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RESEARCH ARTICLE

Effect of various concentrations of Biozyme Crop+ on yield and quality of ridge gourd in Terai Zone of West Bengal

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Abstract

A field experiment was conducted to evaluate the effect of Biozyme Crop+, a commercial bio-stimulant, on the yield and quality of the ridge gourd variety Baro Pata Local and to optimize its dose for ridge gourd cultivation. The experiment was conducted during the kharif season of 2017 and 2018 at the instructional farm of UBKV, Coochbehar, West Bengal. It consisted of five treatments of different concentrations of Biozyme Crop+, which were laid in a randomized block design (RBD) with three replications in both years. The results revealed that the application of Biozyme Crop+ significantly affected all yield and quality parameters of ridge gourd, and the highest yield (27.27 t/ha), most of the nutritional quality, viz. vitamin A (55.99 IU), vitamin C (5.73 mg/100 g), and fruit crude fibre content (2.44 mg/100 g) and the highest B: C ratio (3.39) were recorded with the application of 7.5 mL/l Biozyme Crop+. The crop-specific dosage of commercial formulations of seaweed extracts is still under research. Therefore, from the present study, it can be concluded that the application of Biozyme Crop+ @ 7.5 ml/l can give maximum yield and better quality of ridge gourd.

Keywords: Biozyme Crop+, ridge gourd, yield and quality.

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Introduction

Ridge gourd, *Luffa acutangula*, which is popularly known as *Kalitori* in Hindi, is a very nutritious summer season vegetable crop of the terai region of West Bengal, India. The fruits are diuretic, expectorant, laxative, purgative, hypoglycaemic, and have a cooling effect on the stomach, which is easy to digest. It is an important component of a low-calorie diet, which is good for diabetic patients (Pullaiah, 2006). Moreover, it is an important part of several Bengali cuisines and has high demand in the market. But most of its cultivation is restricted to production using chemical fertilizers, as cultivation solely dependent on organic manures has not resulted in yields as good as those of inorganic fertilizers. To improve the yield and economic returns of organic farming, the agricultural scientific communities have been developing several approaches, and the use of bio-stimulants such as humic acid, microbial inoculants, fulvic acids, protein hydrolysates, amino acids, and seaweed extracts is one amongst them (Latimer, 1992; Povero et al., 2016). Bio-stimulants are the compounds or formulations of naturally occurring compounds that stimulate the natural process of plant growth (Sharma et al., 2013; Calvo et al., 2014).

Nowadays, the liquid extract obtained from marine algae, i.e., seaweed extract (SWE), has gained importance

as a foliar spray for various horticultural crops, especially in vegetables and flowers (Crouch & Van Staden, 1994). As it is plant-based, it is a non-toxic, non-polluting, and biodegradable compound (Dhargalkar & Pereira, 2005). It has shown several positive potentials in terms of enhanced growth and yield (Blunden, 1991; Crouch & Van Staden, 1994; Shukla et al., 2019). It is rich in precursors of cytokinin and auxin, enzymes, and hydrolysed protein, and also considered a storehouse of naturally occurring nutrients in chelated form (Shukla et al., 2019), which helps to improve cell division and cell enlargement, resulting in better chlorophyll content and increased production. It contains several macronutrients & micronutrients, as well as plant growth-promoting substances (Mooney & Van Staden, 1986). It stimulates mineral absorption and uptake (Verkleij, 1992; Turan & Kose, 2004) in plants, thereby reducing the quantity of nutrient application. As a result, plant growth and yield (Rama Rao, 1991), along with the quality of the crop, also get enhanced (Verkleij, 1992). To harness the benefits of seaweed extract commercially, in organic farming, several formulations of seaweed extract are available in the market. One such commercial product available in Indian markets is Biozyme Crop+, produced by Biostadt India Ltd. Biozyme Crop+ is an eco-friendly commercial bio-stimulant that contains the extract of *Ascophyllum nodosum as its primary component,* known for its positive influence on the plant's physiological system. Therefore, this study was conducted to assess the impact of Biozyme Crop+ bio-stimulant on the yield and quality of organically produced ridge gourd in the terai region of West Bengal.

