



THE ORGANIC TURNAROUND

Farmers Achievements under DBT projects in Aspirational Villages of Meghalaya

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Abhay Kr Pandey
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of India

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Authors

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PREFACE

Over the past few years, we have had the privilege of working closely with farming communities in some of the most remote yet inspiring corners of Meghalaya. What began as a project under the Department of Biotechnology (DBT), Government of India, soon grew into something much larger—a shared journey of change, learning, and transformation.

This book, *The Organic Turnaround: Farmers' Achievements under DBT Projects in Aspirational Villages of Meghalaya*, is our humble attempt to document that journey. It brings together stories of farmers who, with limited resources but unlimited determination, embraced organic farming as a path toward healthier soils, better livelihoods, and more sustainable futures.

Through field visits, conversations, training sessions, and farmer-led innovations, we saw first-hand how change happens not overnight, but through patient effort, trust, and local leadership. These pages capture the spirit of that change. From shifting traditional practices to adopting new methods, from facing market uncertainties to becoming entrepreneurs, the farmers featured here are proof that organic farming is not just possible but practical even in challenging terrains.

The DBT's support was not just financial it was a catalyst that brought together research, extension, and community will. And behind every success story, there's a team of field workers, scientists, volunteers, and, most importantly, farmers who made it happen.

We hope this book inspires others policymakers, students, researchers, and fellow development professionals to look more closely at what's working in these villages. But more than anything, we hope it gives due recognition to the farmers who dared to try something different and, in doing so, sparked a quiet but powerful turnaround.

— The Authors

ACKNOWLEDGMENT

This book, *The Organic Turnaround: Farmers' Achievements under DBT Projects in Aspirational Villages of Meghalaya*, is the result of collective efforts, visionary leadership, and dedicated teamwork. It is with deep respect and sincere appreciation that we acknowledge the many individuals and institutions who made this endeavor possible.

We are profoundly grateful to **Dr. Anupam Mishra, Honourable Vice Chancellor**, Central Agricultural University (Imphal), for his inspiring leadership and unwavering support. His commitment to promoting sustainable agricultural development has been a guiding force in the successful realization of this work.

Our sincere thanks to **Dr. Indira Sarangthem, Director of Instruction**, Central Agricultural University (Imphal) for her consistent encouragement, academic insights, and valuable contributions that have significantly enriched the depth and direction of this book.

Special thanks are due to **Dr. T.R. Sarma, Registrar**, Central Agricultural University (Imphal) for his keen interest, constructive suggestions, and steadfast support towards the promotion of organic farming practices and farmer empowerment.

We acknowledge with deep appreciation the guidance and support of **Dr. L.M. Garnayak, Director of Research**, Central Agricultural University (Imphal) and **Dean**, College of Post Graduate Studies in Agricultural sciences, Umiam, Meghalaya whose emphasis on research-driven impact played a pivotal role in shaping the project.

We also extend our heartfelt thanks to **Dr. Ph. Ranjit Sarma, Director of Extension Education**, Central Agricultural University (Imphal) for the administrative assistance and cooperation, which greatly facilitated the smooth execution of the project activities.

We gratefully acknowledge the **Department of Biotechnology (DBT), Government of India**, for their **financial support** under the DBT Aspirational Districts Programme. This generous support enabled the successful implementation of the project and the documentation of farmers' inspiring journeys and sustainable innovations.

Our deep appreciation goes to the dedicated field and research team—**Lipa Deb, Jyotim Gogoi, Augustino**, and **Madhusmita Mahanta**—whose tireless efforts, data collection, and on-ground engagement with farming communities were instrumental in compiling this book.

Finally, we extend our sincere gratitude to the Headman, farmers and stakeholders in the aspirational villages of Meghalaya, whose achievements and resilience are at the heart of this work.

— The Authors

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Organic Production of Potato at Jetra village of Meghalaya

Farmer No.- 01



Shri Philon Ch. Marak
Position : Village Headman
Contact: +91-9383322565



Fig 1: Shri Philon received inputs and method demonstration for organic cultivation



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Shri Philon Ch. Marak (47 years) is from Jetra village, Chokpot, South Garo Hills district of Meghalaya. He is the village headman of Jetra and a member of several local NGOs (Balgorsa SHG, Durnama SHG, Ka Sarina SHG etc.). He actively participated in various activities of CPGSAS, CAU, Umiam conducted at Jetra village. He is an active farmer where he grows potato by following organic practices. He also cultivates crops like turmeric, maize, rice etc. He is very much interested in learning new and improved methods for adoption of organic crop cultivation and encourages his village farmers to grow crops organically. The major challenges that he faced are pest and disease problem, natural calamities and lack of regulated market for the produce.

TRAINING

Since 2021, under the guidance of CPGSAS, CAU, (I), Umiam, Meghalaya, he has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management of pests and diseases of vegetables, and training on method of seed treatment with bioinoculants, integrated pest management and distribution programme of seeds/ organic inputs organized by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. After getting training, he adopted these methods in his fields and regularly used them which brought good results. He successfully utilized the knowledge and skill acquired during the training to increase his income. His field was inspected by a group of scientists regularly to guide him on different problems faced by him in the field. With constant support and guidance he was able to get increased yield and higher income.

ACHIEVEMENTS

Through the adoption of organic cultivation practices the incidence of plant diseases pests such as late blight, early blight, and wilt and whitefly incidence reduced drastically. There was also improvement in seed germination up to 3-4% than conventional practices adopted by him. There was also an increase of 8 % (approx) of his produce, as yield of potato after adoption of organic practice was increased from 11054.8 kg/ha to 23906.1 kg/ha. Laboratory analysis of soil sample also showed increased in population of beneficial microorganisms in the plot with organic package. It led him to adopt better technology in farm equipment and using biopesticides.



Fig 2: Training programme attended by farmers at Jetra village

IMPORTANCE FOR FARMERS

Mr. Marak is a source of inspiration for other fellow farmers involved in farming. The advantage of organic farming techniques has enabled him to earn income and increase his socio-economic status. He is a great example of how adopting organic farming practices could be the way forward for farmers.

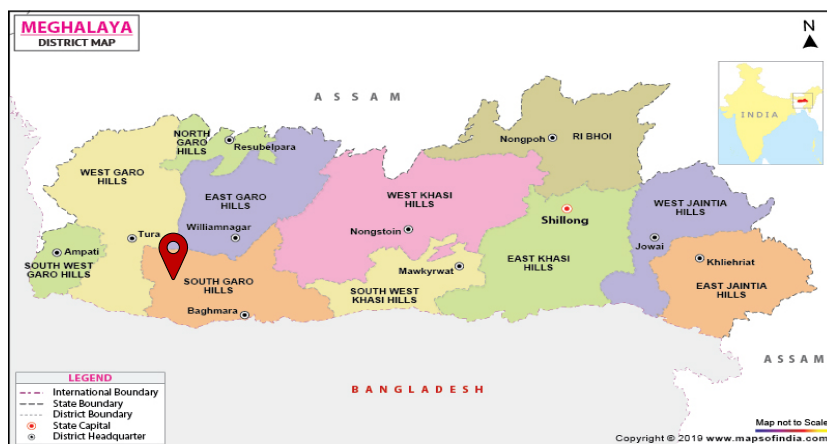


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management Practices	2 spray of home made pesticides	• Use of healthy diseased free Tuber. • Tuber treatment with UmTricho @ 1 litre in 100 litres of water + CAU Bioenhancer @ 1 litre in 100 litres of water • Foliar spray on UmComb @ 10 ml per litre of water 3-4 times at 10 days interval starting from 35-40 days of the crops. • 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	Decreased	Increased
Average net return	11054.8 kg/ha	23906.1 kg/ha
Pest damage level	Late blight, early blight, wilt, cutworm, whitefly	Nil
C:B Ratio	1:1.7	1:2.2

Production of Potato by organic biopesticides at Jetra village of Meghalaya

Farmer No.- 02



Shri Chakro M. Sangma

Village Employment Committee Secretary

Contact: +91-8014724257



Fig 1: Shri Sangma attending awareness cum training programme at Jetra



Latitude: 25.32°N,

Longitude: 90.41°E

INTRODUCTION

Shri Chakro M. Sangma (42 years) is a progressive farmer from the village of Jetra village, Chokpot, South Garo Hills district of Meghalaya. He is the Secretary of the Village Employment Committee and an active member of several NGOs (A Kauksa SHG, Chiring Dilsa SHG, Dedoa SHG etc.). He has actively participated in various training programmes, skill development programmes as well as hands on training conducted at Jetra village and helped in distribution of input to fellow farmers. He grows several crops like potato, maize, turmeric etc. by following organic cultivation practices as recommended by NBAIR Bangalore, CAU-CPGSAS, Meghalaya, TRA, NBRDC, Nagrakata, and others. He has received higher production in his produce by following organic cultivation practices. His income and socio-economic condition has also increased by selling of his produce. The major challenges that he faced is pests and disease problems like late blight, early blight, cutworm, whitefly etc.

TRAINING

Since 2022, on behalf of CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRRDC, Nagrakata and ICAR-NBAIR, Bangalore, under the DBT funded project, he has received several trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of biopesticides and macrobials and use of biopesticides such as seed treatment and soil application for organic cultivation. He received essential inputs through the DBT project's demonstration program, including seeds, sticky traps, biopesticides, vermicompost biofertilizers, and macrobials. After completion of training programmes, he began cultivating potato using these techniques. The scientists were constantly guiding him for increasing yield as well as reducing disease and pests. He was able to use the information and skills he had gained to boost his revenue by implementing the organic-based package of practices.

ACHIEVEMENTS

His potato field was severely impeded by pests and diseases prior to the implementation of organic practices and bio-inputs supplied by CPGSAS, CAU, (I), Umiam, Meghalaya, and NBAIR, Bangalore. Significant reduction in late blight, early blight, wilt, cutworm and other insect pests was noticed. Apart from these, the incidence of beneficial insects was also found to increase after the adoption of organic production. Germination also improved by 3% compared to his usual practice. After adopting organic practices, the yield of potato increased from 11373.3 kg/ha to 21863.2 kg/ha. beneficial there was a notable increase in the population dynamics of advantageous microbes. By switching to organic farming methods, he was able to secure his food supply and boost his earnings.



