ha^{-1}, and 580 kg ha^{-1}, respectively. The higher seed yield in variety BARI Mosur-6 was attributed to higher pods $plant^{-1}$ and 1000-seed weight. Similar findings were obtained by Islam *et al*. (2015) and Islam *et al*. (2010). The results revealed that high yielding variety of lentil developed by BARI performed better in rainfed eco-system under climate change situation.

Table 1. Seed yield and yield contributing characters of lentil varieties at farmers' field of Sylhet (Two years' mean)

Variety	Plants m^2	Plant height (cm)	Pods $plant^{-1}$	1000 seed weight (g)	Seed yield (Kg ha^{-1})
BARI Mosur-3	48.5	22.63	51	19.33	560
BARI Mosur-4	48.67	24.63	57	16.00	650
BARI Mosur-5	50.17	21.87	65	18.00	580
BARI Mosur-6	53.83	20.10	41	20.00	960
CV (%)	4.75	3.74	9.0	3.15	7.07
$LSD_{(0.05\%)}$	4.77	1.67	5.0	1.15	0.09

Black gram

Result revealed that the tallest plant height of black gram was observed in BARI Mash-1 (48.67 cm) while the shortest plant height was recorded in BARI Mash-3 (43.83 cm). The highest number of branch per plant was produced by BARI Mash-2 (3.47) that was statistically followed by BARI Mash-1 (2.73). BARI Mash-2 produced the highest number of pods per plant (25.93) that was statistically similar to that of BARI Mash-1 (23.47). Maximum seeds pod^{-1} (5.73) was produced by BARI Mash-2, followed by BARI Mash-1. The longest pod length (4.90 cm) was also provided by BARI Mash-2 (Table 2). Whereas, the lowest pod length was recorded in BARI Mash-3. However, BARI Mash-2 showed better performance and produced a maximum 1000

seed weight (38.27 g) than other black gram varieties. Likewise, the highest seed yield was recorded in BARI Mash-3 (1.15 t ha^{-1}) while the lowest seed yield was found in BARI Mash-1 (1.04 t ha^{-1}).

Table 2. Seed yield and yield parameters of black gram varieties at farmers' field of Sylhet region (Two years' mean)

Variety	Plant height (cm)	Branch $plant^{-1}$ (nos.)	Pods $plant^{-1}$ (nos.)	Seeds pod^{-1} (nos.)	Pod length (cm)	1000 seed weight (g)	Seed yield t ha^{-1}
BARI Mash-1	48.67	2.73	23.47	5.00	4.27	36.33	1.04
BARI Mash-2	45.17	3.47	25.93	5.73	4.90	38.27	1.07
BARI Mash-3	43.83	2.40	21.67	4.60	4.07	37.27	1.15
CV (%)	3.11	2.85	5.55	4.97	5.53	1.34	9.50
LSD (0.05)	3.24	0.19	2.98	0.57	0.55	1.14	NS

Chickpea

The plant populations markedly varied with the varieties. The plots under cultivation of BARI Chola-3, BARI Chola-5 and BARI Chola-6 gave the statistically similar number of $plants^{-2}$. Branches $plant^{-1}$ markedly influenced by different varieties. More number of branches $plant^{-1}$ (2.83) was recorded in BARI Chola-6, which was statistically followed by BARI Chola-5. Whereas the lowest number of branches per plant was provided by BARI Chola-3 (Table 3).

The yield attributing characters *viz*., number of pods per plant and number of seeds per pod greatly influenced genetical characters of different varieties. The significantly higher number of pods per plant (29.40) was recorded from BARI Chola-7 but rest of the tested varieties gave the statistically similar number of pod per plant. Though non-significant variation was found in seeds pod^{-1} but numerically higher numbers of seeds pod^{-1} were noticed in BARI Chola-6. Seed yield was greatly influenced by different varieties evaluated, BARI Chola-6 variety yielded significantly higher seed yield (1.15 t ha^{-1}); but rest of the varieties were produced similar seed yields.

