

Original Research Article

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Response of Buckwheat Varieties in Northern Parts of West Bengal

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ABSTRACT

A field experiment was conducted during *rabi* seasons of 2016–17 and 2017–18 at the instructional farm of Uttar Banga Krishi Viswavidyalaya to study the varietal response of buckwheat in northern parts of West Bengal. The experiment was laid out in randomised block design with four replications. The treatments were five buckwheat varieties: VL UGAL 7, PRB 1, Himpriya, Himgiri and Sangla B 1 taken in the present study. From the result, it was observed that all the growth parameters: plant height, dry matter accumulation; yield attributes: number of branches and yield was significantly influenced among these five varieties. Variety PRB 1 recorded highest yield (20.2 and 19.7 q ha⁻¹) which was statistically at par with Himpriya (19.10 and 18.5 q ha⁻¹) and VL UGAL 7 (17.4 and 19.5 q ha⁻¹) during both seasons, respectively. The lowest yield was recorded with Sangla B 1 (15.5 and 15.7 q ha⁻¹). Though VL UGAL 7 recorded highest test weight (48.4 g), the seed yield ha⁻¹ was lower than PRB 1 and Himpriya because later tow varieties might be bear more number of seeds plant⁻¹. It could be concluded that PRB 1 and Himpriya would performed better with recommended management practices under northern parts of West Bengal.

Keywords

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varieties, yield,
Rabi

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Introduction

Common buckwheat (*Fagopyrum esculentum* Moench) has been a crop of secondary importance in many countries and presently cultivated in every cereals growing country in the world (Campbell, 1997). Once the crop was known as underutilized crop, now-a-days the crop is become the potential crop or future crop (Yadav *et al.*, 2017). It is an ancient annual dicotyledonous plant belonging to the

family polygonaceae. The crop is known as pseudo-cereal as its grains belong to cereals because of their similar use and chemical composition. It is poor man's crop, representing an important food supply in remote places of tribal tract of the country. It is the best crop in higher altitude in terms of adaptation to climatic variables (Baniya, 2001). The protein of buckwheat is of excellent quality and rich in lysine, unlike common cereals. It has also medicinal value

including all its parts, so the demand of buckwheat is increasing. Buckwheat can produce a better crop on marginal soil fertility and tolerate soil acidity than the other cereal does. Because of its branched taproot system buckwheat is capable to grow under limited supply of irrigation water during the *rabi* season. Keeping the above in view the present study was undertaken to study the varietal response of buckwheat in northern parts of West Bengal.

Materials and Methods

A field experiment was conducted during *rabi* seasons of 2016 – 17 and 2017 – 18 at Instructional Farm of Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar, West Bengal to study the varietal response of buckwheat in northern parts of West Bengal. The farm is situated at 26°19'86" N latitude and 89°23'53" E longitude at an elevation of 43 meter above mean sea level.

The soil of the experimental field was sandy loam in texture and acidic in reaction (pH 5.44), high in organic carbon (0.545%), low available nitrogen (184.24 kg ha⁻¹), high in available phosphorus (24.60 kg ha⁻¹) and low in available potassium (103.50 kg ha⁻¹). The experiment was laid out in randomized block design with four replications. The treatments were five buckwheat varieties: VL Ugal 7, PRB 1, Himpriya, Himgiri and Sangla B1 taken in the present study.

The buckwheat seeds were sown on 21th December during 1st season and 22nd December during 2nd season and harvesting was done on 7th March during 1st season and 10th March during 2nd season. One pre-sowing irrigation was given and no irrigation was applied as there was a rainfall during 1st season and one irrigation was applied in 2nd growing season.

Recommended dose of fertilizers @ 40:20:20 kg NPK/ha were applied in the form of urea, single super phosphate and muriate of potash. Full dose of fertilizers were applied as basal.

Well rotten cow dung manure @ 5 t ha⁻¹ was applied 7 days before final land preparation. Other cultural operations were undertaken as and when required. Observations on growth parameters, yield attributes and yield of different varieties were recorded. The data on various variables were analysed by using statistical procedures as described by Gomez and Gomez (1984).

Results and Discussion

Data pertaining to the growth parameters: plant height, dry matter accumulation; yield attributes: number of branches and yield was significantly influenced among these five varieties and presented in (Table 1 & 2).

Growth and yield attributes

From the results it was observed that significantly taller plant recorded with VL UGAL 7 during both seasons, respectively. PRB 1 recorded highest dry matter accumulation (23.5 and 22.5 g plant⁻¹) which was statistically at par with Himpriya and VL UGAL 7. In case of days taken to 50 % flowering, VL UGAL 7 flowers early (54 and 53 days) whereas, Sangla B 1 flowers late.