Fig 2: Potato cultivation at Jetra Village

IMPORTANCE FOR FARMERS

Mr. Sangma is an active and knowledgeable farmer who has proved to be a role model in extending developmental activities in the agriculture sector especially by adoption organic farming for cultivation of his crops which also helped him a lot in serving the society.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	2 sprays of home made pesticide	• Use of health, diseased free Tuber. • Tuber treatment with UmTricho @ 1 litre in 100 litres of water + CAU Bioenhancer @ 1 litre in 100 litres of water • Foliar spray on UmComb @ 10 ml per litre of water 3-4 times at 10 days interval starting from 35-40 days of the crops. • Yellow/blue sticky trap @4-5 traps/acre • Phomone traps @1 trap/acre • Installation of Tricho cards and field releasae on lace wings. • Haulm cutting at 80-85 days of the crop.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	11373.3 kg/ha	21863.2 kg/ha
Pest damage level	Late blight, early blight, wilt, cutworm, whitefly	Nil
C:B Ratio	1:1.4	1:2.15

Cultivation of Potato through organic methods at Jetra village of Meghalaya

Farmer No.- 03



Smt. Siljena M. Sangma
Contact: +91 9383336032



Fig 1: Smt. Sanga receiving organic inputs and potato tubers at Jetra



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Siljena M. Sangma (35 years) is a progressive farmer from Jetra village, Chokpot, South Garo Hills district of Meghalaya. She is one of our fellow farmers under the DBT Biotech Kisan project. She is one of the active farmers of Jetra where she has grown potato by adopting organic practices recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore. In addition to potato, she also cultivates maize, turmeric, tomato etc. She sells her farm produce like tomato, potato, and flowers in local market and has earned good income because of higher production by following organic practices. However, the major problem which hinders potato production is ant, cutworm, late blight, early blight, wilt, sucking pests and caterpillars.

TRAINING

Since 2022, CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRRDC, Nagrakata and ICAR-NBAIR, Bangalore, under the DBT funded project, she has guided through trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of biopesticides and macrobials and use of biopesticides such as tuber treatment and soil application for organic cultivation. In addition to these, a team of scientists visits the field frequently to guide them for mitigating pests, disease and other farming related problems faced by her during cultivation of the crops. She has also received a farmers' fellowship of Rs. 10,000 p.m for a period of four months which is a provision under the DBT project to promote organic production among the farmer beneficiaries. Apart from these, essential inputs like potato tubers, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials have also been supplied for smooth running of the farm activities. She efficiently used these information, inputs and skills for implementing organic based practices to cultivate her crops which further increased her revenue and socio-economic condition.

ACHIEVEMENTS

Mrs. Sangma was highly benefitted through the adoption of organic cultivation practices for growing her crops. After adoption of organic methods, the incidence of plant diseases such as late blight, early blight, and wilt and whitefly incidence was significantly reduced. The use of farm based organic products reduced her farming cost and her annual net earnings were increased by 4% compared to his traditional activities. Apart from these, there was an increase in the microbial population count as well as increased germination percentage. This prompted her to use biopesticides and upgrade the technology in farm equipment. Her crop yield was increased from 11379.9 kg/ha to 24879.0 kg/ha.



Fig 2: Data collection for impact analysis at Jetra village

IMPORTANCE FOR FARMERS

Her passion and enthusiasm to learn skill based techniques helps to generate income and become a helping hand for her family. She is grooming well and inspiring other women in the village to take up organic farming practices. She has become a source of inspiration for the neighboring villages.

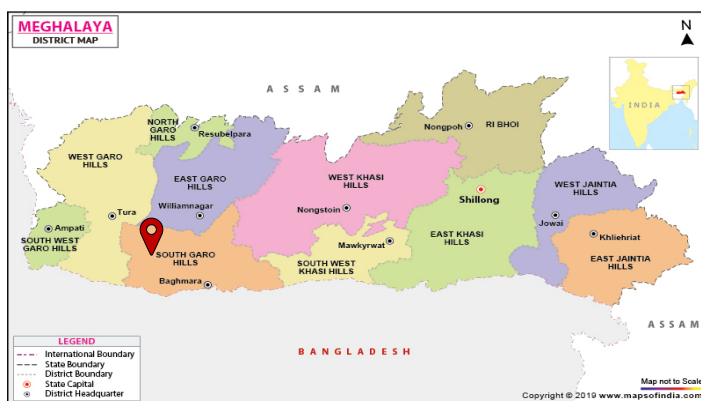


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	6-8 spray of home made biopesticides per crop season	• Use diseased free healthy tubers • Tuber treatment with UmTricho @ 1 litres in 100 litres of water and CAU-Bioenhancer @ 1 litres in 100 litre of water for 45 to 60 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky trap @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field release of lacewing. • Haulm cutting at 80-85 days of the crops.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	11379.9 kg/ha	24879.0 kg/ha.
Pest damage level	Late blight, early blight, wilt, cutworm, whitefly	Nil
C:B Ratio	1:1.7	1:2.1

Enhancement of Potato production through organic cultivation practices at Jetra village of Meghalaya

Farmer No.- 04



Smt. Premita M. Sangma

Contact: +91 9612049987



Fig 1: Smt. Sanga receiving organic inputs and potato tubers at Jetra



Latitude: 25.32°N,

Longitude: 90.41°E

INTRODUCTION

Smt. Premita M. Sangma (33 years) is a progressive farmer from the Jetra village, Chokpot, South Garo Hills district of Meghalaya. She is one of our fellow farmers under the DBT Biotech Kisan project. She is one of the projects beneficiaries' actively involved in the organic cultivation of potato and other crops. She is one of the progressive farmers of the village and always enthusiastic to know new techniques related to organic farming recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore. . In addition to potato, she also cultivates maize, potato, tomato, green gram, and other horticultural crops by adopting organic approaches. She is also promoting nearby farmers for adoption of organic crop cultivation. The major problems related with potato production are pests and disease problems like ant, cutworm, late blight, early blight, wilt, sucking pests and caterpillars.

TRAINING

She has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management 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 CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore, and also gained experience by taking part in exposure visits. She also received hand-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enrich compost with *Trichoderma* and preparation of microbial enriched cow dung slurry. Apart from these, essential inputs like seeds, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials have also been supplied for smooth running of the farm activities. During the whole cultivation period, a team of researchers and scientists regularly inspects and monitors the field to solve different problems of pests and diseases. With the help and advice of the expert team, she has been able to manage the problem of pests and diseases in her field. Through her experience, information and skill she acquired in the different activities organised by the project, she has been able to increase her farm production which in turn has boosted her income and bankability.

ACHIEVEMENTS

Through the adoption of organic practices, she not only secured her food security, but also increased her income by selling of potato, with an extra earning in every season. By following recommended organic cultivation practices of CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore the incidence of plant diseases such as late blight, early blight, and wilt and insect pests like cutworm, whitefly etc. was reduced. There was also improvement in seed germination up to 3% than conventional practice adopted by her. There was also increase in 4% (approx) of his produce, as yield of potato after adoption of organic practice was increased from 11381.2 kg/ha to 23195.4 kg/ha. Laboratory analysis of soil sample showed increased in population of beneficial microorganism in the plot with organic package. Population of beneficial insects was also found to increase.



Fig 2: Method demonstration on application of biopesticides at Jetra village

IMPORTANCE FOR FARMERS

Through this initiative and support from the CPGSAS team it has not only benefitted her family but her whole village as well, it has brought awareness on the benefits of organic cultivation. She became the source of inspiration for other farmers involved in farming. She is always ready to provide them the help and guidance needed.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticides	• Use diseased free healthy tubers • Tuber treatment with UmTricho @ 1 litres in 100 litres of water and CAU-Bioenhancer @ 1 litre in 100 litres of water for 45 to 60 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky trap @ 4-5 traps/ acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field releases of lacewing. • Haulm cutting at 80-85 days of the crops
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	11381.2 kg/ha	23195.4 kg/ha
Pest damage level	Late blight, early blight, wilt, cutworm, whitefly	Nil
C:B Ratio	1:1.8	1:1.9

Organic integrated management practice in Potato cultivation at Jetra village of Meghalaya

Farmer No.- 05

Smt. Neelu M Marak

Contact: +91 8014400820



Fig 1: Demonstration activity of potato at Jetra



**Latitude: 25.32°N,
Longitude: 90.41°E**

INTRODUCTION

Smt. Neelu M Marak (35 years) is a enthusiastic and hard working farmer from the Jetra village, Chokpot, South Garo Hills district of Meghalaya. She benefits from the project activities and has adopted organic cultivation practices recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR. Bangalore. She has attended several training and awareness camps organised at Jetra and has also been benefited by the inputs supplied to her through the DBT project. She cultivates maize, potato, tomato, green gram, and other horticultural crops by adopting organic cultivation practices and sells her produce in the local market. Through her increased income and production, she is showing great promise to her fellow farmers to adopt organic method of crop cultivation. In the field situation, she struggles to mitigate the problems of pests and disease problems like ant, cutworm, late blight, early blight and wilt.

TRAINING

She has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management of pests and diseases of vegetables, and training on method of seed treatment with bioinoculants, integrated pest management and participated seeds/organic inputs organized by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore, and also gained experience by taking part in exposure visits. She also received hand-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enriched compost with *Trichoderma* and preparation of microbial enriched cow dung slurry. In addition to these, she has also received a farmers' fellowship of Rs. 10,000 p.m for a period of four months which is a provision under the DBT project to promote organic production among the farmer beneficiaries. During the whole cultivation period, a team of researchers and scientists regularly inspects and monitors the field to solve different problems of pests and diseases. During the inspection, several pest and disease related problems were encountered and solutions were put forwarded to mitigate them. Impact analysis of organic cultivation of the crops was also done and it was observed that her income was increased due to adoption of these improved techniques.