Table 3. Seed yield and yield components of chickpea varieties at farmers' field in Sylhet (Two years' mean)

Variety	Plants m^2	Branch $plant^{-1}$	Pods $plant^{-1}$	Seeds pod^{-1}	Seed yield (t ha^{-1})
BARI Chola-3	29.90	1.57	28.03	1.53	1.00
BARI Chola-4	29.20	1.67	28.00	1.60	1.00
BARI Chola-5	29.62	1.77	28.30	1.63	1.00
BARI Chola-6	29.60	1.83	28.53	1.67	1.15
BARI Chola-7	28.83	1.63	29.40	1.60	1.06
CV (%)	0.68	6.99	1.09	12.65	4.10
$LSD_{(0.05)}$	0.38	0.22	0.59	NS	0.08

Potato

Plant height, tuber per plant, tuber yield of potato was significantly influenced by the varieties except for individual tuber weight of potato (Table 4). The longest plant height (30.75 cm) was recorded in the potato variety Diamant that was statistically identical with Asteris (30.74 cm) while the lowest plant height (29.37 cm) was recorded in the potato variety Cardinal. The highest number of tuber per plant (8.13) was recorded in potato variety Diamant that was statistically followed by Granula (7.47). The almost similar trend was observed in case of tuber yield of potato varieties. The variety of Diamant produced the maximum tuber yield (19.99 t ha^{-1}) while the lowest tuber yield of potato (16.20 t ha^{-1}) was found in Asterix variety (Table 3).

Table 4. Tuber yield and yield contributing characters of potato at farmers field in Sylhet region (Two years' mean)

Variety	Plant height (cm)	Plants m^2 (nos)	Tuber $plant^{-1}$ (nos)	Individual tuber weight (g)	Tuber yield (t ha^{-1})
Daimant	30.75	9.83	8.13	27.56	19.99
Granula	30.10	9.73	7.47	26.34	17.03
Cardinal	29.37	10.13	6.87	27.43	16.63
Asterix	30.74	9.60	6.27	27.05	16.20
Lady Roseta	29.80	9.94	7.13	26.37	17.62
CV (%)	1.51	4.56	7.43	4.26	10.71
$LSD_{(0.05\%)}$	0.86	NS	1.00	NS	3.53

Turmeric

The yield and yield contributing characters of tested turmeric varieties varied significantly. The maximum plant height was recorded in locally popular cultivar Basanti (134.33 cm) follower by BARI Hould-5 (126.33 cm). BARI Holud-4 had the lowest plant height (117.33 cm) which was statistically similar with BARI Holud-3 (119.00 cm). The number of finger per plant was highest in BARI Holud-5 (16.73) followed by BARI Holud-4

(15.77). The lowest number of finger was recorded in locally popular cultivar Basanti (9.42). The maximum amount of rhizome yield was produced by BARI Holud-4 (20.91 t ha^{-1}). BARI Holud-5 and BARI Holud-3 provided statistically similar rhizome yield. On the contrary, local cultivar gave the lowest yield of rhizome. A similar trend was found in case of per hectare dry yield of rhizome. The highest dry yield (3.18 t ha^{-1}) was recorded in BARI Holud-3 followed by BARI Halud-4 which was statistically similar to BARI Halud-5 (2.68 t ha^{-1}) and local cultivar produced the lowest (1.42 t ha^{-1}). The dry matter per cent in BARI Holud-3 followed by BARI Holud-4 (14.98%) and BARI Halud-5 (14.69%) and lowest in local cultivar (11.98%).

Table 5. Yield and yield attributes of turmeric varieties in Sylhet (Two years' mean)

Variety	Plant height (cm)	Fingers $plant^{-1}$	Rhizome yield (t ha^{-1})	Dry wt. (t ha^{-1})	Dry matter (%)
BARI Holud-3	119.00	13.70	17.14	3.18	18.57
BARI Holud-4	117.33	15.77	20.91	3.13	14.98
BARI Holud-5	126.33	16.73	18.09	2.68	14.69
Local (Basanti)	134.33	9.42	11.90	1.42	11.98
CV (%)	3.21	5.47	5.79	7.15	4.06
$LSD_{(0.05)}$	7.97	1.52	1.96	0.37	0.18