Number of primary and secondary branches plant⁻¹ was non-significant in both the seasons, respectively. Slightly more secondary branches plant⁻¹ was recorded with PRB 1. Significantly highest test weight was recorded with VL UGAL 7 which was statistically different from all varieties. Test weight of four varieties was non-significant in both the seasons, respectively.

Table.1 Response of buckwheat varieties to growth and yield attributes (mean of 2 years)

Treatment	Plant height at 60 DAS (cm)			Dry matter accumulation at 60 DAS (g plant ⁻¹)			Days taken to 50 % flowering			Number of primary branches plant ⁻¹			Number of secondary branches plant ⁻¹		
	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean
Himpriya	100.5	99.3	99.9	21.4	21.4	21.4	57	53	55.0	2.75	2.50	2.63	5.25	5.25	5.25
VL UGAL 7	101.5	102.0	101.8	20.2	19.9	20.1	54	53	53.5	3.00	2.75	2.88	6.00	5.25	5.62
PRB 1	91.8	94.5	93.1	23.5	22.7	23.1	55	57	56.0	2.75	2.75	2.75	5.75	5.75	5.75
Himgiri	94.3	91.5	92.9	18.3	18.0	18.2	56	54	55.0	2.25	3.00	2.63	5.42	5.75	5.58
Sangla B1	89.8	90.0	89.9	19.1	19.0	19.0	59	56	57.5	2.00	2.25	2.13	4.67	4.75	4.71
SEm±	1.74	2.48	1.11	0.70	0.84	0.34	0.97	0.41	0.20	0.21	0.25	0.12	0.36	0.42	0.20
CD (P= 0.05)	5.42	7.72	3.23	2.18	1.85	0.98	1.14	1.27	0.58	NA	NA	0.35	NA	NA	0.59
CV %	3.43	5.19	4.35	6.83	5.97	6.42	1.30	1.51	1.40	16.41	19.18	17.90	13.40	15.64	14.55

Table.2 Response of buckwheat varieties to seed yield and NPK status of soil (mean of 2 years)

Treatment	Test weight (gm)			Seed yield (q ha ⁻¹)			Available N (kg ha ⁻¹)			Available P ₂ O ₅ (kg ha ⁻¹)			Available K ₂ O (kg ha ⁻¹)		
	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean	2016-17	2017-18	Mean
Himpriya	40.3	40.0	40.2	19.1	18.5	18.8	67.2	72.7	70.0	14.3	15.0	14.7	22.7	27.8	25.2
VL UGAL 7	49.4	48.9	49.2	17.4	19.5	18.4	73.0	64.7	68.8	13.7	12.4	13.1	25.1	24.2	24.7
PRB 1	39.1	39.4	39.3	20.2	19.7	20.0	69.2	69.3	69.3	16.4	15.2	15.8	17.0	20.3	18.7
Himgiri	41.0	40.0	40.5	16.6	19.0	17.8	74.8	68.6	71.7	12.9	14.4	13.7	20.2	22.5	21.4
Sangla B1	41.5	40.3	41.0	15.5	15.7	15.6	75.8	76.9	76.4	15.4	17.2	16.3	25.5	24.0	24.8
SEm±	0.90	0.81	0.44	0.72	0.76	0.38	3.20	2.56	2.88	1.41	1.00	1.21	1.84	2.19	2.02
CD (P= 0.05)	2.79	2.53	1.29	2.25	2.38	1.12	NA	7.97	7.99	NA	NA	NA	5.76	NA	5.88
CV %	4.23	3.89	4.07	8.12	8.27	8.20	8.87	7.25	8.06	19.32	13.44	16.38	16.68	18.36	17.52

Yield and available NPK status of soil

Variety PRB 1 recorded highest yield (20.2 and 19.7 q ha⁻¹) which was statistically at par with Himpriya (19.10 and 18.5 q ha⁻¹) and VL UGAL 7 (17.4 and 19.5 q ha⁻¹) during both seasons, respectively. The lowest yield was recorded with Sangla B 1 (15.5 and 15.7 q ha⁻¹). Though VL UGAL 7 recorded highest test weight (48.4 g), the seed yield ha⁻¹ was lower than PRB 1 and Himpriya because later tow varieties might be bear more number of seeds plant⁻¹. The results of present investigation were in close agreements the findings of (Saha *et al.*, 2017). The fertility status i.e. N, P₂O₅ and K₂O of the soil due to the response of different varieties was remained non-significant.

It could be concluded that PRB 1 and Himpriya would response better with recommended management practices under northern parts of West Bengal.

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