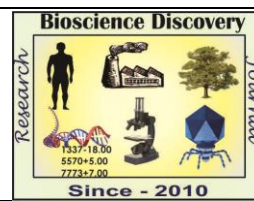


© RUT Printer and Publisher

Print & Online, Open Access, Research Journal Available on <http://jbsd.in>

ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)

Research Article



Effect of blue green algae on yield of Soyabean (*Glycine max* L. (Merr))

Jadhav S.R. and S.M. Talekar*

Department of Botany, Arts, Science and Commerce College, Rahuri. Ahmednagar.(MS) 413705.

*Head P.G. Department of Botany, Mrs. K.S.K. College, Beed. (MS)-431122.

santosh.talekar567@gmail.com

Article Info

Received: 01-04-2019,

Revised: 02-06-2019,

Accepted: 19-06-2019

Keywords:

BGA. Biofertilizer

Abstract

The experiment on Soyabean was conducted during kharif 2016, Deolali-pravara, Rahuri tahasil Dist. Ahmednagar to study the effect of Blue Green Algae (BGA) as biofertilizer on yield and yield parameter of soyabean. Soyabean called as golden beans is important oil seed crop. It is rich source of Protein and fiber. During this study the effect of BGA was studied with respect chemical fertilizer. The role of BGA biofertilizer was studied by giving five different treatments BGA, BGA+FYM, FYM, chemical fertilizer (Urea) and Control. Use of BGA+FYM shows significant results as compare to chemical fertilizer (urea), FYM and BGA.

INTRODUCTION:

Soybean is an important source of food, protein, and oil. The most important countries of the world with the highest rate of soybean production include the USA, Brazil, Argentina, China, and India.

At present, India exports 55% of its soya meal. However, the Soya industry of the country is crippled by low yield, Most of the Soyabean is produced in rainfed areas. Hence more research is essential to increase its yield under different conditions, including stress.

In India most of farmer's economic condition is not good to applying recommended dose of chemical fertilizers. The chemical fertilizers are high cost and have adverse effect on nature due to this alternative source like biofertilizers- Azatobacer, organic fertilizers- Compost, Vermicompost are used.

Blue Green Algae (BGA) are alternative source of nitrogen containing chemical fertilizers. The choice of biological fertilizer is cost effective, eco- friendly and easily available. Sustainable agriculture is advantageous over convention agriculture for its capacity to accomplish food demand by utilizing environmental resources

without negatively affecting it BGA play beneficiary role (Chatterjee A., et al., 2017). BGA having ability to fix atmospheric nitrogen in specialized cells called heterocyst which comprises 5-10% of cells in the filament (Fleming and Haselkorn, 1973). The agronomic potential of BGA also studied (Venkataraman, G.S. 1961). BGA having ability to fix nitrogen their role in rice cultivation was studied and show significant difference in the yield (De, P.K. 1939, Venkataraman, G.S. 1981). Later on BGA as biofertilizer also applies on leafy (*Trigonella* and *Spinach*) and Fruit (*Capsicum* and *Tomato*) (Abhang, A.R. 2009) and cotton crops (Shinde, M D. 1995). And get significant result in yields with respective crops.

MATERIALS AND METHODS:

The experiment was conducted in the Soyabean field of Deolali-pravara, Rahuri Dist- Ahmednagar of Maharashtra in the year 2015. Each experimental plot measured 2 feet × 2 feet in size. The field was designed as a Randomized Block Design. The treatments were five and three replication of each.

The Soyabean variety Phule Kalyani (DS-228) having duration of 95- 100 days with production up to 23.53 Qtls./Hect. average yield (MAHABEEJ). Seed was collected from the Mahatmaphule Krushi Vidyapeeth Rahuri (MPKV). The seeds were sown in a bed having distance between two plants 5 cm and 30 cm between two rows. BGA fertilizer containing the dried mass of *Nostoc*, *Spirulina* and

Scytonema was isolated from arable land of Ahmednagar district and identified by using of Monograph Cyanophyceae (Desikachary 1959, and Anand 1998). The fertilizers apply in two doses, half at the time of sowing and half dose at time of flower initiation. After the Soyabean harvest, the Soyabean yield and yield parameters were recorded. The following observations were recorded.

Table No. 2. Biofertilizer applied g/per plot on yield parameters of Soyabean (*Glycine max* L. (Merr))

Sr.No.	Symbol	Treatment	Quantity of fertilizers applied (g/plot)
1	T1	Control	-
2	T2	BGA	10
3	T3	FYM	500
4	T4	BGA+FYM	10 + 500
5	T5	Nitrogen Fertilizer (Urea)	5

Table No. 2. Effect of BGA on yield parameters of Soyabean (*Glycine max* L. (Merr))

