

## Success Story on Cultivation of Tomato through Organic Practices

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### Abstract

Farmers of Mabong village follow conventional organic practices to cultivate tomato other vegetables without knowledge on scientific organic cultivation practices. They face high infestation of pests and diseases attack with decrease in yield. A team of scientist identified Mr. Som Bahadur Rai as a potential farmers fellow under DBT funded project and trained on scientific organic cultivation practices. After two years of continuous training and exposure Mr. Rai could make good profit with 30-35% increase in yield with 80% less pest and disease attack. The result of his success motivated many nearby farmer in adopting the scientific organic practices. Presently Mr. Rai becomes master trainer for horizontal transfer of the technology among the other farmers.

**Keywords:** Farmer income, Organic cultivation, Pest and disease management, Tomato



**Farmer's Name:** Mr. Som Bahadur Rai

**Address:** Village- Mabong, Tehsil- Soreng, District- West Sikkim, Sikkim

### Farmers' Profile

Shri. Som Bahadur Rai (30 years) is an active farmer of village Mabong of West Sikkim district of Sikkim. He is one of the DBT funded projects beneficiaries' who actively helped the Project Investigators in implementing organic practices in the village Mobong (Figure 1). From time to time, he assisted in conducting training and demonstration programs at farmers' field as master trainer. Mr. Rai is one of the progressive farmers of the village and always enthusiastic to know new techniques related to organic farming. He cultivates potato, tomato, maize, green gram, cowpea, cabbage and cauliflowers and several horticultural crops in his farm. Most of the crops he cultivates through adopting organic approaches. He is also promoting nearby farmers for adoption of organic crop cultivation.

### Training

He has undergone various awareness cum training programmes, workshops and skill development programmes on mass production of biopesticides, organic management

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of pests and diseases of vegetables and training on method of seed treatment with bioinoculants, integrated pest management and distribution of seeds/ organic inputs organized by CAU-CPGSAS, CAU (Imphal), Umiam, Meghalaya, TRA-NBRRDC, Nagrakata, West Bengal and ICAR-NBAIR, Bangalore and also gained experience by taking part in exposure visits (Figure 2).



Figure 1: Location details of Mabong village of West Sikkim



Figure 2: Mr. Rai receiving spraying machine in a field demonstration training program

Mr. Rai and other farmers actively participated and show eagerness to learn new organic technology for farming. He also received hand-on training program at TRA-NBRRDC, Nagrakata on low-cost mass culture of microbial agents, preparation of enrich compost with *Trichoderma* and preparation of microbial enriched cow dung slurry (Figure 3). A team of scientists led by Dr. A.K. Pandey of TRA and Dr. Pranab Dutta of CAU-CPGSAS regularly inspects and monitors the field during the whole cultivation period to solve different problems of pests and diseases. During the inspection, problems like late blight, wilt, early blight, whitefly and caterpillar were observed in tomato and solutions were put forwarded to organically manage these diseases and pests. Also, during the field visit information was collected for the impact analysis on organic cultivation of the crops.

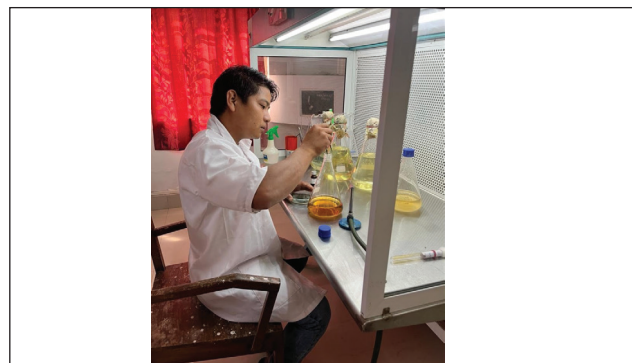


Figure 3: Hands on training on mass production of *Trichoderma*



Figure 4: Organic tomato field of Mr. Som Rai with tricho-cards and disease/ pest free healthy crop

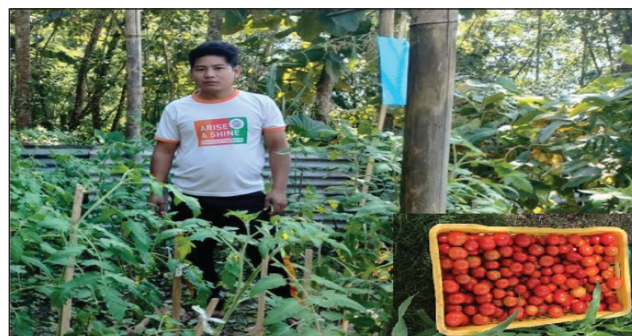


Figure 5: Mr. Som Rai with harvested healthy organic tomato from his organic field



Figure 6: Project PI collecting soil samples from tomato field for microbial analysis

### Achievement

After two years of adoption of organic practices, Mr. Rai and his wife highly benefited. The incidence of pests and diseases after application of microbial agents and macrobials, yellow sticky traps, enriched compost, quality seed materials, timely pest and disease scouting, provided by TRA-NBRRDC, Nagrakata and CAU-CPGSAS, CAU, Umiam, Meghalaya significantly decreased which resulted in potential 32.75% increase in tomato yield (Figure 4 and 5; Table 1) from 2116.6 kg ha<sup>-1</sup> to 2809.8 kg ha<sup>-1</sup>. Mr. Rai received more profit from tomato cultivation and through these, he enhanced his economic benefits. The soil quality

analysis showed significant increase in microbial population in the demonstration and technology adopted plot (Figure 6).

### Importance for Farmers

From time to time, during 2022 to 2023 Mr. Rai participated in training programs conducted at KVK, Gyalshing, West District. He is also a source of motivation for other farmers. Along with Ganesh Rai, he also aware many farmers in Upper and lower Mabong about low-cost on-farm microbial production and application methods after receiving training from TRA-NBRRDC, Nagrakata. He is ready to help farmers at any time regarding the judicious use of microbial biopesticides and their low-cost production.

### Economic Analysis

Table 1: Comparative analysis between before and after adoption of organic practices

| Component               | Before adoption of organic practices    | After adoption of organic practices   |
|-------------------------|---|---|
| No. of Sprays           | Two rounds of spray week <sup>-1</sup>  | <ul style="list-style-type: none"> <li>• Seed treatment followed by two rounds of spray of Trichoderma biocides at 15 days intervals.</li> <li>• Yellow/ blue sticky traps @ 4-5 traps acre<sup>-1</sup>.</li> <li>• Pheromone trap @ 2 trap acre<sup>-1</sup>.</li> <li>• Installation of tricho-cards and field release of lacewing.</li> </ul> |
| Farmer's profit margins | Less                                    | High  |
| Production level        | Average                                 | Increased   |
| Average net return      | 2116.6 kg ha <sup>-1</sup>              | 2809.8 kg ha <sup>-1</sup>  |
| Pest damage level       | Wilt, blight, caterpillar and white fly | Nil   |
| Cost Benefit Ratio      | 1:1.22                                  | 1:4.87  |

### Conclusion

By adoption of proven organic practices framers can increase the crop productivity with significant reduction pests and disease incidence and improve the soil quality parameters. The knowledge if percolated among other farmer it may help in organic cultivation of the other crops too.

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