

REPORT

On

Evaluate the Bio- Rakshak in Brinjal

Sponsored By

Nivashakti Bioenergy Pvt. Ltd.



Submitted by

*Dr. M.S. Parihar
&
Shri Pravin Barde*

**RAJMATA VIJAYARAJE SCINDIA KRISHI VISHWA VIDYALAYA
GWALIOR**

Fruit Research Station, Entkhedi, Bhopal (M.P)

2016-17

REPORT

On

*Evaluate the Bio- Rakshak in Brinjal against chewing pest
(Looper/Caterpillar, Tomato fruit worm, Horn Worm, Pin
Worm and Sting Bug)*

Sponsored By

*Nivashakti Bioenergy Pvt. Ltd.
Junaid Manzil, 2nd Floor, 7B, Aliripukur Road,
Kolkatta 700010 (West Bangal)*

Submitted by

*Dr. M.S. Parihar
&
Shri Pravin Barde*

**RAJMATA VIJAYARAJE SCINDIA KRISHI VISHWA VIDYALAYA
GWALIOR**

Fruit Research Station, Entkhedi, Bhopal (M.P)

2016-17

REPORT ON TESTING OF PRODUCTS

1. **Details of Sponsor:** Nivashakti Bioenergy Pvt. Ltd., Junaid Manzil, 2nd Floor, 7B, Aliripukur Road, Kolkatta 700010 (West Bangal)
2. RVSKVV, Gwalior letter no: DRS/CPC/2015/1741 dated 27-10-2016
3. **Name of the trial:** Evaluate the Bio- Rakshak in Brinjal
4. **Name of the Scientist:** Dr. M.S. Parihar, Fruit Research Station, Entkhedi, Bhopal, (M.P.)
5. **Name of Product:** Bio-Rakshak

General information

Location : Research Field, Fruit Research Station, Entkhedi, Bhopal, (M.P.)

Season : Rabi 2017

Crop : Brinjal

Variety : NDBH-6

Irrigated/Rain fed : Irrigated

Spacing : Plant to Plant 45 cm and Row to Row 60 cm

Methods of Sowing : Ridge

6. Introduction

Brinjal is an important herb belonging to the family solanaceae and having chromosome number, $2n = 24$. Brinjal is grown in warm climatic conditions. The unripe brinjal fruits are primarily used as cooked vegetable for preparation of various dishes and as a raw material in pickle making and dehydration.

• In India it occupies an area of 0.71 million ha with the production of 13.55 million tonnes and productivity 19.35 t/ha. In Madhya Pradesh It occupies 0.042 million ha area with an annual production of 1.066 million tonnes and productivity of 25.38 t/ha (NHB 2015).

Project title: Evaluate the Bio- Rakshak in Brinjal against chewing pest (Looper/Caterpillar, Tomato fruit worm, Horn Worm, Pin Worm and Sting Bug).

Treatment details:-

T₁ – 0.60 ml/liter of water + 0.2 ml Magic Shakti

T₂ – 0.8 ml/liter of water + 0.2 ml Magic Shakti

T₃ – 1.0 ml/liter of water + 0.2 ml Magic Shakti

T₄ – 1.2 ml/liter of water + 0.2 ml Magic Shakti

Design : RBD
Replication : Four

7. Methodology:

- Recommended of practice were followed.
- Minimum 2 spray was applied first at flowering stage and second one is before fruit maturity.

8. Observation recorded:

- I. Plant height (cm) at 30, 60 and 90 DAT
- II. Number of leaves at 30, 60 and 90 DAT
- III. Fruit Length (cm)
- IV. Fruit Diameter (cm)
- V. Fresh Weight (g)
- VI. Fruit Yield per plant (g)
- VII. Fruit Yield per (ha/q)

9. Effect of natural enemies (parasites as well as predators):

The observation on parasitoids, parasites and predators were observed during the trial period at 10, 20, 30, 40 and 50 DAT in treatment 1 to 4 and recorded in table no 2 in the report. The population of natural enemies was counted in 10 point scale.

Yield at harvest: Observation on the yield was recorded treatment-wise.

Site of the Experiment: Research Field, Fruit Research Station, Entkhedi, Bhopal (M.P.) during Rabi season of 2017.

10. Experiment details:

Crop	: Brinjal
Variety	: NDBH-6
Experimental trial layout	: RBD
Type of soil	: Sandy and black cotton soil
Date of application	: 05-02-2017
Plot size	: 3 m x 2.25 m = (6.75 m ²)
Spacing	: 60 X 45 cm
Number of treatments	: 04
Number of replication	: 04


INCHARGE FARM
Fruit Research Station
Entkhedi-462038

11. Result:

Plant height (cm)

The results in Table 1 revealed that all the treatments were found statistically significant for growth and yield of brinjal at each time interval of observation. The maximum plant height (22.73, 35.85 and 66.60 cm) at 30, 60 and 90 DAT was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) and minimum plant height (17.70, 31.14 and 58.07 cm) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

No of leaves per plant

The maximum number of leaves per plant (34.46, 75.44 and 94.76) at 30, 60 and 90 DAT was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) and minimum number of leaves per plant (15.38, 64.88 and 83.57) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Fruit Length (cm)