Materials and Methods

The experiment was conducted at the Instructional Farm of Horticulture at Uttar Banga Krishi Vishwavidyalaya, Coochbehar, West Bengal, India, during February to June of 2017 and 2018. The area is under the terai zone in the Teesta alluvial region of the state. The experiment was laid under a randomized block design with three replications and five treatments consisting of foliar applications of five different concentrations of Biozyme Crop+ bio-stimulant: T_1 - 0 mL/l, T_2 - 2.5 mL/l, T_3 - 5 mL/l, T_4 - 7.5 mL/l, and T_5 - 10 mL/l. The foliar application was done during the first true leaves stage (15 DAS) and first flower emergence (45 DAS). The detailed meteorological data during the experiment are given in Figure 1. Seeds of the Baro Pata Local variety of ridge gourd were purchased from the market of Pundibari, Coochbehar, and were soaked overnight. The next morning, the seeds were wrapped in a cotton cloth and kept inside a raw cow dung heap for quick germination. The germinated seeds were sown hill @ 3 seeds per hill made at a spacing of 1.5 x 0.6 m, with a mixture of farmyard manure and vermicompost in beds of 10 X 4.5 m size.

For the nutrition of the plant, farmyard manure @ 20 t/ha and vermicompost @ 5 t/ha were applied to the soil 15 days before sowing of the seeds. After the proper establishment of the seedlings on the hills, only one healthy seedling was kept per hill. The plants were tied to bamboo sticks regularly to give them support until they reached the bower height. Pheromone traps were tied on the bower @3 traps per acre, and a timely spray of neem oil was given, along with manual inspection to avoid pest infestation. The hills were kept clean by manual weeding regularly, and the removed weeds were used for mulching the hills to avoid water loss from the soil and erosion during irrigation.

The harvesting was started after 50 to 60 days after sowing. Ten fresh fruit samples from ten plants each from each treatment and each replication were collected at 5 days from anthesis for measuring the weight of each fruit and for other quality parameters. For a total count of fruit per plant calculation exact record of fruits harvested at each picking was kept. Vitamin A was estimated by the colorimetric method using a spectrophotometer, as suggested by Davies (1976). For vitamin C estimation titrimetric method based on the reduction of 2,6-dichlorophenol indophenol by ascorbic

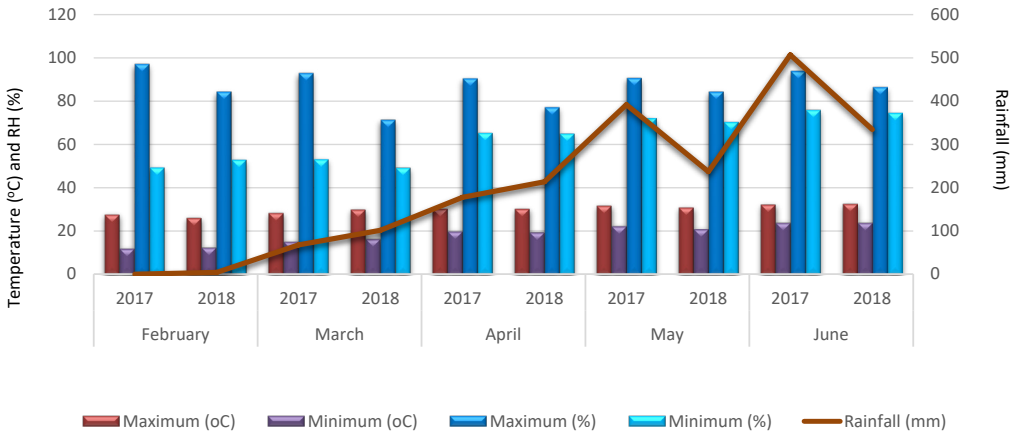

Figure 1: Meteorological parameters during the field experiment

Table 1: Cost of cultivation

Sl. No.	*Operation / Input*	*Requirement ha^{-1}*	*Rate (₹)*	*Total costs (₹)*
A	Fixed costs			
A1	Seed (Baro Pata Local)	5 kg	1000.00 /kg	5000.00
A2	Land rent	6 months	100	100.00
A3	Main field preparation			
a	Tractor ploughing	3 hours	250.00 /hr	750.00
b	Power tiller ploughing	3 hours	100.00 /hr	300.00
c	Cleaning and layout of the field	20-man days (8 hrs)	250.00 /man day	5000.00
d	Bamboo poles	1000	100.00 /pole	100000.00
e	Plastic thread	400	30.00 /roll	12000.00
A4	Intercultural operation			
a	Irrigation	10 hours	200.00 /hr	2000.00
A5	Plant protection chemicals			
a	Neem oil	2 l	300.00 /l	600.00
b	Application cost of chemicals	5-man days (8 hours)	250.00 /man day	1250.00
c	Pheromone traps	7 traps	100.00 /trap	700.00
A6	Harvesting of fruits	20-man days (8 hours)	250.00 /man day	5000.00
A7	Loading and carrying for the market	Tractor (5 hours)	250.00 /hr	1250.00
A8	FYM	20 t	1.00 /kg	20000.00
A9	Vermicompost	5 t	5.00 /kg	25000.00
	Total A			178950.00
B	Variable costs			
B1	Seaweed extract Biozyme crop+	As per treatment	1600 /l	----------
	Total B			
	Total costs (A+B)			

