



Full Length Research Article

EFFECT OF DIFFERENT LEVEL OF VERMIWASH SPRAY ON GROWTH AND YIELD OF
FENUGREEK CV. LOCAL

^{1*}Jadhav, P. B., ²Patil, N. B., ³Saravaiya, S. N., ⁴Dekhane, S. S., ⁵Tekale, G. S., ⁶Harad, N. B.,
⁷Jadhav, K. P. and ⁸Patel, D. J.

^{1, 2, 4, 6 and 7}ASPEE Agricultural Research and Development Foundation, 'ASPEE HOUSE', P. O. Box No. 7602,
B. J. Patel Road, Malad (W), Mumbai-400 064

³Associate Professor, Department of Vegetable Science, ACHF, NAU, Navsari-396 450

⁵ Ph. D. Scholar, Department of Vegetable Science, ACHF, NAU, Navsari-396 450

⁸Ex. Principal and Dean, B A College of Agriculture, Anand (GJ) - 388 110

ARTICLE INFO

Article History:

Received 26th May, 2014
Received in revised form
11th June, 2014
Accepted 23rd July, 2014
Published online 31st August, 2014

Key words:

Fenugreek,
Trigonella foenum-graecum,
Local,
Vermiwash,
Methi, etc.

ABSTRACT

The present investigation was undertaken with the main objective to study the effect of different level of vermiwash spray on growth and yield of Fenugreek cv. Local. The experiment consists of five treatments involving spraying of vermiwash viz., 0.5 %, 1 %, 1.5% and 2 % by mixing with simple water and control were imposed and the foliar application was made 200 l/ha (1 time) with knapsack sprayer in the evening hours thrice at 15, 30 and 45 days after sowing seeds. The data clearly showed that the yield obtained with treatment T₅ (100 % RDF as fertigation and vermiwash foliar thrice times spray of 2 % at 15, 30 and 45 DAS had significantly higher plant height (84.10cm), root length (18.37 cm), number of branches⁻¹ (6.80), total number of pods plant⁻¹ (34.48), straw weight plot⁻¹ (0.85 kg), seed weight (1161.33 kg) and straw weight (2833.73 kg) ha⁻¹, respectively. This treatment had maximum harvest index (29.03 %), net maximum realization 39,620.80 ₹/ha and cost benefit ratio 1:3.17 out all other treatments than control. It can be concluded that the growth and yield of fenugreek showed much positive results for spraying of vermiwash.

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INTRODUCTION

Fenugreek (*Trigonella foenum-graecum* L.) commonly known as *Methi*, belongs to the family Fabaceae and has originated in South East Europe or the South West Asian region. India is one of the major producer and exporter of fenugreek, with an annual export of nearly 1500t. It is widely grown in the states of Rajasthan, Gujarat, Tamil Nadu, Uttar Pradesh, Himachal Pradesh, Madhya Pradesh and Andhra Pradesh. Fenugreek plants are weak and spreading moderately attaining a height of 30 to 50 cm. It comes to flowering at 30 to 50 days after sowing and matures in 110-140 days. Total chemical farming is hazardous, so organic manures, fertilizers, bio-pesticides and bio-fertilizers must be used in judicious combination to maintain soil fertility.

Earthworms play a vital role in plant growth. It is a quite possible to effect quick change over for sustainable agriculture by harnessing brand new vermicompost technology to the soil. In recent times, the commercial vermin culturists have started promoting a product called vermiwash. This vermiwash may contain enzymes, secretions of earthworms which would stimulate the growth and thereby yield of crops and even develop resistance against pests in crops receiving this spray. Such a preparation would certainly have the soluble plant nutrients apart from some organic acids and mucus of earthworms and microbes (Shivsubramanian and Ganeshkumar, 2004).

MATERIALS AND METHODS

The present investigation was carried out at ASPEE, Agricultural Research and Development Foundation (ARDF), TANSA Farm during the year *rabi* 2013-14. The experiment was laid down in Randomized Block Design (RBD) consisting

*Corresponding author: Jadhav, P. B.