Hybrid Maize

Yield and yield components of hybrid maize varieties differed significantly (Table 6). The highest plant height (207.67 cm) was observed in BARI Hybrid Maize-13 followed by BARI Hybrid Maize-9 but the lowest height was recorded in hybrid Sunshine. Cob length varied significantly among the varieties. Cob length was higher (23.17 cm) in BARI Hybrid Maize-9 followed by BARI Hybrid Maize-13. The maximum cob weight (172.93 g) was obtained from BARI Hybrid Maize-9 followed by BARI Hybrid Maize-13, whereas the lowest cob weight (131.00 g) was recorded in Sunshine. The maximum number of grains cob^{-1} was recorded in BARI Hybrid Maize-9 (507.00) which was statistically significant to that of other tested varieties. The lowest number of grains cob^{-1} (303.93) was found from Sunshine but at par with BARI Hybrid Maize-7 (328.30). Thousand-grain weight of maize hybrids is a genetical control parameter but it may be changed through changing the environment of the growing place. The maximum 1000-grain weight was obtained from BARI Hybrid Maize-9 (388.00 g) which was at par with BARI Hybrid Maize-13 (380.00 g). The grain size of BARI Hybrid Maize-7 was minimum (302.00 g) followed by BARI Hybrid Maize-12 (320.33 g). The highest grain yield was recorded in BARI Hybrid Maize-9 (9.85 t ha^{-1}) and it was statistically significant with other tested maize hybrids and this variety produced 46.2% and 31% higher yield than Sunshine (an imported maize hybrid). It might be the cumulative effect of yield attributes of BARI Hybrid Maize-9. On the contrary, statistically similar yield (8.93 t ha^{-1}) was produced by BARI Hybrid Maize-12 and BARI Hybrid Maize-13 in haor areas under rainfed ecosystem. Similar findings were reported by Begum *et al*. (2010) and Islam *et al*. (2015).

Table 6. Yield attributes and yields of hybrid maize varieties grown at farmer's field in Sylhet (Two years' mean)

Variety	Plant height (cm)	Cob length (cm)	Cob weight (g)	Grains cob^{-1}	1000-grain weight (g)	Yield (t ha^{-1})
BARI Hybrid Maize-7	192.67	16.40	133.33	328.30	302.00	7.57
BARI Hybrid Maize-9	203.00	23.17	172.93	507.00	388.00	9.85
BARI Hybrid Maize-12	193.67	19.73	134.67	380.27	320.33	8.93
BARI Hybrid Maize-13	207.67	22.47	144.33	395.27	380.00	8.93
Hybrid Sunshine	172.67	16.00	131.00	303.93	343.93	7.53
CV (%)	1.68	3.35	2.68	0.6901	3.04	4.40
$LSD_{(0.05)}$	6.14	1.23	7.22	4.97	19.87	0.72

Gladiolus

The yield and yield parameters varied significantly among the varieties. The tallest plant (69.50 cm) was found in BARI Gladiolus-6 followed by BARI Gladiolus-4 and shortest plants were found in BARI Gladiolus-3. Statistically similar numbers of leaves were recorded in BARI Gladiolus-4 and BARI Gladiolus-3 (Table 7). The longest spike (121.50 cm) was found in BARI Gladiolus-4 that was statistically different from that of the other two varieties of gladiolus. The highest number of florets $spike^{-1}$ (13.30) was obtained from BARI Gladiolus-4 which was statistically dissimilar with the BARI Gladiolus-3 (10.30) and BARI Gladiolus-6 (8.10). The rachis length varied significantly among the varieties. The highest rachis length measured from the variety BARI Gladiolus-4 (57.05 cm) and the lowest value was recorded in BARI Gladiolus-6 (40.90 cm). The highest weight of single spike was recorded form BARI Gladiolus-4 (81.45 g) and the lowest was recorded in BARI Gladiolus-3 (35.15 g). The highest spike yield was recorded in BARI Gladiolus-4 (17.63 t ha^{-1}) and the lowest spike yield was obtained from BARI Gladiolus-3 (7.43 t ha^{-1}).