ACHIEVEMENTS

After adoption of organic cultivation practices, she shares that there was reduced incidence of plant diseases such as late blight, early blight, and wilt and insect pests such as cutworm, aphids, whitefly etc. Additionally, there was a boost of 3-4% in seed germination. Organic cultivation practices has also resulted in increased beneficial microbes and insects in the soil and crop canopy respectively. Her income from the produce was increased as her yield increased from 11543.9 kg/ha to 27654.8 kg/ha. She followed the on farm production of biopesticides and enriched compost which significantly reduced her dependence on external inputs and reduced her cost of production yielding huge benefits.



Fig 2: Hands on training on field application of richocards

IMPORTANCE FOR FARMERS

She is an example of a successful women farmer who has shown that agriculture can be converted with the right investments and adoption of correct measures. Her increased income has inspired other women to come forward and take initiative in cultivating crops using organic methods of cultivation



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide	• Use diseased free healthy tubers • Tuber treatment with UmTricho @ 1 litre in 100 litres of water and CAU-Bioenhancer @ 1 litre in 100 litres of water for 45 to 60 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky trap @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field releases of lacewing. • Haulm cutting at 80-85 days of the crops
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	11543.9kg/ha	27654.8 kg/ha.
Pest damage level	Late blight, early blight, wilt, cutworm, whitefly	Nil
C:B Ratio	1:1.5	1:2.91

Organic Production of Tomato at Jetra village of Meghalaya

Farmer No.- 06



Smt. Marcytha M Sangma



Fig 1: Training cum awareness programme at Jetra village



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Marcytha M Sangma (47 years) is from Jetra village, Chokpot, South Garo Hills district of Meghalaya. She is an active farmer who follows organic farming practices for growing her crops. She actively participated in various activities of CPGSAS, CAU, Umiam conducted at Jetra village. She cultivates various crops like turmeric, maize, rice, potato etc. She is very eager and enthusiastic in learning new and improved methods for adoption of organic crop cultivation. She has been able to generate good income from her produce by following organic cultivation practices.

TRAINING

She has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management 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 CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore, and also gained experience by taking part in exposure visits. She also received hands-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enrich compost with *Trichoderma* and preparation of microbial enriched cow dung slurry. In addition to these, she has also received a farmers' fellowship of Rs. 10,000 p.m for a period of four months which is a provision under the DBT project to promote organic production among the farmer beneficiaries. During the whole cultivation period, a team of researchers and scientists regularly inspects and monitors the field to solve different problems of pests and diseases. During the inspection, several pest and disease related problems were encountered and solutions were put forward to mitigate them. Information on impact analysis of organic cultivation of the crops was also done and it was observed that her income was increased due to adoption of these improved techniques.

ACHIEVEMENTS

After adoption of organic cultivation practices, she shares that there was reduced incidence of plant diseases such as late blight, early blight, and wilt and insect pests such as cutworm, aphids, whitefly etc. Additionally there was a boost of 3-4% in seed germination. Organic cultivation practices has also resulted in increased beneficial microbes and insects in the soil and crop canopy respectively. Her income from the produce was increased as her yield increased from 11543.9kg/ha to 27654.8 kg/ha. She followed the on farm production of biopesticides and enriched compost which significantly reduced her dependence on external inputs and reduced her cost of production yielding huge benefits.



Fig 2: Method demonstration and distribution of inputs at Jetra village

IMPORTANCE FOR FARMERS

Mrs. Sangma took the advantages of organic farming in growing her crops which enabled her to earn income and increase her socio-economic status. This has inspired her other fellow farmers to adopt organic farming and increase their income.

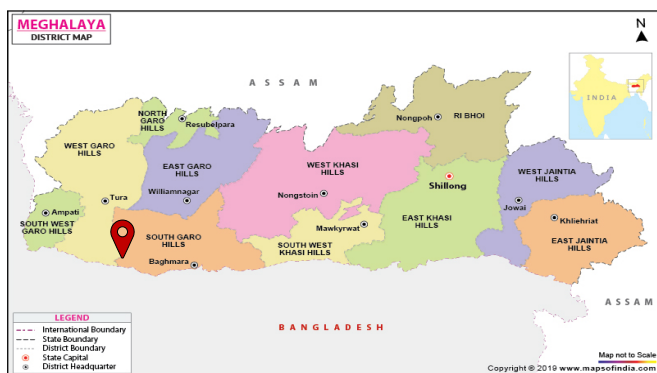


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two round spray of home made biopesticide	- Use diseased free healthy seeds - Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying - Foliar spray of UmComb @ 10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. - Yellow/blue sticky trap @ 4-5 traps/acre for pest monitoring. - Pheromone trap @ 4 traps per acre - Installation of Tricho card and field releasae of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	24510.5 kg/ha	40102.2 kg/ha
Pest damage level	Late blight, early blight, wilt, tomato fruit borer, whitefly	Nil
C:B Ratio	1:1.7	1:2.5

Production of Tomato by organic biopesticides at Jetra village of Meghalaya

Farmer No.- 07



Smt. Jorna M Sangma



Fig 1: Awareness camp at Jetra village



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Jorna M Sangma (43 years) is a resident of village Jetra, South Garo Hills is a progressive women farmer always eager to learn and adopt improved technologies in her field. . She is one of the active farmers of Jetra where she has grown tomato by adopting organic practices recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore. She has also used organic cultivation practices for growing potato, maize, turmeric and other vegetable crops. By using these improved technologies she has been able to increase her yield. However, she faces the problems of diseases like late blight, early blight, wilt and pests incidence like fruit borer, aphids etc.

TRAINING

Since the beginning of the project from 2021, she has participated in multiple trainings, method demonstrations, skill development programmes on organic integrated pest management practices, mass production of biopesticides and macrobials, and use of biopesticides such as seed treatment and soil application for organic cultivation on behalf of CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and ICAR-NBAIR, Bangalore, under the DBT funded project. Furthermore, to encourage organic production among the farmer beneficiaries, a group of scientists regularly inspects their field to provide guidance on reducing pests, diseases, and other farming-related issues that arise during crop cultivation.. Other than these, crucial inputs such as seeds, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials were also provided to encourage and promote organic farming. .

ACHIEVEMENTS

Prior to introducing organic cultivation in her field, her tomato field was severely impeded by pests and diseases. After two years of dedicated organic farming, significant reduction in late blight, early blight, wilt, tomato fruit borer and other insect pests was noticed. Apart from these, the incidence of beneficial insects also increased which provided natural control of the insect pests. Seed germination also improved up to 3% compared to her usual practice. She successfully increased her yield from adopting improved practices; the yield of tomato increased from 21570.4 kg/ha to 38182.9 kg/ha. Additionally, microbial population count also increased after adoption of organic practices.



Fig 2: Hands on training programme at CPGSAS, Umiam attended by farmer beneficiaries

IMPORTANCE FOR FARMERS

Mrs. Sangma has demonstrated that she is a role model for expanding agricultural sector growth, particularly by adopting organic farming practices for crop growing, which have greatly aided her in her efforts to serve the society.

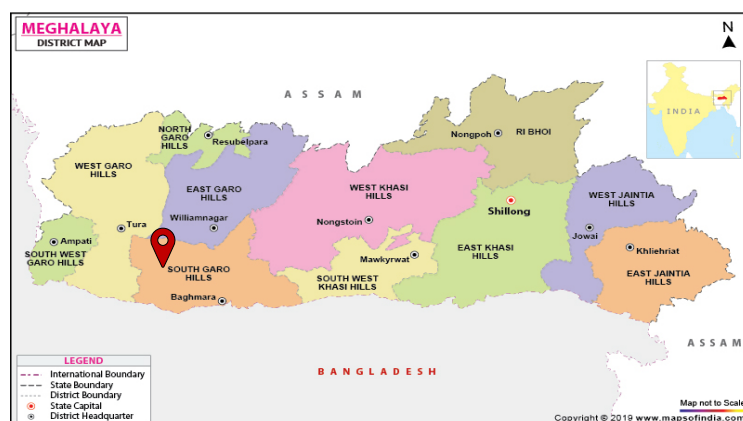


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two round spray of home made biopesticide	• Use diseased free healthy seeds • Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @ 10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky trap @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field release of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	21570.4 kg/ha	38182.9 kg/ha
Pest damage level	Late blight, early blight, wilt, tomato fruit borer, whitefly, aphid	Nil
C:B Ratio	1:1.5	1:2.1

Cultivation of Turmeric through organic methods at Jetra village of Meghalaya

Farmer No.- 08



Smt. Malobi T. Sangma



Fig 1: Field preparation for organic cultivation of turmeric



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Malobi T Sangma (32 years) is a forward-thinking farmer from the Jetra village of South Garo Hills district of Meghalaya. She received a farmers' fellowship for her active involvement in various farming activities in her community. She has also actively taken part in a number of trainings, awareness-raising, and demonstration programmes. She was also helped with input distribution and training course administration. She grows crops utilising the organic methods conducted by that CAU-CPGSAS, NBAIR Bangalore, Meghalaya, TRA, NBRDC, Nagrakata. She grows crops such as cauliflower, cabbage, tomatoes, potatoes, beans, turmeric, and maize, etc. and makes a fair living by selling her produce in the neighbourhood market.

TRAINING

She has participated in several trainings, workshops, skill development programmes, and awareness campaigns organised by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. She has also gained experience through exposure visits, method demonstration on variety of topics, including the mass production of biopesticides, the organic management of vegetable diseases and pests, the method of treating seeds with bioinoculants, integrated pest management, and the distribution of seeds and organic inputs. She has learned how to prepare on farm biopesticides, microbial enriched cow dung slurry, enriched compost with *Trichoderma* at a minimal cost. Furthermore, she has been granted a farmers' fellowship worth Rs. 10,000 per month for a duration of four months, as part of the DBT initiative which has benefitted her in providing financial assistance for purchase of essential inputs for cultivation.