ASPEE Agricultural Research and Development Foundation,
'ASPEE HOUSE', P. O. Box No. 7602, B. J. Patel Road, Malad (W),
Mumbai-400 064

Table 1. Effect of different levels of vermiwash spray on growth and yield of Fenugeek cv. Local variety

Treatments	Plant height, cm	Root length, cm	No. of branches / plant	Total no. of pods / plant	Seed weight per plot, kg	Straw weight / plot, kg	Seed weight / ha, kg	Straw weight per ha, kg	Harvest Index, %
	1	2	3	4	5	6	7	8	9
T ₁	79.704	14.60	5.80	30.12	0.25	0.69	841.33	2296.00	26.80
T ₂	80.964	15.75	6.28	31.36	0.28	0.74	946.67	2468.13	27.72
T ₃	81.454	16.87	6.48	32.20	0.31	0.78	1024.00	2602.67	28.25
T ₄	83.280	17.70	6.76	33.24	0.33	0.82	1093.34	2736.00	28.61
T ₅	84.102	18.37	6.80	34.48	0.35	0.85	1161.33	2833.73	29.03
C. D. @ 0.05	1.23	0.54	0.44	0.75	0.02	0.04	67.47	116.99	0.62

Table 2. Economics of different treatments

Treatments	Yield, kg/ha		Gross realization, ₹/ha		Cost of production, ₹/ha	Total Gross Realization, ₹/ha	Net Realization, ₹/ha	C:B Ratio
	Seed	Straw	Seed	Straw				
	10	11	12	13	14	15	16	17
T ₁	841.33	2296.00	33653.33	4592.00	14500.00	38245.33	23745.33	1:1.64
T ₂	946.67	2468.00	37866.67	4936.00	14460.00	42802.67	28342.67	1:1.96
T ₃	1024.00	2602.67	40960.00	5205.33	13950.00	46165.33	32215.33	1:2.31
T ₄	1093.33	2736.00	43733.33	5472.00	12300.00	49205.33	36905.33	1:3.00
T ₅	1161.33	2833.73	46453.33	5667.47	12500.00	52120.8	39620.80	1:3.17

Selling:-
 1. Seed selling rate:- 40 ₹/kg
 2. Straw selling rate:- 2 ₹/kg

Costs:-
 1. Nitrogen(Urea):- 11.08 ₹/kg
 2. Phosphorus (SSP):- 18.75 ₹/kg
 3. Vermiwash:- 30 ₹/Liter



Fig. 1. General View of growth of Fenugeek CV. Local

of five treatments including control with replicated five times. The seed was sowed at 15 x 10 cm distance in a plot size 3 x 1 m. All agronomical practices in virgule were employed from time to time. The statistical analysis was done by using method of Panse and Sukhatne, (1967).

RESULTS AND DISCUSSION

The present study was undertaken to study the impact of vermiwash foliar spray on growth and yield of fenugreek cv. Local. The data clearly indicated that the growth and yield of crop obtained with treatment T₅ (vermiwash foliar thrice times spray of 2 % at 15, 30 and 45 DAS) had showed significantly higher plant height (84.10cm), (fig.1), root length (18.37 cm), number of branches plant⁻¹ (6.80), total number of pods plant⁻¹ (34.48), straw weight plot⁻¹ (0.85 kg), seed weight (1161.33 kg) and straw weight (2833.73 kg) ha⁻¹, respectively. It had highest harvest index (29.03%), high net maximum realization of ` 39,620.80 ha and cost benefit ratio of 1:3.17 out all other treatments at the end of experiment (Tables 1 and 2). The T₅ (100 % RDF and vermiwash foliar thrice times spray of 2 % at 15, 30 and 45 DAS) had positive effects followed by T₄ for particularly plant height (83.28cm), root length (17.70 cm), number of branches plant⁻¹ (6.76), straw weight plot⁻¹ (0.82 kg) and ha⁻¹ (2736.00 kg), harvest index (28.61%) than all remaining treatments at the end of experiment due to good effect on seeds and seeds yield by vermiwash may contain cytokinins, auxin, and vitamins, enzymes possibly derived from microbes associated with earthworms. The positive effect of vermiwash spray on crop growth and yield in the present study is in conform also with the studies of Buckerfield *et al.* (1999) who reported weekly applications of vermiwash to increase radish yield by 7.3% (<http://www.organicfarmingblog.com/vermiwash-microorganisms/>) and Thangavel (2003) who observed that both growth and yield of paddy increased with the application of vermiwash and vermicast extracts. The similar results represented by Ansari and Kumar (2010), Hatti *et al.*, (2010), and Samadhiya *et al.*, (2013)

Conclusion

From the forgoing discussion, it can be concluded that foliar spray of vermiwash applied @ 2 % effective at 15, 30 and 45

days after sowed seeds than control treatment (without vermiwash) were found best enhance plant height, root length, number of branches plant⁻¹, total number of pods plant⁻¹, straw weight plot⁻¹, seed weight ha⁻¹, straw weight ha⁻¹, harvest index, net realization (C) and C: B ratio of fenugreek cv. Local.

Acknowledgement

The authors are grateful to Directors of ASPEE, Agricultural Research and Development Foundation, Mumbai for providing facilities for conducting the research work.

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