Note: ₹: Indian National Rupees

acid was used, as suggested by Mazumder & Majumder (2003), and for crude fibre estimation A.O.A.C. (1980) method was used. The collected data were analysed using analysis of variance (ANOVA) following the randomized block design (Gomez & Gomez, 1984) at a 5% level of significance. The cost of cultivation is presented in Table 1, and the economics of cultivation were estimated by calculating the benefit-cost ratio. The price of ridge gourd was kept at ₹ 30/ kg as per the local market rates during the harvesting season.

Results and Discussion

Effect of Biozyme Crop+ bio-stimulant on the yield and yield parameters of ridge gourd

From the recorded data, it was found that the use of Biozyme Crop+ bio-stimulant significantly improved all yield characters of ridge gourd, as seaweed extracts are reported to contain various plant growth-regulating hormones and micronutrients (Mooney & Van Staden, 1986; Blunden, 1991). In general, a gradual increase in the number of fruits per plant, individual fruit weight, yield per plant, and yield per hectare was observed with the increase in concentration of Biozyme Crop+ bio-stimulant, and the highest data was obtained at 7.5 mL/l (T_4) concentration. Still, when the concentration was increased further, a slight decrease in observed values was noticed (Table 2).

Application of 7.5 mL/l Biozyme Crop+ bio-stimulant increased the number of fruits per plant by 73.91% than the control, and it was 27.66, 16.50, and 5.26% more than 2.5, 5, and 10 mL/l, respectively. The highest fruit weight obtained from 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application was 122.55 g, which was 21.92% more than the control treatment (T_1) and 12.04, 3.27, and 1.33% more than 2.5 mL/l (T_2), 5 mL/l (T_3), and 10 mL/l (T_5) treatments, respectively. Due to the increase in the number of fruits and fruit weight, the yield per plant and yield per hectare were also affected. The highest yield per plant (2.45 kg/plant) and the highest yield per hectare (27.27 t/ha) were observed for 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application. The increase in fruit yield for 7.5 mL/l Biozyme Crop+ bio-stimulant application was 113.10, 43.19, 20.21, and 6.51% higher than 0 mL/l (T1), 2.5 mL/l (T2), 5 mL/l (T3), and 10 mL/l (T5) Biozyme Crop+ bio-stimulant application, respectively. Similar kinds

Table 2: Effect of Biozyme Crop+ bio-stimulant on yield of ridge gourd fruits

Treatments	SWE conc. (mL/l)	Number of fruit/plants			Average fruit weight(g)			Yield/plant (kg)			Yield/ha (t/ha)		
		2017	2018	Pool	2017	2018	Pool	2017	2018	Pool	2017	2018	Pool
T_1	0	10.67	12.33	11.50^{d}	96.80	104.23	100.52^{c}	1.03	1.28	1.15^{d}	11.39	14.20	12.80^{d}
T_2	2.5	15.33	16.00	15.67^{cd}	103.71	115.07	109.39^{b}	1.59	1.84	1.71^{c}	17.64	20.45	19.05^{c}
T_3	5	16.67	17.67	17.17^{bc}	113.27	124.08	118.68^{a}	1.89	2.20	2.04^{b}	20.96	24.42	22.69^{b}
T_4	7.5	19.33	20.67	20.00^{a}	117.50	127.60	122.55^{a}	2.27	2.64	2.45^{a}	25.25	29.29	27.27^{a}
T_5	10	18.33	19.67	19.00^{ab}	116.13	125.77	120.95^{a}	2.13	2.47	2.30^{ab}	23.72	27.50	25.61^{ab}

Ton per hectare (1 ton=1000 kg); Different letters in a single column show statistically significant differences for $P < 0.05$

of results were reported by Rathore et al. (2009) in soybean Basavaraja et al. (2018) in maize when an increase in the concentration of SWE improved the yield. Further, Basavaraja et al. (2018), Thirumaran et al. (2009), and Rama Rao (1991) observed that application of SWE at a lower concentration gave better results. They also reported that increasing the concentration to a certain level does not give any significant results, which is in confirmation with our results.