ACHIEVEMENTS

After following organic farming, she was happy that her crop had reduced pest and disease infestation and that there had been an increase in the number of beneficial insects like predators, natural enemies etc. On the farm, she made biopesticides and enriched compost using available farm resources that helped control diseases and pests effectively while lowering production costs. In addition, germination percentage rose by upto 3-4% along with increased microbial population count. The yield of turmeric was significantly high when compared to the yield she received by following old farming methods. She is starting to serve as an example for all of her fellow farmers and generates good income from her produce.



Fig 2: Distribution of inputs at Jetra village

IMPORTANCE FOR FARMERS

She successfully used these tools, knowledge, and skills to develop her crops using organic farming practices, increasing her income and raising her social standing. She was able to increase her income from selling turmeric and ensure her food security by converting to organic farming practices.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	6-8 spray of home made biopesticides per crop season	• Use diseased free healthy rhizome • Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field release of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1554.8 kg/ha	2899.7 kg/ha
Pest damage level	Leaf blotch, turcicum blight, shoot borer etc.	Nil
C:B Ratio	1:1.5	1:2.9

Enhancement of Turmeric production through organic cultivation practices at Jetra village of Meghalaya

Farmer No.- 09



Smt. Bijoli G Momin



Fig 1: Demonstration activity on organic cultivation of turmeric at Jetra



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Bijoli G Momin (55 years) is a farmer from the Jetra village, Chokpot, South Garo Hills district of Meghalaya. She has been actively involved in the organic cultivation of turmeric and other crops. She is one of the hardworking farmers of the village and always eager to adopt and learn new technologies in her field. In addition to turmeric, she also cultivates maize, potato, tomato, green gram, and other cucurbitaceous crops by adopting organic approaches recommended by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. She also encourages and assists her fellow farmers for adoption of organic crop cultivation. The major problems she encounters related with turmeric production is pests and disease problems like shoot borer, leaf blight, leaf blotch, leaf roller, wilt, rhizome rot etc.

TRAINING

She has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management of pests and diseases of vegetables spices etc. and training on method of seed/rhizome/tuber treatment with bioinoculants, integrated pest management and distribution of seeds/organic inputs organized by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore, and also gained experience by taking part in exposure visits. She also received hand-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enriched compost with *Trichoderma* and preparation of microbial enriched cow dung slurry. Apart from these, essential inputs like seeds, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials have also been supplied for smooth running of the farm activities. During the whole cultivation period, a team of researchers and scientists regularly inspects and monitors the field to solve different problems of pests and diseases. With the help and advice of the expert team, she has been able to manage the problem of pests and diseases in her field. Impact analysis done shows higher production with increased benefit cost ratio.

ACHIEVEMENTS

By switching to organic farming methods, she was able to ensure her food security as well as boost her revenue by selling her produce and earning more each season. Recommendations for organic farming made by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore were followed, which decreased the occurrence of insect pests and diseases like shoot borer, leaf blotch, turcicum blight etc. Additionally, there was increase in seed germination, beneficial insects and microbes compared to the traditional method she used. The yield of turmeric increased from 1232.5 kg/ha to 3399.9 kg/ha after adopting organic practices. This helped her in more revenue generation.



Fig 2: Turmeric cultivation using organic module

IMPORTANCE FOR FARMERS

Through this initiative and support from the CPGSAS team it has not only benefitted her family but her whole village as well, it has brought awareness on the benefits of organic cultivation. She became the source of inspiration for other farmers involved in farming. She is always ready to provide them the help and guidance needed.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide per week	• Use diseased free healthy seeds • Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky traps @ 4-5 traps/ acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field release of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1232.5 kg/ha	3399.9 kg/ha
Pest damage level	Leaf blotch, turcicum blight, shoot borer etc.	Nil
C:B Ratio	1:1.2	1:2.1

Organic Production of Tomato at Jetra village of Meghalaya

Farmer No.- 10



Smt. Marcytha M Sangma



Fig 1: Training cum awareness programme at Jetra village



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Marcytha M Sangma (47 years) is from Jetra village, Chokpot, South Garo Hills district of Meghalaya. She is an active farmer who follows organic farming practices for growing her crops. She actively participated in various activities of CPGSAS, CAU, Umiam conducted at Jetra village. She cultivates various crops like tomato, turmeric, maize, rice, potato etc. She is very eager and enthusiastic in learning new and improved methods for adoption of organic crop cultivation. She has been able to generate good income from her produce by following organic cultivation practices.

TRAINING

Since 2021, she has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management 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 CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. She has used her experience and information gained from the different training programmes, in her fields which brought higher production in her produce. In addition to these, an expert team of scientists constantly guided her during her crop period. She also received several bioinputs like bioformulations, macrobials, seeds which further helped her in boosting her confidence to adopt organic cultivation.

ACHIEVEMENTS

As compared to previous cultivation practices, through the adoption of organic cultivation practices the incidence of plant diseases such as late blight, early blight, and wilt and insect pests like tomato fruit borer, whitefly, aphid incidence reduced significantly. Increase in seed germination up to 3-4% than conventional practices was also observed. There was also increase in 8 % (approx) of his produce, as yield of tomato after adoption of organic practice was increased from 24510.5 kg/ha to 40102.2 kg/ha. Soil sample analysis of soil sample also showed increased in population of beneficial microorganism in the plot with organic package. Her crop yield increased significantly which further increased his revenue generation.



Fig 2: Method demonstration and distribution of inputs at Jetra village

IMPORTANCE FOR FARMERS

Mrs. Sangma took the advantages of organic farming in growing her crops which enabled her to earn income and increase her socio-economic status. This has inspired her other fellow farmers to adopt organic farming and increase their income.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two round spray of home made biopesticides during crop period	• Use diseased free healthy seeds • Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field releasae of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	24510.5 kg/ha	40102.2 kg/ha
Pest damage level	Late blight, early blight, wilt, tomato fruit borer, whitefly	Nil
C:B Ratio	1:1.2	1:2.0

Production of Tomato by organic biopesticides at Jetra village of Meghalaya

Farmer No.- 11



Smt. Jorna M Sangma



Fig 1: Awareness camp at Jetra village



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Jorna M Sangma (43 years) is a resident of village Jetra, South Garo Hills is a progressive women farmer always eager to learn and adopt improved technologies in her field. . She is one of the active farmers of Jetra where she has grown tomato by adopting organic practices recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore. She has also used organic cultivation practices for growing potato, maize, turmeric and other vegetable crops. By using these improved technologies she has been able to increase her yield. However, she faces the problems of diseases like late blight, early blight, wilt and pests incidence like fruit borer, aphids etc.

TRAINING

Since 2021, she has participated in multiple trainings, method demonstrations, skill development programmes on organic integrated pest management practices, mass production of biopesticides and macrobials, and use of biopesticides such as seed treatment and soil application for organic cultivation on behalf of CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRRDC, Nagrakata, and ICAR-NBAIR, Bangalore, under the DBT funded project. Furthermore, to encourage organic production among the farmer beneficiaries, a group of scientists regularly inspects their field to provide guidance on reducing pests, diseases, and other farming-related issues that arise during crop cultivation. Other than these, crucial inputs such as seeds, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials were also provided to encourage and promote organic farming.

ACHIEVEMENTS

Prior to introducing organic cultivation in her field, her tomato field was severely impeded by pests and diseases. After two years of dedicated organic farming , significant reduction in late blight, early blight, wilt, cutworm and other insect pests was noticed. Apart from these, the incidence of beneficial insects also increased which provided natural control of the insect pests. Seed germination also improved up to 3% compared to her usual practice. She successfully increased her yield from adopting improved practices; the yield of tomato increased from 21570.4 kg/ha to 38182.9 kg/ha. Additionally, microbial population count also increased after adoption of organic practices.



Fig 2: Hands on training programme at CPGSAS, Umiam attended by farmer beneficiaries

IMPORTANCE FOR FARMERS

Mrs. Sangma has demonstrated that she is a role model for expanding agricultural sector growth, particularly by adopting organic farming practices for crop growing, which have greatly aided him in his efforts to serve society.

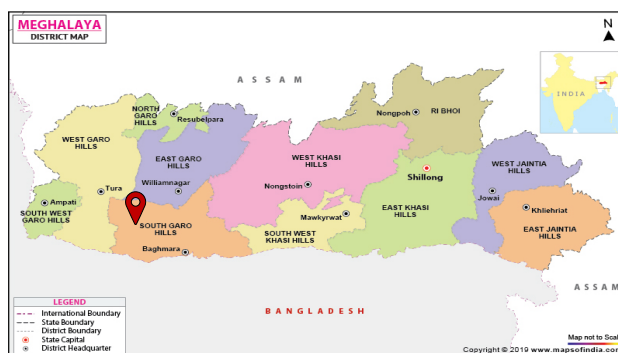


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two round spray of homemade biopesticides during crop period	• Use diseased free healthy seeds • Seed treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @ 10 ml per litre at least for 3-4 times starting from 35-40 days of the crop. • Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. • Pheromone traps @ 4 traps per acre • Installation of Tricho card and field releases of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	21570.4 kg/ha	38182.9 kg/ha
Pest damage level	Late blight, early blight, wilt, tomato fruit borer, whitefly, aphid	Nil
C:B Ratio	1:1.5	1:2.0

Cultivation of turmeric through organic methods at Jetra village of Meghalaya

Farmer No.- 12



Smt. Malobi T. Sangma



Fig 1: Field preparation for organic cultivation of tomato



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Malobi T Sangma (32 years) is a forward-thinking farmer from the Jetra village of South Garo Hills district of Meghalaya. She received a farmers' fellowship for her active involvement in various farming activities in her community. She has also actively taken part in a number of trainings, awareness-raising, and demonstration programmes. She also helped with input distribution and training course administration. She grows crops utilising the organic methods that CAU-CPGSAS, NBAIR Bangalore, Meghalaya, TRA, NBRDC, Nagrakata, and Meghalaya propose. She grows crops such as cauliflower, cabbage, tomatoes, potatoes, beans, turmeric, and maize, among others, and makes a fair living by selling her produce in the neighbourhood market.

