

Plant Protection Success Story

Adoption of IPM - Trichoderma and Metarhizium in Turmeric crop



Name of the Farmers: Shankar Ramrao Jogdand

Address: Village - Nila, Taluka- Nanded , District - Nanded, State Maharashtra,
Pin - 431605

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Situation analysis/Problem statement:

He started turmeric cultivation in the village Nila of Nanded Taluka with small land holding. He worked hard on the turmeric field which led to good income but was not sufficient to quench his thirst of earning a very handsome amount which made him to increase the land areas of turmeric cultivation. Gradually he started earning a handsome amount but was very upset to use the chemical pesticides to manage pest and diseases, their cost and health side effect. In the year 2021, he came in contact with Krishi Vigyan Kendra, Pokharni, Nanded where the Scientist (Plant Protection) of the Krishi Vigyan Kendra help him to learn scientific cultivation of turmeric as well as best possible Integrated Pest and disease Management practices to control the insect pest and diseases of turmeric crop with minimization of cost of pesticide application that led to less health hazardous effects.

Plan, Implement and Support:

He took personal interest to use of *Trichoderma harzianum* and *Metarhizium anisopliae* formulations in turmeric crop to get rid of the problem such as rhizome fly, white grub, rhizome rot and leaf spot disease of turmeric with the help of Scientist (Plant protection) from KVK, Nanded-1. He participated in the training programme at the KVK. He used Trichoderma and Metarhizium formulations in case of turmeric crop through rhizome treatment, drenching as well as through soil application. Trichoderma and Metarhizium formulations were used in rhizome treatment @10gm per kg of the seed rhizome, for drenching 20 gm Trichoderma and 20 gm Metarhizium formulation per liter of water and through soil application mixed and incubated in FYM @ 1 kg each per 10 quintal of FYM for 20 days in moist conditions. The cultivation of the turmeric crop in same land have avoided for three consecutive years.

Output:

IPM solution gives better practices to get rid off the increased attack of diseases and insect pest. In case of water logged condition chances of attack of soil and root pathogen may increase which can be successfully managed by using the Trichoderma and Metarhizium formulations

through soil and root drenching of the turmeric crop. The physical property of the soil also improved by the use of these bio pesticides.

Outcome:

Use of Trichoderma and Metarhizium formulations in case of turmeric crop through rhizome treatment, drenching as well as through soil application

Cost effectiveness of the innovations/ practices developed

Impact Factor	Before Adoption	After Adoption of IPM		
		2021-22	2022-23	2023-24
Crop / Agricultural Practice	Application of Chemical Pesticide	IPM		
Yield of crop / ha	250 qt. of fresh rhizome /ha	320 qt. of fresh rhizome/ha	355 qt. of fresh rhizome/ha	380 qt. of fresh rhizome/ha
Gross return (Rs)	5,00,000	6,40,000	7,10,000	7,80,000
Cost of Cultivation(Rs)	1,45,000	1,35,000	1,58,000	1,72,000
Cost of Plant Protection inputs (Rs)	40,800	32,500	26,500	25,500
Any Other Cost (Rs)	10,000	10,000	8000	7000
Net Saving / Net Profit	2,94,200	4,63,000	5,17,500	5,75,500
B:C ratio	2.55	3.60	3.68	3.81
% incidence of pest	12.85	7.35	4.59	1.57
% incidence of disease	14.68	9.23	6.53	2.85

The cost of plant protection there reduced by 60%. The percent incidence of pest and diseases were also reduced and net profit get increased year after year.

Impact:

Trichoderma and Metarhizium application enriched with FYM and through rhizome treatment, soil drenching would reduce disease and pest incidence as well as improve the soil physical properties which in turn would reduce the dependence on costly chemical fertilizers as well as chemical fungicides.

Hence, this technology would reduce the cost of cultivation in one hand and increase the farmers income on the other. It will also reduce the chemical pesticides residue problem and environmental hazards. By exploring the benefits of Trichoderma and Metarhizium application through this technology farmers would encouraged to use this bioagent in other crops.

He also aware other growers of his village to adopt the IPM practices with low input cost as well as less health hazardous effects. He aware his locality to use of balanced chemical fertilizers with organic fertilizers like Neem cake, FYM etc. He also aware to the farmers about safety measures practices to use chemical pesticides. His dedication and aim may led to develop him as role model for IPM practices in near future.

IPM practices leads to sustainable yield for long time without affecting the human health and environment. 10-15% of the locality got awareness from his practices and adopted IPM practices in their turmeric crop.

Name of Contributors : Mr. Manik Kalyankar, SMS (Plant Protection)



FYM Enrichment



Rhizome treatment



Preparation of solution
for soil drenching



Drenching



Healthy Turmeric crop



Harvested rhizomes