Effect of Biozyme Crop+ bio-stimulant on the nutritional value of ridge gourd

Using Biozyme Crop+ bio-stimulant significantly improved the vitamin A, Vitamin C, and crude fibre content of ridge gourd fruits. The highest recorded data was for 7.5 mL/l Biozyme Crop+ bio-stimulant treatment with respect to all the quality parameters observed (Table 3). The fruit vitamin A content was increased up to 10.92% for the 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application than the control treatment, which was also 8.48, 3.28, and 0.83% higher than 2.5 mL/l (T_2), 5 mL/l (T_3), and 10 mL/l (T_5) Biozyme Crop+ bio-stimulant application. 10.94% increase in fruit vitamin C content was observed for 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application as compared to the control. Though the vitamin C concentration for 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application was recorded as the highest, it was at par with the other treatments, viz., 2.5 mL/l (T_2), 5 mL/l (T_3), and 10 mL/l (T_5) Biozyme Crop+ bio-stimulant application. Increasing the Biozyme Crop+ bio-stimulant concentration also increased the crude fibre content of the fruits and maximum crude fibre content was obtained (2.44 mg/100 g) from 7.5 mL/l (T_4) Biozyme Crop+ bio-stimulant application which was 15.93% higher than the control treatment (T_1) and 7.89, 3.83 and 1.81% higher than 2.5 mL/l (T_2), 5 ml/l (T_3), and 10 mL/l (T_5) Biozyme Crop+ bio-stimulant application, respectively. The increase in qualitative character may be because of an increase in nutrient uptake by the plant due to the application of seaweed extract (Turan & Kose, 2004; Mancuso et al., 2006) and increased root growth. Moreover, the results obtained in this study were in confirmation with the report of Zhang & Schmidt (1999) and Zhang & Schmidt, (2000) that exogenous application of seaweed extract enhances antioxidants status of Kentucky bluegrass, tall fescue, and creeping bent grass, respectively. Further studies are needed to establish a clear relationship between seaweed extract dose and crop plant responses (Perez-Onate et al., 2026). However, the application of seaweed extract is known to reduce auxin synthesis (Wally et al., 2013), which indirectly affects photosynthesis by regulating mesophyll expansion (Batista-Silva et al., 2024), thus, excessive application of seaweed extract might have negatively affected photosynthesis, resulting in a decline in ridge gourd performance when the concentration was increased from 7.5 to 10 mL/l.

Effect of Biozyme Crop+ bio-stimulant on the economics of ridge gourd cultivation

The highest net return of ₹ 631950 and B:C of 3.39 was obtained with the application of 7.5 mL/l (T_4) Biozyme Crop+

Table 3: Effect of Biozyme Crop+ bio-stimulant on nutritional value of ridge gourd fruits

Treatments	SWE conc. (mL/l)	Vitamin A (IU)			Vitamin C (mg/ 100 g)			Crude Fibre (mg/ 100 g)		
		2017	2018	Pool	2017	2018	Pool	2017	2018	Pool
T_1	0	50.46	50.50	50.48^{e}	5.17	5.17	5.17^{c}	2.07	2.14	2.10^{d}
T_2	2.5	51.40	51.83	51.61^{d}	5.69	5.60	5.65^{b}	2.25	2.27	2.26^{c}
T_3	5	54.15	54.27	54.21^{c}	5.71	5.68	5.69^{ab}	2.32	2.38	2.35^{b}
T_4	7.5	56.01	55.97	55.99^{a}	5.75	5.71	5.73^{a}	2.42	2.45	2.44^{a}
T_5	10	55.56	55.49	55.53^{b}	5.72	5.68	5.70^{ab}	2.38	2.41	2.40^{a}

Ton per hectare (1 ton=1000 kg); Different letters in a single column show statistically significant differences for $p < 0.05$

Table 4: Effect of Biozyme Crop+ bio-stimulant on the economics of ridge gourd cultivation

Treatments	*SWE conc. (ml/l)*	*Total cost of cultivation (₹)*	*Gross return (₹)*	*Net return (₹)*	*Benefit:Cost ratio (B:C)*
T1	0	178950	384000	205050	1.15
T2	2.5	181350	571500	390150	2.15
T3	5	183750	680700	496950	2.70
T4	7.5	186150	818100	631950	3.39
T5	10	188550	768300	579750	3.07

Note: ₹: Indian National Rupees

bio-stimulant. The increase in B: C for T_4 was 194.78% higher than T_1, 57% higher than T_2, 25% higher than T_3, and 10.42% higher than T_5 (Table 4). From the data is can be observed that increasing the concentration of Biozyme Crop+ bio-stimulant from 7.5 to 10 mL/l reduced the B:C as well as the net return because of reduction in yield.