TRAINING

She has participated in several trainings, workshops, skill development programmes, and awareness campaigns organised by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. She has also gained experience through exposure visits, method demonstration on variety of topics, including the mass production of biopesticides, the organic management of vegetable diseases and pests, the method of treating seeds with bioinoculants, integrated pest management, and the distribution of seeds and organic inputs. She has learned how to prepare on farm biopesticides, microbially enhanced cow dung slurry, enriched compost with *Trichoderma* at a minimal cost. Furthermore, she has been granted a farmers' fellowship worth Rs. 10,000 per month for a duration of four months, as part of the DBT initiative which has benefitted her in providing financial assistance for purchase of essential inputs for cultivation.

ACHIEVEMENTS

After following organic farming, she discovered that her crop had reduced pest and disease infestation and that there had been an increase in the number of beneficial insects like predators, natural enemies etc. On the farm, she made biopesticides and enriched compost using available farm resources that helped control diseases and pests effectively while lowering production costs. In addition, germination percentage rose by upto 3-4% along with increased microbial population count. The yield of turmeric was significantly high when compared to the yield she received by following old farming methods. She is starting to serve as an example for all of her fellow farmers and generates good income from her produce.



Fig 2: Distribution of inputs at Jetra village

IMPORTANCE FOR FARMERS

She successfully used these tools, knowledge, and skills to develop her crops using organic farming practices, increasing her income and raising her social standing. She was able to increase her income from selling tomato and ensure her food security by converting to organic farming practices.

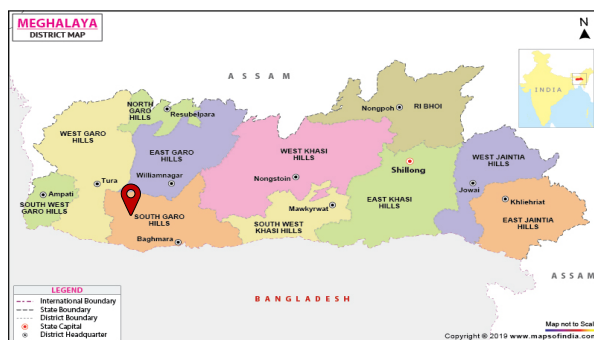


Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	6-8 sprays of home made biopesticides per crop season	- Use diseased free healthy rhizome - Rhizome treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying - Foliar spray of UmComb @ 10 ml per litre at least for 3-4 times starting from 35-40 days of transplanting of the crop. - Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. - Pheromone trap @ 4 traps per acre - Installation of Tricho card and field releasae of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1554.8 kg/ha	2899.7 kg/ha
Pest damage level	Leaf spot, leaf blotch, rhizome rot, shoot borer etc	Nil
C:B Ratio	1:1.5	1:2.3

Enhancement of Turmeric production through organic cultivation practices at Jetra village of Meghalaya

Farmer No.- 13



Smt. Bijoli G Momin



Fig 1: Demonstration activity on organic cultivation of turmeric at Jetra



Latitude: 25.32°N,
Longitude: 90.41°E

INTRODUCTION

Smt. Bijoli G Momin (55 years) is a farmer from the Jetra village, Chokpot, South Garo Hills district of Meghalaya. She has been actively involved in the organic cultivation of turmeric and other crops. She is one of the hardworking farmers of the village and always eager to adopt and learn new technologies in her field. In addition to turmeric, she also cultivates maize, potato, tomato, green gram, and other cucurbitaceous crops by adopting organic approaches recommended by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore. She also encourages and assists her fellow farmers for adoption of organic crop cultivation. The major problems she encounters related with turmeric production is pests and disease problems like shoot borer, turmeric blight, leaf blotch, leaf roller, wilt, rhizome rot etc.

TRAINING

She has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of biopesticides, organic management 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 CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRRDC, and NBAIR Bangalore, and also gained experience by taking part in exposure visits. She also received hands-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enrich compost with *Trichoderma*, and preparation of microbial enriched cow dung slurry. Apart from these, essential inputs like seeds, sticky traps, biopesticides, vermicompost, biofertilizers, and macrobials have also been supplied for smooth running of the farm activities. During the whole cultivation period, a team of researchers and scientists regularly inspects and monitors the field to solve different problems of pests and diseases. With the help and advice of the expert team, she has been able to manage the problem of pests and diseases in her field. Impact analysis done shows higher production with increased benefit cost ratio.

ACHIEVEMENTS

By switching to organic farming methods, she was able to ensure her food security as well as boost her revenue by selling turmeric and earning more in each season. Recommendations for organic farming made by CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRRDC, and NBAIR Bangalore were followed, which decreased the occurrence of insect pests and diseases like wilt, shoot borer, leaf blotch, turcicum blight etc. Additionally, there was increase in germination, beneficial insects and microbes compared to the traditional method she used. The yield of turmeric increased from 1232.5 kg/ha to 3399.9 kg/ha after adopting organic practices. This helped her in more revenue generation .



Fig 2: Turmeric cultivation using organic module

IMPORTANCE FOR FARMERS

Through the initiative and support from the CPGSAS team it has not only benefitted her family but her whole village as well, it has brought awareness on the benefits of organic cultivation. She became the source of inspiration for other farmers involved in farming. She is always ready to provide them the help and guidance needed.



Fig 3: Jetra village, Chokpot, South Garo Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide during the crop season.	• Use diseased free healthy rhizome • Rhizome treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of transplanting of the crop. • Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field releases of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1232.5 kg/ha	3399.9 kg/ha
Pest damage level	Leaf blotch, turcicum blight, shoot borer etc.	Nil
C:B Ratio	1:1.8	1:2.8

Organic Production of Maize at Langdongdai village of Meghalaya

Farmer No.- 14



Smt. Erbina Tyrsa
Contact: +91-6000064104



Fig 1: Field preparation for organic cultivation of tomato



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Smt. Elbina Tyrsa is from the village Langdongdai, West Khasi Hills, Meghalaya. She actively participated in various training, demonstration and awareness program conducted at village Langdongdai, Meghalaya. She is one of the active farmers of Langdongdai. She grows maize adopting organic practices recommended by CAU-CPGSAS, CAU (Imphal), Umiam, Meghalaya; TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore. In addition to maize, she also cultivates potato, turmeric, tomato etc. She sells her farm produce like tomato, potato, etc in local market, Mawshynrut, West Khasi Hills. However, the major problem which hinder maize production is leaf blight and sheath blight diseases, fall Army worm etc.

TRAINING

Since 2022, under the DBT funded project, she has received several trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of biopesticides and macrobials and use of biopesticides such as seed treatment and soil application for organic cultivation. Critical inputs like diseased free seeds, biopesticides, sticky traps, vermicompost, biofertilizers, macrobials etc. were supplied to her under demonstration programme under the DBT project. After receiving training programs, she adopted these methods for cultivation of maize and from time to time she implemented all the methods recommended by CAU-CPGSAS, CAU (Imphal), TRA-NBRRDC, and ICAR-NBAIR in her maize fields which brought potential results both in terms of yield enhancement and disease and pest reduction. By adopting the organic based package of practices she could increased her income by utilizing the acquired knowledge and skills. She is an example of a successful women farmer who has shown that agriculture can be transformed with the right investments and the right knowledge.

ACHIEVEMENTS

By implementing organic cultivation practices the incidence of plant diseases like Northern leaf blight, sheath blight and fall armyworm reduced drastically. There was also improvement in seed germination up to 3-4% than conventional practice adopted by her. There was also increase in 14.0 % (approx.) of her produce, as yield of maize after adoption of organic practice was increased from 2091.1 kg/ha to 2390.1 kg/ha. Laboratory analysis of soil sample showed increased upto 650×10^6 cfu/g in population of beneficial microorganism in the plot with organic package as compared to farmers practice 41.90×10^6 cfu/g . Through the adoption of organic practices, not only she secured her food security, but also increased her income by selling of maize, with an extra earning of Rs. 15,000-Rs. 20,000 per season per ha area.



Fig 2: Skill development programme held at CGPSAS, CAU (I), Umiam



Fig 3: Input distribution and hand on Training Programmes attended by farmers at Langdongdai village.

IMPORTANCE FOR FARMERS

Smt. Erbina inspired other farmers of the village to start organic cultivation in their fields. She became the source of inspiration for other farmers involved in farming. She is always ready to provide them the help and guidance needed. She is also an example of a successful women farmer who has shown that agriculture can be converted with the right investments and adoption of correct measures.



Fig: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Framers Practices	Recommended Integrated Organic Practices
Management practices	Use of local seeds	Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/ litre + soil application UmTricho enriched compost @200 kg/ acre + three foliar application of UmComb@10 ml/litre + release of <i>Trichogramma chilonis</i> @ 1,00,000 / ha for 2-3 release+ Pheromone trap FAW lure (5 traps /acre) + timely irrigation and intercultural practices + frequent crop monitoring
Germination %)	97.55%	100%
Yield (kg/ha)	2199.1 kg/ha	2390.1 kg/ha
Pest damage level	Northern leaf blight: 21.10%, Sheath blight : 13.60% Fall army worm :17.40%	Northern leaf blight: 12.80% Sheath blight : 7.20% Fall army worm : 8.10%
Microbial population (cfu/g)	41.90 X10 ⁶ cfu/g	650X10 ⁶ cfu/g
C:B Ratio	1:1.16	1:2.12

Production of Maize by organic biopesticides at Langdongdai village of Meghalaya

Farmer No.- 15



Shri Elderson Sohlamar
Village Employment Committee Secretary
Contact: +91- 8798214526



Fig 1: Shri E. Sohlamar attending awareness cum training programme at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Elderson Sohlamar is an active farmer and Village Employment Committee Secretary of the village Langdongdai, Mawshynrut, West Khasi Hills of Meghalaya . He is one of the projects beneficiaries' actively involved in the organic cultivation of maize and other crops. He is one of the progressive farmers of the village and always enthusiastic to know new techniques related to organic farming. He cultivates maize, potato, tomato, green gram, and other horticultural crops. After implementation of DBT project, most of the crops he cultivates by adopting organic approaches. He is also promoting nearby farmers for adoption of organic crop cultivation.