Table 7. Yield and yield attributes of gladiolus varieties at farmers field in Sylhet areas (Two years' mean)

Variety	Plant height (cm)	Leaves plant^{-1}	Spike length (cm)	Rachis length (cm)	Florets spike^{-1}	Weight of single spike (g)	Spike yield (t ha^{-1})
BARI Gladiolus-3	61.10	8.10	110.30	42.60	10.30	35.15 c	7.43
BARI Gladiolus-4	63.35	8.00	121.50	57.05	13.30	81.45 a	17.63
BARI Gladiolus-6	69.50	6.40	103.95	40.90	8.10	40.00 b	9.08
CV (%)	5.66	4.17	1.17	3.83	1.26	1.32	10.10
LSD $_{(0.05)}$	6.34	0.54	2.26	3.10	0.23	1.19	5.91

CONCLUSION

The results of the trials conducted for two consecutive years revealed that lentil var. BARI Mosur-6; black gram var. BARI Mash-3; maize var. BARI Hybrid Maize-9; turmeric var. BARI Holud-4; potato var. Diamant; chickpea var. BARI Chola-6 and BARI Gladiolus-4 performed better under the soil and climatic conditions of the Sylhet region.

ACKNOWLEDGEMENT

Authors are gratefully acknowledged Bangladesh Agricultural Research Institute, Gazipur and Metrological Department, Sylhet for providing financial help and logistic support and weather data, respectively. Thanks to others who contributed in editing and compiling the manuscript.

REFERENCES

BBS (2010) Statistical Yearbook of Bangladesh, Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.

Begum S, Islam MN, Kaon SS, Sultana W (2010) Performance of hybrid maize in char land areas. Char land Research 2007-2010, Agronomy Division, Bangladesh Agricultural Research Institute, Joydebpur, Gazipur-1701. Pp. 08-10.

Gulles AA, Bartolome VI, Morantte RIZA, Nora LA, Relente CEN, Talay DTGYe (2014) Randomization and analysis of data using STAR [Statistical Tool for Agricultural Research]. *Philippine Journal of Crop Science*, 39 (supplement1), 137.

Islam MN, Akhteruzzamam M, Rahman S (2010) Performance of lentil varieties in charland areas. Annual Research Report (2009-2010). Agronomy Division, BangladeshAgricultural Research Institute, Joydebpur, Gazipur-1701. Pp. 76-77.

Islam MN, Rahman MS, Alom MS, Akhteruzzaman M (2015) Performance of different crops productivity enhancement through adaptation of crop varieties at charland in Bangladesh. *Bangladesh J. Agril. Res.* 40(4), 629-640.

Nazrul MI (2017) On-farm verification of linseed and sesame variety for Fallow-Fallow-T aman rice cropping system in Sylhet region of Bangladesh. *Bangladesh Agron. J.* 20(1), 7-12.

Nazrul MI, Hasan MK, Mondal MRI (2017) Production potential and economics of mung bean in rice based cropping pattern in Sylhet region under AEZ 20. *Bangladesh J. Agril. Res.* 42(3), 413-424.

Nazrul MI, Shaheb MR (2012) Screening of pulse crops for fallow land utilization in Sylhet region. *Bangladesh Agron. J.*; 15(2), 59-65.

Nazrul MI, Shaheb MR (2014) Performance of sweet gourd as relay with transplanted aman rice under rainfed ecosystem in Sylhet region. *Bangladesh Agron. J*. 17(2), 47-53.

Nazrul MI, Shaheb MR, Khan MAH, Khan ASMMR (2013) On-Farm Evaluation of Production Potential and Economic Returns of Potato-Rice Based Improved Cropping System. *Bangladesh Agron. J*. 16(2), 41-50.

Rahman KMM, Schmitz PM (2007) Food Production Sustainability and Security in Bangladesh. Bangladesh Agricultural University, Mymensingh and Justus-Liebig-University, Giessen, Germany.

Rahman MA, Barma NCD, Sarker MH, Sarker MMR, Nazrul MI (2013) Adaptability of wheat varieties in strongly acidic soils of Sylhet. *Banagladesh J. Agril. Res*. 38(1), 97-104.

Sarker MMR, Shaheb MR, Nazrul MI (2012) Urea Super Granule: A good source of Nitrogen on growth yield and profitability of cabbage in Sylhet. *J. Environ. Sci. & Natural Resources*. 5(1), 295-299.

Shaheb MR, Nazrul MI, Ali M (2012) Performance of Mustard varieties for fallow land utilization in Sylhet region. *Bangladesh Agron. J.* 15(2), 47-52.