Treatment	Pod Length	Number of pods/plant	Number of seed / pod	Number of seeds /plant	weight of seed /plant	Thousand seed weight	Straw Q/Ha	% increase	Seed Q/Ha	% increase
T1	4.3	52.67	2.01	105.9	10.52	98.4	14.97	100	22.93	100
T2	4	57	2.4	136.8	13.06	97.5	16.34	109.15	24.08	105.02
T3	4.3	56.5	2.48	140.12	12.79	93.3	17.7	118.23	25.92	113.04
T4	4.5	62.33	2.58	160.8	16.86	102.8	19.06	127.32	28.42	123.94
T5	3.5	45.5	2.37	107.8	9.66	90.2	14.16	94.58	23.71	103.40
SD	0.39	6.23	0.22	23.30	2.80	4.86	1.99		2.20	
SDE	0.14	2.20	0.08	8.24	0.99	1.72	0.70		0.78	
GM	4.12	54.80	2.37	130.29	12.58	96.43	16.44		25.01	

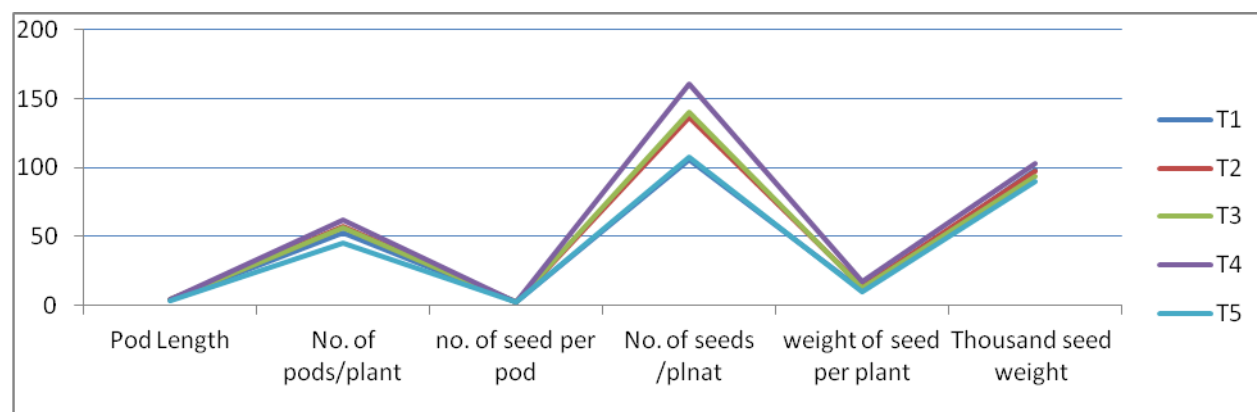


Fig. 1 Effect of BGA on yield parameters of Soyabean

RESULTS AND CONCLUSION:

The highest value of seed yield and yield parameters was obtained in the treatment containing T4 - BGA+FYM (Table No. 2). In this treatment the seed yield was increase by 23.94%. However, the straw yield was recorded 27.32 % over the control. The pod length, number of pods/plant, number of seeds/plant and weight of seed /plant show significantly increase in the treatment T4. Where BGA is used with F.Y.M. BGA+F.Y.M. showing the significant effect as biofertilizer with compare to other treatment and that is a good option for chemical fertilizer which has costly and adverse effect on nature. Such kind of results was reported by Abhang A.R. (2009) in crop fields like *Trigonella*, *Spinach*, *Capsicum*, Tomato) and Shinde M. D. (1995) Cotton and *Fenugreek* from Ahmednagar district (M.S.).

REFERENCES

Abhang AR, 2009. Screening of blue green algae for their potential as biofertilizer using leafy (*Trigonella* and *Spinach*) and Fruit (*Capsicum* and

Tomato) vegetable as a test plants. Ph.D. thesis. University of Pune.

Anand N, 1989. Hand book of blue-green algae of rice filed of South India. Publ *Bishen Singh Mahendra Pal Singh, Dehradun*.

Chatterjee A, Singh S, Agrawal C, Yadav S, Rai R, Rai LC, 2017. Role of Algae as a Biofertilizer. In Rajesh Prasad Rastogi, Datta Madamwar and Ashok Pandey (Eds,) *Algal Green Chemistry: recent progress in Biotechnology* (pp.189-200). Elsevier. 8-0-44-63784-0.

De PK, 1939. The roll of blue-green algae in nitrogen fixation in rice fields. Proc. Roy Sac. London 127B:129-139.

Desikachary TV, 1959. Cyanophyta Publ. ICAR, New Delhi

Shinde MD, 1995. Studies on soil characterization and effect of blue-green algae on selected crops from Pravaranagar area. (M.S.) Ph.D. Thesis. University of Pune.

Venkataraman GS, 1981. Blue green algae for rice production. FAO soils. Bull.No. 146.

Venkataraman GS, 1961. The role of blue green algae in agriculture. *Sci. Cult.* 27:9-13.

How to cite this article

Jadhav S.R. and S.M. Talekar, 2019. Effect of blue green algae on yield of Soyabean (*Glycine max* L. (Merr).. *Bioscience Discovery*, 10(3):119-121.