TRAINING

Shri. Elderson Sohlamar has undergone various awareness cum training programmes, workshops, and skill development programmes on mass production of bio-pesticides, training on organic management of pests and diseases of vegetables, and training on method of seed treatment with bio-inoculants, integrated pest management. Critical input like healthy diseased seeds, organic inputs like UmTricho (*Trichoderma harzianum* based liquid bioformulation), Um Tricho enriched compost, Pheromone traps, yellow sticky traps were distributed under DBT funded project and also gained experience by taking part in exposure visits. He also received hands-on training program at CAU-CPGSAS, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enriched compost with *Trichoderma*, and preparation of microbial enriched cow dung slurry. A team of scientists regularly inspects and monitors the field during the whole cultivation period to solve different problems of pests and diseases. During the inspection, problems like leaf blight and sheath blight diseases, Fall Army worm etc. were observed and solutions were put forward to manage these diseases and pests. Also, during the field visit information was collected from the impact analysis on organic cultivation of the crops.

ACHIEVEMENTS

After two years of organic practice, Mr. Elderson Sohlamar was highly benefited from following the organic modules. The incidence of pests and diseases after application of microbial agents and macrobials provided by CGSAS, CAU, Umiam, Meghalaya significantly decreased which resulted in potential 100% increase in maize yield from 1193.0 kg/ha to 2393.3 kg/ha. Seed germination was increasing up to 4-5% than conventional practice adopted by him. Mr. Elderson Sohlamar received twice the profit from maize cultivation by adopting organic cultivation and through these, he enhanced his economic benefits.



Fig 2: Hands on training on use of macrobials



Fig 3: Distribution of input and Maize cultivation at Langdongdai Village

IMPORTANCE FOR FARMERS

From time to time, during 2022 to 2024 Mr. Sohlmarm participated in training programs conducted by CPGSAS, CAU, Umiam, Meghalaya. He is also a source of motivation for other farmers.

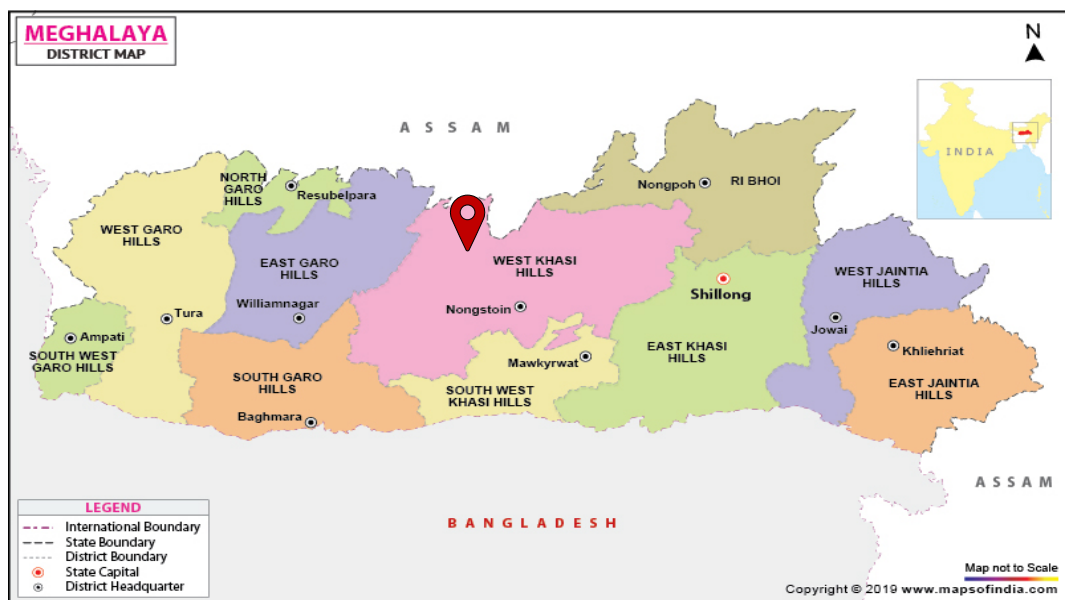


Fig: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticides	• Use diseased free healthy rhizome • Rhizome treatment with UmTricho @ 10 ml per litre of water and CAU-Bioenhancer @ 10 ml per litre of water for 30 to 45 min followed by shade drying • Foliar spray of UmComb @10 ml per litre at least for 3-4 times starting from 35-40 days of transplanting of the crop. • Yellow/blue sticky traps @ 4-5 traps/acre for pest monitoring. • Pheromone trap @ 4 traps per acre • Installation of Tricho card and field releases of lacewing.
Farmer's profit margins	Less	High
Production level	Decreased	Highly Increased by 100%
Average net return	1193.0kg/ha	2393.3 kg/ha
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.4	1:2.9

Cultivation of Maize through organic methods at Langdongdai village of Meghalaya

Farmer No.- 16



Shri Arful Mangsang
Contact: +91-8798215012



Fig 1: Shri A. Mangsang receiving organic inputs and Knapsack Sprayer at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Arful Mangsang lives in village Langdongdai, Mawshynrut, West Khasi Hills of Meghalaya. He is a progressive farmer, early adopter and always eager to learn new ideas. He cultivates maize, potato, tomato, turmeric, green gram, and several cucurbits crops. He is also actively involved in the organic cultivation of maize and other crops. He is also promoting nearby farmers for adoption of organic crop cultivation.

TRAINING

He has received several trainings, method demonstration, skill development programme on organic integrated pest management and input distribution, use of biopesticides such as seed treatment and soil application for organic cultivation on

behalf of CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and NBAIR, Bangalore since the execution of the project, i.e., 2022. he grows all his crops including maize using organic methods only as per suggestion provided by TRA, NBRDC, Nagrakata, CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and NBAIR, Bangalore which brought potential results both in terms of increased yield production and disease and pest reduction. Through the training, he benefited with increase income by utilizing the knowledge and skills acquired.

ACHIEVEMENTS

Organic cultivation benefited Mr. Arful Mangsang in many ways since organic produce has more demand. Organic practices also raised his social economic status and net earnings was twice than that of non-organic practice per annum. It led him to adopt better technology in farm equipment and using bio-pesticides. Adoption of organic practices led to reduction of Northern leaf blight, sheath blight, and fall army worm in his maize field which results an increased yield from 1396.9 kg/ha to 2391.1 kg/ha.



Fig 2: Input distribution and germination of maize in farmer field at Langdongdai village.

IMPORTANCE FOR FARMERS

Mr. Arful Mangsang is a source of inspiration for other farmers involved in organic farming. The motivated the fellow farmer for Integrated farming techniques as 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.



Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/ litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 traps/ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps /acre) • Timely irrigation and intercultural practices • Frequent crop monitorin
Farmer's profit margins	Less	High
Production level	Decreased	Highly Increasedby 100%
Average net return	1396.9 kg/ha	2391.1 kg/ha.
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.3	1:2.0

Enhancement of Maize production through organic cultivation practices at Langdongdai village of Meghalay

Farmer No.- 17



Shri Hoping Puwein
Contact: +91 6001623161



Fig 1: Shri H. Puwein receiving organic input at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Hoping Puwein is a forward-thinking farmer from the village of Langdongdai in the West Khasi Hills. He benefits from the project as well. Additionally, he has actively taken part in different awareness, training, and demonstration programs held in the West Khasi Hills village of Langdongdai. Additionally, he was taken active part in training program and distribution of materials in Langdongdai. He is one of the prospective farmers in Langdongdai, where he grows maize using organic methods that are advised by NBAIR Bangalore, CAU-CPGSAS, Meghalaya, NBAIR Bangalore, and TRA, NBRRDC, Nagrakata. In addition, he grows, cauliflower, cabbage, potatoes, turmeric, maize, and other crops. In the Mawshynrut local market in the West Khasi Hills, he also sells potatoes, tomatoes, and maize. However, Northern leaf blight, sheath blight, fall army worms, and sucking pests are the main issues limiting the production of maize yields.

TRAINING

Since the project's execution, from 2022, he has been part of several trainings, method demonstrations, skill development programs on organic integrated pest management and input distribution, mass production of biopesticides and macrobials, and the use of biopesticides for organic cultivation, such as seed treatment and soil application, imported by CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore. He cultivates all of his crops, including maize, exclusively using organic methods per the advice of CAU-CPGSAS, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore. This approach has the potential to produce higher yield as well as a reduction in disease and pests. By applying the organic practices, he was able to increase his income.

ACHIEVEMENTS

His maize field was severely impeded by pests and diseases prior to the implementation of organic practices and bio-inputs supplied by CPGSAS, CAU, (I), Umiam, Meghalaya, and NBAIR, Bangalore. The incidence of fall army worm, sheath blight, and northern leaf blight was significantly reduced by the adoption of organic approaches. Additionally, seed germination improved by 8-10% compared to his usual practice. He increased his crop yield after adopting organic practices from 893.6 kg/ha to 2396.6 kg/ha. Additionally, there was a notable increase in the population dynamics of advantageous microbes. By switching to organic farming methods, he was able to secure his food supply and boost his earnings by selling maize.



Fig 2: Method demonstration of application of biopesticides at Langdongdai village

IMPORTANCE FOR FARMERS

He inspired other farmers of the Langdongdai village also to start organic cultivation in their fields. He always helps other farmers about organic practices and aware them to do in their field by his innovative ideas gained in training program.



Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide in entire crop period.	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 traps/ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps /acre) • Timely irrigation and intercultural practices • Frequent crop monitorin
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	839.6 kg/ha	2396.6 kg/ha
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.4	1:1.8

Organic integrated management practice in Maize cultivation at Langdongdai village of Meghalaya

Farmer No.- 18



Shri Hagin Nianglang



Fig 1: Shri H. Nianglang receiving organic input at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Hagin Nianglang lives in village Langdongdai, West Khasi Hills of Meghalaya. He is an early adopter, a progressive farmer, and eager to learn new concepts. He grows a number of cucurbit crops in addition to maize, potatoes, tomatoes, turmeric, and green grams. In addition, he actively participates in the organic farming of other crops, including maize. He is also encouraging surrounding farmers to switch to organic crop production.