Conclusion

From this experiment, it can be concluded that the application of Biozyme Crop+ bio-stimulant can improve the yield and quality parameters of organically grown ridge gourd. For the ridge gourd, application of Biozyme Crop+ @ 7.5 mL/l concentration can give the highest yield and benefit, but increasing the concentration may not be significantly beneficial.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

References

A.O.A.C.(1980). Official methods of analysis (13th ed.) Association of Official Analytical Chemcists, Washington, D.C. New York.

Basavaraja, P. K., Yogendra, N. D., Zodape, S. T., Prakash, R. & Ghosh A. (2018). Effect of seaweed sap as foliar spray on growth and yield of hybrid maize. Journal of Plant Nutrition, 41(14), 1851–1861.

Batista-Silva, W., Gonçalves, J., Siqueira, J.A., Martins, A.O., Ribeiro, D. M., Nunes-Nesi, A., Zsogon, A., & Araújo, W. L. (2014). Auxin metabolism and the modulation of plant growth. Environmental and Experimental Botany, 226, 105917, doi. org/10.1016/j.envexpbot.2024.105917.

Blunden, G. (1991). Agricultural uses of seaweeds and seaweed products, pp. 65–81. In: Guiry, M.D., Blunden, G. (eds.), Seaweed Resources in Europe: Uses and Potential. John Wiley and Sons, Chichester.

Calvo, P., Nelson, L. & Kloepper, J. W. (2014). Agricultural uses of plant biostimulants. Plant and Soil, 383, 3-41.

Crouch, I. J. & Van Staden, J. (1994). Commercial seaweed products as biostimulants in horticulture. Journal of Home & Consumer Horticulture, 1, 19–76.

Davies, B. H. (1976). Carotenoids, pp. 38–165. In: Chemistry and Biochemistry of Plant Pigments, (2nd ed.), Goodwin, T.W. (ed.). London-New York-San Francisco: Academic Press, (Vol.2) (Analytical Methods).

Dhargalkar, V. K. & Pereira, N. (2005). Seaweed: promising plant of the millennium. Scientific Culture, 71, 60–66.

Gomez, K.A., & Gomez, A.A. (1984). Statistical procedures for agricultural research (2nd ed.). pp. 680. New York: John Wiley and Sons.

Latimer, L. G. (1992). Drought, paclobutrazol, abscisic acid, and gibberellic acid as an alternative to daminozide in tomato transplant production. The Journal of the American Society for Horticultural Science, 117, 243-47.

Mancuso, S., Azzarello, E., Mugnai, S. & Briand, X. (2006). Marine bioactive substances (IPA extract) improve foliar ion uptake and water tolerance in potted *Vitis vinifera* plants. Advances in Horticultural Science, 20, 156–161.

Mazumdar, B. C. & Majumder, K. (2003). Determination of chemical constituents, pp. 93-139. In: Methods on physio-chemical analysis of fruits, Daya Publishing House, Delhi.

Mooney, P. A. & Van Staden, J. (1986). Algae and Cytokinins. Journal of Plant Physiology, 123, 1–2.

Pérez-Oñate, C.J., Nicolau, M.C.M., Ferreira, T.C., Broetto, F., Bossolani, J.W., Montes de Oca, M., Heitmann, W., Alves, C.J., Bettini, M.O., Moreno-Poveda, G.A., Villaseñor-Ortiz, D, da Silva, L.C., Filho, S.G., Little, H., Maude, S. & Stadnik, M.J. (2026). Crop yield responses to seaweed extract-based biostimulants depend on application strategy, formulation, and extraction methods: a meta-analysis. Frontier in Plant Science, 17, 1803269. doi: 10.3389/fpls.2026.1803269

Povero, G., Mejia, J. F., Tommaso, D. D., Piaggesi, A. & Warrior, P. (2016). A systematic approach to discover and characterize natural plant biostimulants. Frontiers in Plant Science, 7, 435.

Pullaiah, T. (2006). Encyclopedia of world medicinal plants (4th ed.), pp. 1962-1964. A.P. Regency Publications, New Delhi,

Rama Rao, K. (1991). Effect of seaweed extract on *Zyziphus mauratiana* Lamk. Journal of Indian Botanical Society, 71, 19–21.