The maximum fruit length (13.89 cm) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum fruit length (8.29 cm) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Fruit Diameter (cm)

The maximum fruit diameter (6.41 cm) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum fruit diameter (4.51 cm) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Fresh Weight (g)

The maximum fresh weight (40.70 g) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum fresh weight (33.68 g) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

No. of Fruits per plant

The maximum number of fruits per plant (26.25) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum number of fruits per plant (19.23) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Fruit Yield per plant (g)

The maximum fruit yield per plant (1070.67 g) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum fruit yield per plant (649.03 g) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Fruit Yield (q/ha)

The maximum fruit yield (446.11 q/ha) was found best in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti) and treatment T₂ (0.8 ml/liter of water + 0.2 ml Magic Shakti) while minimum fruit yield (270.43 q/ha) was found in treatment T₁ (.60 ml/liter of water + 0.2 ml Magic Shakti) respectively.

Table 1: Effect of Bio-Rakshak on growth of brinjal.

Treatment	Plant height (cm)			No of leaves per plant		
	30 DAT	60 DAT	90 DAT	30 DAT	60 DAT	90 DAT
T ₁	17.70	31.14	58.07	15.38	64.88	83.57
T ₂	19.56	32.78	61.40	24.86	69.42	87.68
T ₃	21.53	34.76	63.21	29.26	74.39	91.69
T ₄	22.73	35.85	66.60	34.46	75.44	94.76
S.Em±	0.058	0.055	0.094	0.214	0.129	0.128
CD at 5 %	0.187	0.177	0.301	0.684	0.412	0.411

Table 2: Effect of Bio-Rakshak on yield of brinjal.

Treatment	Fruit Length (cm)	Fruit Diameter (cm)	Fresh Weight (g)	No. of Fruits per plant	Fruit Yield per plant (g)	Fruit Yield per (ha/q)
T ₁	8.29	4.51	33.68	19.23	649.03	270.43
T ₂	10.30	5.49	35.86	22.62	812.74	338.64
T ₃	13.38	5.97	38.67	25.19	976.14	406.72
T ₄	13.89	6.41	40.70	26.25	1070.67	446.11
S.Em±	0.070	0.022	0.082	0.083	9.720	4.050
CD at 5 %	0.224	0.069	0.261	0.264	31.095	12.956

12. **Pest population:** The results in (Table 2) revealed that the pest population was controlled effectively in treatment T₄ (1.2 ml/liter of water + 0.2 ml Magic Shakti) followed by treatment T₃ (1.0 ml/liter of water + 0.2 ml Magic Shakti). The pest

population remained throughout higher in treatment T₁ (0.60 ml/liter of water + 0.2 ml Magic Shakti). All the treatments were significantly effective as compared to treatment T₁.

Table 3: Evaluate the Bio- Rakshak in Brinjal against chewing pest (Looper/Caterpillar, Tomato fruit worm, Horn Worm, Pin Worm and Sting Bug)

Treat.	Looper/Caterpillar			Tomato fruit worm			Horn Worm		
	30 DAT	40 DAT	50 DAT	30 DAT	40 DAT	50 DAT	30 DAT	40 DAT	50 DAT
T ₁	8	4	3	3	2	1	0	0	0
T ₂	5	3	1	0	2	1	0	0	0
T ₃	2	0	0	0	0	0	0	0	0
T ₄	1	0	0	0	0	0	0	0	0

Table 4: Evaluate the Bio- Rakshak on natural enemies of brinjal.

Treatments	Population coccinellids on brinjal plant				
	10 DAT	20 DAT	30 DAT	40 DAT	50 DAT
T ₁	3	3	3	3	7
T ₂	4	4	3	3	3
T ₃	2	5	2	3	5
T ₄	4	4	3	4	5

13. Conclusion:

On the basis of one season trial, it can be concluded that minimum 2 spray first at flowering stage and second one is before fruit maturity in brinjal (1.2 ml/liter of water + 0.2 ml Magic Shakti) found best for the control of chewing pest under field conditions and achieved good yield and they less harm to natural enemies.


INCHARGE FARM
 Fruit Research Station
 Enkhed-452038

Location: Entkhedi

Table 5. Meteorological data:

Month	Temperature (°c)		RH (%)	Rain fall (mm)
	Minimum	Maximum		
February 2017	25.00	34.00	65 %	-
March 2017	16.00	39.20	70 %	-
April 2017	17.00	42.20	85%	-
May 2017	24.00	44.00	75 %	-
June 2017	24.00	41.50	68 %	-

CERTIFICATE

Certified that the information in the report is based on the bonafied work carried out under Contractual Research of RVSKVV and the same has been analysed and interpreted by the concerned scientist. No part of the research has been utilized for any other purpose.

Signature :

Name :

Designation :

Dr. M.S. Parihar

Principal /In-Charge

FRS, Entkhedi, Bhopal (M.P.)

R.V.S. Krishi Vishwa Vidyalaya, Gwalior (M.P.)

INCHARGE FARM
FRS, Entkhedi, Bhopal
Entkhedi, Bhopal