TRAINING

Since the project's implementation, i.e., in 2022, under the initiatives CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore. Shri hagin has undergone multiple training sessions, method demonstrations, skill development

programs on organic integrated pest management and input distribution, as well as hands-on training in the use of biopesticides for seed treatment and soil application in organic cultivation. All of his crops, including maize, are grown using organic methods exclusively, following recommendations from CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore. These efforts led increased in yield as well as reduce disease and pest levels. By applying the knowledge and abilities he has gained from the training, he was able to raise his income.

ACHIEVEMENTS

Mr. Hagin Nianglang gained much from organic gardening because there is a greater market for organic produce. His social and economic standing was further enhanced by his organic activities, and his annual net earnings were increased by 14% compound to the non-organic activities. It prompted him to use biopesticides and upgrade the technology in farm equipment. In his maize field, the use of organic farming methods resulted in a decrease of fall army worm, sheath blight, and northern leaf blight, increasing yield from 2096.1 kg/ha to 2391.3 kg/ha.



Fig 2: Hands on training on field application of Bio-pesticide

IMPORTANCE FOR FARMERS

For other farmers who practice organic farming, Mr. Hagin Nianglang is an inspiration. with integrated farming practices, Shri Hagin in showed example in increase in socioeconomic standing and make cash by ensuring that, even in the event that one of your operations fails, the others can support in good crop production. If farmers take his lead, they could reap the benefits of implementing integrated farming techniques.



Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray of home made biopesticide per week	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 / ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps / acre) • Timely irrigation and intercultural practices • Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	2096.1 kg/ha	2391.3 kg/ha.
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.3	1:1.6

Organic Production of Maize at Langdongdai village of Meghalaya

Farmer No.- 19



Smt. Birsibon Sohlamar



Fig 1: Smt. Birsibon Sohlamar receiving organic input at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Smt. Birsibon Sohlamar is from the village Langdongdai, West Khasi Hills, Meghalaya. She actively participated in various training, demonstration and awareness programs conducted at village Langdongdai, Meghalaya. She is one of the active farmers of Langdongdai where she grown maize adopting organic practices recommended by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR. Bangalore. In addition to maize, she also cultivates potato, turmeric, tomato etc. She sells her farm produce like tomato, potato etc. in local market, Mawshynrut, West Khasi Hills. However, the major problem which hinder her maize production were ant, leaf blight and sheath blight diseases, stem borer, Fall Army worm sucking pests and caterpillars.

TRAINING

Since 2022, under the initiatives of CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore, under the DBT funded project, she has received several trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of bio-pesticides and macrobials and use of bio-pesticides such as seed treatment and soil application for organic cultivation. Critical inputs like seeds, biopesticides, sticky traps, vermicompost, bio-fertilizers, macrobials etc. were supplied to her under demonstration programme under the DBT project. After receiving training programs, she adopted these methods for cultivation of maize and from time to time she implemented all the methods recommended by CAU-CPGSAS, CAU (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore in her maize fields which brought potential results both in terms of yield enhancement and disease and pest reduction. By adopting the organic based package of practices she could increase her income by utilizing the acquired knowledge and skills. She is an example of a successful woman farmer who has shown that agriculture can be transformed with the right investments and the right knowledge.

ACHIEVEMENTS

By implementing organic cultivation practices the incidence of plant diseases such as late blight, early blight, and wilt and whitefly incidence reduced drastically. There was also improvement in seed germination up to 4% than conventional practice. There was also increase in 41 % (approx) of her produce, as yield of maize after adoption of organic practice was increased from 1692.5 kg/ha to 2395.4 kg/ha. Laboratory analysis of soil sample showed increased in population of beneficial microorganism in the plot with organic package. Through the adoption of organic practices, she not only secured her food security, but also increased her income by selling of maize, with an extra earning in every season.



Fig 2: Hands on training on field application of Bio-pesticide

IMPORTANCE FOR FARMERS

She inspired other farmers of the village to start organic cultivation in their fields. She became the source of inspiration for other farmers involved in farming. She is

always ready to provide them the help and guidance needed. She is also an example of a successful women farmer who has shown that agriculture can be converted with the right investments and adoption of correct measures.



Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	6-8 spray of home made biopesticides per crop season	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 /ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps /acre) • Timely irrigation and intercultural practices • Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1692.5 kg/ha	2395.4 kg/ha.
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.5	1:2.25

Organic integrated management practice in Maize cultivation at Langdongdai village of Meghalaya

Farmer No.- 20



Smt. Medarlin Nianglang



Fig 1: Smt. Medarlin Nianglang received inputs and method demonstration for organic cultivation



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Smt. Medarlin Nianglang is a progressive farmer from the village Langdongdai, West Khasi Hills, of Meghalaya. She is among the project's beneficiaries as well. In the West Khasi Hills, at village Langdongdai, she has also actively taken part in a number of training, awareness, and demonstration programme. She was helped with input critical and training program etc. She grow maize using organic methods as per the suggestion of NBAIR Bangalore, CAU-CPGSAS, Meghalaya, TRA, NBRDC, Nagrakata. In addition, she grows, legumes, potatoes, turmeric, cabbage, and cauliflower. In Mawshynrut, West Khasi Hills. But the main issue limiting the maize yields is the presence of sucking pests, autumn army worms, sheath blight, and northern leaf blight.

TRAINING

Under the initiatives of CPGSAS, CAU, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore, she has participated in multiple trainings, method demonstrations, skill development programs on organic integrated pest management and input distribution, mass production of bio-pesticides and macrobials, and use of bio-pesticides for seed treatment and soil application for organic cultivation since the project's execution, i.e., 2022. She only uses organic ways to cultivate all of his crops, including maize, as per the advice of CAU-CPGSAS, (I), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and NBAIR, Bangalore. This approach has the potential to produce greater yield production as well as reduce pest and disease. By applying the knowledge she had gained from the training, she was able to raise her income. She exemplifies a successful woman.

ACHIEVEMENTS

Prior to the implementation of organic methods and bio-inputs from CPGSAS, CAU, (I), Umiam, Meghalaya, and NBAIR, Bangalore, her maize crop experienced serious insect and disease problems. Nonetheless, the occurrence of fall army worm, sheath blight, and northern leaf blight was greatly decreased by the use of organic methods. Additionally, there was a 3% increase in seed germination compared to her usual technique. Her produce increased as a result of these techniques; for example, the yield of maize increased from 2292.3 kg/ha to 2396.4 kg/ha after adopting organic practices. In addition, favorable microbial population dynamics were markedly enhanced. She could improved her income by selling maize and ensured her food security by implementing organic methods.



Fig 2: Training Programmes attended by farmers and germinating of Maize seed on farmer field at Langdongdai village

IMPORTANCE FOR FARMERS

Smt. Medarlin Nianglang encouraged the other Langdongdai village farmers to begin growing organic crops in their farms. Through her creative ideas from her training program, she constantly assists other farmers with organic techniques and informs them of what they should be doing in their area.



Fig 3 : Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	two rounds of spray per home made biopesticide during a crop season	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/ litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 / ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps / acre) • Timely irrigation and intercultural practices • Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	2292.3 kg/ha	2396.4 kg/ha
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.4	1:1.8

Production of Maize by organic biopesticides at Langdongdai village of Meghalaya

Farmer No.- 21



Shri Alkadius Nianglang



Fig 1: Shri A. Nianglang attending awareness cum training programme at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Alkadius Nianglang husband of Baiarlin Sohlamar is from the village Langdongdai, West Khasi Hills, Meghalaya. They both took an active part in a number of awareness, training, and demonstration activities held in the Meghalaya Langdongdai. He grows maize using organic methods advised by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and ICAR-NBAIR, Bangalore. He is one among the active farmers in Langdongdai. He also grows potatoes, tomatoes, turmeric, and other crops in addition to maize. He sells his farm products in the Mawshynrut, West Khasi Hills, local market. His products include tomatoes and potatoes. However, the main issues effecting maize output include caterpillars, Fall Army worm-sucking pests, ants, leaf blight and sheath blight illnesses, and stem borer.

TRAINING

Since 2022, under the initiatives CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata and ICAR-NBAIR, Bangalore, under the DBT funded project, he has received several trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of bio-pesticides and macrobials and use of biopesticides as seed treatment and soil application for organic cultivation. He received essential inputs through the DBT project's demonstration program, including seeds, sticky traps, bio-pesticides, vermicompost, bio-fertilizers, and macrobials. He began cultivating maize using these techniques after completing training programs, and he periodically applied all the techniques suggested by CAU-CPGSAS, CAU (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and ICAR-NBAIR, Bangalore in his maize fields. These approaches showed promise for increasing yield as well as reducing disease and pests. He was able to use the information and skills he had gained to boost his revenue by implementing the organic-based package of practices. He is an example of a prosperous farmer who has demonstrated that, with the correct approach agriculture can be revolutionized.

ACHIEVEMENTS

The incidence of plant diseases such late blight, early blight, wilt, and whitefly infestation decreased significantly when organic agriculture methods were used. Additionally, compared to his typical approach, there was a 4-5% boost in seed germination. Additionally, there was an increase in 19 % (approximately) of his produce since the yield of maize increase from 1996.5 kg/ha to 2390.9 kg/ha once organic practices were adopted. An increase in beneficial microorganisms was also observed in the plot with the organic package. He increased his income by selling maize, earning an additional income in every season from his land.



Fig 2: Maize cultivation at Langdongdai Village treated with Biopesticide.

IMPORTANCE FOR FARMERS

From time to time, during 2022 to 2024 Mr. A. Sohlamar participated in training programs conducted by CPGSAS, CAU, Umiam, Meghalaya that increases his. He is a source of motivation for other farmers.



Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	6-8 spray of home made biopesticides per crop season	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre • Soil application UmTricho enriched compost @200 kg/ acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 /ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps /acre) • Timely irrigation and intercultural practices • Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	1996.5kg/ha	2390.9 kg/ha
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.4	1: 2.1

Cultivation of Maize through organic methods at Langdongdai village of Meghalaya

Farmer No.- 22



Shri Paminen Puwein



Fig 1: Shri P. Puwein receiving organic inputs and Knapsack Sprayer at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Shri Paminen Puwein is husband of Darihun Sohlamar from the village Langdongdai, West Khasi Hills, Meghalaya. At village Langdongdai in Meghalaya, they enthusiastically took part in a range of training, awareness, and demonstration programme. In Langdongdai, he cultivates maize using organic methods advised by CAU-CPGSAS, Central Agricultural University (Imphal), Umiam, Meghalaya, TRA, NBRDC, Nagrakata, and ICAR-NBAIR, Bangalore. He is a the active farmers and grows potatoes, turmeric, tomatoes, and other crops in addition to maize. His farm produces, such as tomatoes, potatoes, and flowers, are sold at the Mawshynrut local market in the West Khasi Hills. Caterpillars, fall armyworm-sucking bugs, stem borer, ants, leaf blight, and sheath blight diseases are the main issues impeding maize output.

TRAINING

Since 2022, under the initiatives of CAU-CPGSAS, CAU, (Imphal), Umiam, Meghalaya, TRA, NBRRDC, Nagrakata and ICAR-NBAIR, Bangalore, under the DBT funded project, he has received several trainings, method demonstration, skill development programme on organic integrated pest management practices, mass production of biopesticides and macrobials and use of biopesticides such as seed treatment and soil application for organic cultivation. Critical inputs like seeds, biopesticides, sticky traps, vermicompost, biofertilizers, macrobials etc were supplied to him under demonstration programme under the DBT project. He began cultivating maize using these techniques after completing training programs, and he periodically applied all the techniques suggested by CAU-CPGSAS, CAU (Imphal), Umiam, Meghalaya, TRA, NBRRDC, Nagrakata, and ICAR-NBAIR, Bangalore in his maize fields. These approaches showed promise for increasing yield as well as reducing disease and pests. He was able to use the information and skills he had gained to boost his revenue by implementing the organic-based package of practices. He is an illustration of a prosperous farmer who has demonstrated that, with the correct funding and information, agriculture can be revolutionized.

ACHIEVEMENTS

By implementing organic cultivation practices the incidence of plant diseases such as leaf blight, sheath blight, and pests incidence reduced drastically. Additionally, seed germination improved by 2 to 3 % compared to the traditional method he used. Additionally, the yield of his maize grew by 8% (approximately) after adopting organic practices, going from 2199.1 kg/ha to 2390.1 kg/ha. Beneficial microbe populations were found to be higher in the plot with the organic package, according to laboratory analysis of soil sample. By using organic farming methods, he was able to protect his food security and boost his income by selling maize in every season.





Fig 2: Input distribution and land preparation for maize cultivation at Langdongdai village.

IMPORTANCE FOR FARMERS

Other farmers of the village were motivated by Mr. Paminen Puwein and his wife to begin growing organic crops in their farms. He became the source of inspiration for other farmers involved in farming. He is always ready to provide them the help and guidance needed. He is also an example of a successful farmer who has shown that agriculture can be converted with the right investments and adoption of correct measures.

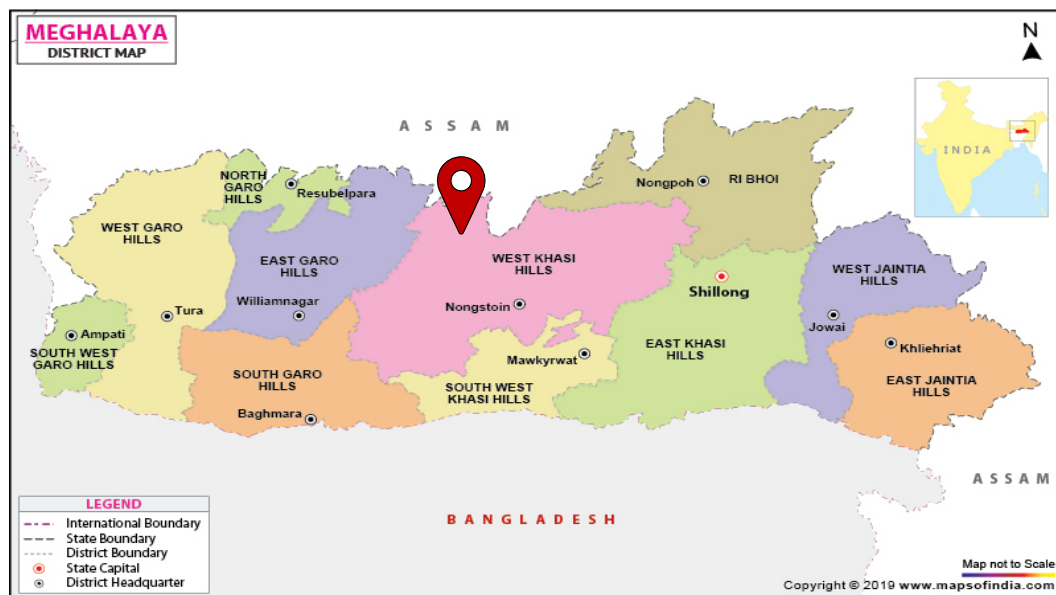


Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray in a crop season	• Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre • Soil application UmTricho enriched compost @200 kg/acre • Three foliar application of UmComb@10 ml/litre • Installation of yellow sticky trap @10 /ha • Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release • Pheromone trap FAW lure (5 traps /acre) • Timely irrigation and intercultural practices • Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	2199.1 kg/ha	2390.1 kg/ha.
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.2	1:1.6

Cultivation of Maize through organic methods at Langdongdai village of Meghalaya

Farmer No.- 23



Smt. Bioris Puwein



Fig 1: Smt. B. Puwein receiving organic input at Langdongdai



Latitude: 25.75°N,
Longitude: 90.98°E

INTRODUCTION

Smt. Bioris Puwein is an active farmer of village Langdongdai, West Khasi Hills District of Meghalaya. She is one of the projects beneficiaries' actively involved in the organic cultivation of maize and other crops. She is one of the more forward-thinking farmers in the community and is constantly eager to learn about new organic farming methods. She cultivates maize, potato, tomato, and other horticultural crops. Most of the crops she cultivates by adopting organic approaches. She also encouraged other farmers to do farming without using chemical fertilizers.

TRAINING

Through CPGSAS, CAU, Umiam, Meghalaya, TRA, NBRDC, and NBAIR Bangalore, she participated in exposure visits and underwent a variety of awareness-raising, training, and skill-development programs on mass production of biopesticides,

organic management of pests and vegetable diseases, and training on the method of treating seeds with bioinoculants, integrated pest management, and distribution of seeds and organic inputs. She also received hand-on training program at CPGSAS, CAU, Umiam, Meghalaya on low-cost mass culture of microbial agents, preparation of enriched compost with *Trichoderma*, and preparation of microbial enriched cow dung slurry. A team of scientists regularly inspects and monitors the field during the whole cultivation period to solve different problems of pests and diseases. During the inspection, problems like leaf blight and sheath blight diseases, stem borer, Fall Army worm sucking pests and caterpillars were observed and solutions were put forward to manage these diseases and pests. Also, during the field visit information was collected from the impact analysis on organic cultivation of the crops.

ACHIEVEMENTS

After two years of organic practice, Mrs. Bioris Puwein was highly benefited from following the organic modules. The incidence of pests and diseases after application of microbial agents and macrobials provided by CPGSAS, CAU, Umiam, Meghalaya significantly decreased which resulted in potential of more than 100% increase in maize yield from 993.7 kg/ha to 2391.2 kg/ha. Seed germination was increasing up to 5-6 % than conventional practice adopted by her. Bioris Puwein received double profit from maize cultivation by adopting organic cultivation and through these, she enhanced her economic benefits.



Fig 2: Method demonstration of application of biopesticides at Langdongdai village

IMPORTANCE FOR FARMERS

From time to time, during 2022 to 2024 Bioris Puwein participated in training programs conducted by CPGSAS, CAU, Umiam, Meghalaya. She is also a source of motivation for other farmers

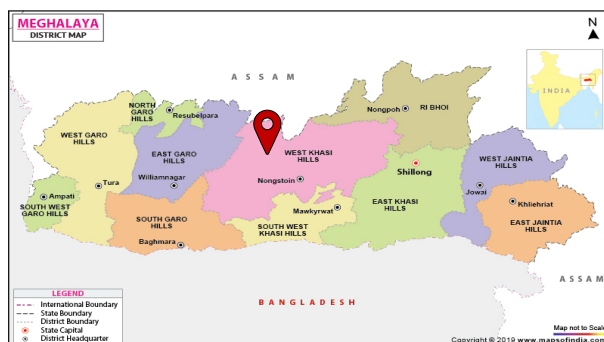


Fig 3: Langdongdai, Mawshynrut, West Khasi Hills, Meghalaya

ECONOMIC ANALYSIS

Component	Before adoption of Organic approach	After adoption of Organic approach
Management practices	Two rounds of spray per week	- Use of healthy seeds + Seed treatment with <i>Trichoderma harzianum</i> based biopesticides (UmTricho) @ 10 ml/litre - Soil application UmTricho enriched compost @200 kg/acre - Three foliar application of UmComb@10 ml/litre - Installation of yellow sticky trap @10 / ha - Release of <i>Trichogramma chilonis</i> @ 1,00,000 /ha for 2-3 release - Pheromone trap - FAW lure (5 traps /acre) - Timely irrigation and intercultural practices - Frequent crop monitoring
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	993.7 kg/ha	2391.2 kg/ha
Pest damage level	Northern leaf blight, sheath blight, and fall army worm	Nil
C:B Ratio	1:1.3	1:2.56



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