Rathore, S. S., Chaudhary, D. R., Boricha, G. N., Ghosh, A., Bhatt, B. P., Zodape, S. T. & Patolia, J. S. (2009). Effect of seaweed extract on the growth, yield and nutrient uptake of soybean (*Glycine max*) under rainfed conditions. South African Journal of Botany, 75 (2), 351–355.

Sharma, H. S. S., Fleming, C., Selby, C., Rao, J. R. & Martin, T. (2013). Plant biostimulants: A review on the processing of macroalgae and use of extracts for crop management to reduce abiotic and biotic stresses. Journal of Applied Phycology, 26(1), 465–490.

Shukla, P., Mantin, E., Adil, M., Bajpai, S., Critchley, A. & Prithiviraj, B. (2019). *Ascophyllum nodosum* based biostimulants: Sustainable applications in agriculture for the stimulation of plant growth, stress tolerance, and disease management. Frontiers in Plant Science, 10. 10.3389/fpls.2019.00655.

Thirumaran, G., Arumugam, M., Arumugam, R. & Anantharaman, P. (2009). Effect of seaweed liquid fertilizer on growth and pigment concentration of *Cyamopsis tetrogonolaba* (L) Taub. American-Eurasian journal of agricultural & environmental sciences, 2 (2), 50-56.

Turan, M. & Kose, C. (2004). Seaweed extracts improve copper uptake of grapevine. Acta Agriculturae Scandinavica. Section B, Soil and Plant Science, 54, 213–220.

Verkleij, F. N. (1992). Seaweed extracts in agriculture and horticulture: a review. Biological Agriculture and Horticulture, 8, 309–324.

Wally, O. S. D., Critchley, A. T., Hiltz, D., Craigie, J. S., Han, X., Zaharia, L. I., Suzanne, R. A. & Balakrishnan P. (2013). Regulation of phytohormone biosynthesis and accumulation in Arabidopsis following treatment with commercial extract from the marine macroalga *Ascophyllum nodosum*. Journal of Plant Growth Regulation, 32, 324–339.

Zhang, X. & Schmidt, R. E. (1999). Antioxidant response to hormone-containing product in Kentucky bluegrass subjected to drought. Crop Science, 39, 545–551.

Zhang, X. & Schmidt, R. E. (2000). Hormone-containing products' impact on antioxidant status of tall fescue and creeping bent grass subjected to drought. Crop Science, 40, 1344–1349.

सारांश

उत्तर बंग कृषि विश्वविद्यालय, कूचबिहार, पश्चिम बंगाल, भारत, के शैक्षणिक खेत में वर्ष2017 एवं2018 के खरीफ मौसम के दौरान क्षेत्रीय प्रयोग किया गया। इस प्रयोग में समुद्री शैवाल निष्कर्ष के व्यावसायिक उत्पाद बायोजाइम क्रॉप +की पांच विभिन्न सघनताओं से पांच उपचारों का निर्माण किया गया। इन पांच उपचारों को यादृच्छिक खंड आकार में रखा गया एवं तीन बार, हर वर्ष इनकी पुनरावृत्ति की गयी। अध्ययन के दौरान लिए अवलोकनों से यह पाया गया कि, बायोजाइम क्रॉप +के उपयोग ने तुरई के सभी उपज और गुणवत्ता के मानदंडों पर महत्वपूर्ण प्रभाव डाला, एवं सबसे अधिक उपज27.27) टन/हेक्टेयर (और अधिकांश पोषण गुणवत्ता, जैसे कि विटामिन ए55.99) आईयू(, विटामिन सी5.73) मिलीग्राम100/ ग्राम(, फल का कच्चा रेशा सामग्री2.44) मिलीग्राम100/ ग्राम (और लाभ :लागत7.5 (3.39) मि.ली/.ली .बायोजाइम क्रॉप +के आवेदन के साथ दर्ज की गई। समुद्री शैवाल अर्क के व्यवसायिक फॉर्म्युलेशन की फसल-विशिष्ट खुराक अभी भी शोध के अधीन है। अतः, वर्तमान अध्ययन से यह निष्कर्ष निकाला जा सकता है कि7.5 मि.ली/.ली .की दर से बायोजाइम क्रॉप+ के आवेदन द्वारा तुरई की अधिकतम उपज और गुणवत्ता को प्राप्त किया जा सकता है।