Enhancement of Tomato Production using Microbial Biopesticides, Biofertilizers and Macrobials

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ABSTRACT

A team of scientists of CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya; TRA-, NBBRC, Nagrakata and ICAR-NBAIR, Bengalore under DBT funded project trained the farmers of village Mabong of West Sikkim. Amongst them Mr Ganesh Rai adopted the demonstrated integrated organic management practise with proven bioinoculant technologies of the above institute and got good result with higher yield with CBR of 1:4.23 with significant reduction of pest and disease infestation. The farmers income, bankability increased significantly. Success of Mr Rai attracted many fellow farmer and Mr Rai acted as mater demonstrator cum trainer for the horizontal transfer of the organic package for cultivation vegetables.

INTRODUCTION

Farmer Name: Ganesh Rai
Village-Mabong, **Tehsil**-Soreng, **Dist**-West Sikkim, **State**-Sikkim

Shri. Ganesh Rai, Age: 28 yeas lives in Village Mabong, West Sikkim. He is a progressive farmer, early adopt and

always eager to learn new ideas. He is the member of Farmer Interest group. He cultivates potato, tomato, maize, green gram, and several cucumbers like bottle guard. He is also actively involved in the organic cultivation of tomato and other crops. He is also promoting nearby farmers for adoption of organic crop cultivation.

Training: He undergone skills development on "identified bioinoculant technologies and on farm mass production technologies", method demonstration on "Use of biopesticides for organic tomato cultivation", and training on "identification and management of diseases and pest". He has attended hands-on training on low-cost mass production of beneficial microbial agents at Mycology Laboratory, TRA-NBRRDC, Nagrakata, West Bengal. Being a graduate, he used his professional expertise to expand his farming. Armed with knowledge and experience gained through CAU-CPGSAS, Umiam, Central agricultural University (Imphal), Meghalaya, TRA-Nagrakata, and ICAR-NBAIR, Bangalore interventions, he became more confident enough to share the knowledge with other farmers. He also encouraged other farmers to do farming without using synthetic fertilizers.

Achievement: Organic cultivation benefited Mr. Ganesh Rai in many ways since organic produce has more demand. It has also led him to find new market for his produce in Jorethang local market. Organic practices also raised his social economic status and net earnings upto 89,000 rupee per annum. It led him to adopt better technology in farm equipment and using biopesticides. Adoption of organic practices led to reduction of attack of whitefly and late and early blight in his tomato field which results an increased yield from 2266.7 kg/ha to 2865.6 kg/ha.

Importance for farmers: Mr. Ganesh is a source of inspiration for other farmers involved in organic farming. He also aware many farmers in Mabong and other adjoining areas about low-cost on-farm microbial production and application methods after receiving training from TRA-NBRRDC, Nagrakata, West Bengaland CAU-CPGSAS, Meghalaya. The advantage of Organic based Integrated farming techniques is that if one activity fails, the other activities may succeed to earn income and improve socioeconomic status. Farmers could benefit from adopting integrated farming practices if they follow his example.

Economic analysis

Component	Before adoption of Biopesticides and macrobials	After adoption of biopesticides and macrobials
No. of Sprays	two rounds of homemade biocides spray per week	• Seed treatment followed by two rounds of spray of *Trichoderma* (TRPATH01) biocide at 15 days intervals. • Yellow/blue sticky traps @ 4-5 traps/acre. • Pheromone trap @ 1 trap/acre. • Installation of tricho-cards and field release of lacewing.
Farmer's profit margins	Less	High
Production level	Average	Increased
Average net return	2266.7 kg/ha	2865.6 kg/ha.
Pest damage level	Wilt, blight, and white fly	Nil
Cost Benefit Ratio	**1:3**	**1:4.23**

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This success story is compiled by authors by them after observing the success of organic practices under DBT fund project.

Fig. 1. Mr. Ganesh Rai understanding about the low-cost mass production of *Trichoderma* at Mycology Laboratory, TRA-NBRRDC, Nagrakata, West Bengal.

Fig 2. Mr. Ganesh Rai doing inoculation of Trichoderma in broth culture at Mycology Laboratory, TRA-NBRRDC, Nagrakata, West Bengal during his hands-on training program.

Fig 3. A part of tomato field of Mr. Ganesh Rai with sticky traps (yellow and blue) and trichocards.