



Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India



भारत-कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान कोलकाता
ICAR- Agricultural Technology Application Research Institute
Bhumi Vihar Complex, Block- GB, Sector- III
Salt Lake, Kolkata- 700097, WB

Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India



भाकृअनुप-कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान कोलकाता
ICAR- Agricultural Technology Application Research Institute

Bhumi Vihar Complex, Block- GB, Sector- III

Salt Lake, Kolkata- 700097, WB



Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India

Year of Publication: **February, 2024**

Citation:

Haldar A, Sahaji S, Samanta P, Maitra NJ, Dey P (2024). Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India. ICAR- Agricultural Technology Application Research Institute, Kolkata, Bhumi Vihar Complex, Block-GB, Sector-III, Salt Lake, Kolkata-700097, West Bengal, India

Edited by:

Dr. Avijit Haldar, Principal Scientist, ICAR-ATARI, Kolkata

Mr. Salim Sahaji, Young Professional, Natural Farming Project, ICAR-ATARI, Kolkata

Mr. Purbendu Samanta, Young Professional, Natural Farming Project, ICAR-ATARI, Kolkata

Dr. Nilendu Jyoti Maitra, Deputy Director of Research, West Bengal University of Animal & Fishery Sciences, Kolkata

Dr. Pradip Dey, Director, ICAR-ATARI, Kolkata

Published by:

Dr. Pradip Dey, Director, ICAR-ATARI, Kolkata, Zone-V, Bhumi Vihar Complex, GB-Block, Salt Lake, Kolkata-700097, West Bengal, India

ISBN Number: 978-81-970646-4-7

@All Rights Reserved

ICAR-ATARI, Kolkata, Zone-V, Bhumi Vihar Complex, GB-Block, Salt Lake, Kolkata-700097, West Bengal, India

Printed at

M/s. Semaphore Technologies Pvt. Ltd
#+91-9038245205

Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India

Contributors

Sl. No.	Name	Designation	Address
1.	Debasis Mishra	Senior Scientist and Head	Angul KVK
2.	Tiryak Kumar Samant	SMS (Agronomy)	Angul KVK
3.	Moumita Dey Gupta	Senior Scientist and Head	Bankura KVK
4.	Mr. Year Mohammad	Field assistant	Bankura KVK
5.	Swagatika Sahu	Senior Scientist and Head	Balasore KVK
6.	Pravamanjari Giri	SMS (Agronomy)	Balasore KVK
7.	N C Barik	Senior Scientist and Head	Baragarh KVK
8.	Rahul Dev Behera	SMS (Soil Science)	Baragarh KVK
9.	Sanjay Kumar Mohanty	Senior Scientist and Head	Bhadrak KVK
10.	Debiprasad Dash	SMS (Soil Science)	Bhadrak KVK
11.	Bikash Roy	Senior Scientist and Head	Cooch Behar KVK
12.	Sandip Hembram	SMS (Soil Science)	Cooch Behar KVK
13.	Ranjan Kumar Mohanta	Senior Scientist and Head	Cuttack KVK
14.	Dillip Ranjan Sarangi	SMS (Soil Science)	Cuttack KVK
15.	Tusar Ranjan Sahoo	SMS (Horticulture)	Cuttack KVK
16.	Sujata Sethy	SMS (Home Science)	Cuttack KVK
17.	Sibananda Singha	Senior Scientist and Head	Dakshin Dinajpur KVK
18.	Nakul Mondal	SMS (Agronomy)	Dakshin Dinajpur KVK
19.	M W Moktan	Senior Scientist and Head	Darjeeling KVK
20.	Pranab Burma	SMS (Plant Protection)	Darjeeling KVK
21.	Ranajit Panda	SMS (Soil Science)	Darjeeling KVK
22.	Snehlata Lama	SMS (Horticulture)	Darjeeling KVK
23.	Bimalendu Mohanty	Senior Scientist and Head	Dhenkanal KVK
24.	Sanghamitra Sahoo	SMS (Plant Protection)	Dhenkanal KVK
25.	Samsul Haque Ansary	Senior Scientist and Head	Hooghly KVK
26.	Sagar Tamang	SMS (Entomology)	Hooghly KVK
27.	Sudip Raha	Lab Assistant	Hooghly KVK
28.	Kironmay Barui	Senior Scientist and Head	Howrah KVK
29.	Sudipta Banerjee	SMS (Agri. Extn)	Howrah KVK
30.	Koushik Nag	SMS (Horticulture)	Howrah KVK
31.	Asim Kumar Maity	Senior Scientist and Head	Jhargram KVK
32.	Sayak Das	SMS (Soil Science)	Jhargram KVK
33.	Srabani Das	SMS (Horticulture)	Jhargram KVK
34.	Jibanjit Sen	Senior Scientist and Head	Jagatsinghpur KVK
35.	Pradipta Majhi	SMS (Soil Science)	Jagatsinghpur KVK
36.	Amitabh Panda	Senior Scientist and Head	Kalahandi KVK
37.	Tribijayi Badjena	SMS (Agri. Extn)	Kalahandi KVK
38.	Narayan Bar	Senior Scientist and Head	Kandhamal KVK
39.	Sujit Kumar Mukhi	SMS (Soil Science)	Kandhamal KVK

Sl. No.	Name	Designation	Address
40.	Aurovinda Das	Senior Scientist and Head	Kendrapara KVK
41.	Tapas Ranjan Sahoo	SMS (Agronomy)	Kendrapara KVK
42.	Sukanta Kumar Sahoo	Senior Scientist and Head	Keonjhar KVK
43.	Nigamananda Behra	SMS (Agronomy)	Keonjhar KVK
44.	Biswanath Sahu	Senior Scientist and Head	Koraput KVK
45.	Sunita Dandana	SMS (Agronomy)	Koraput KVK
46.	Rakesh Roy	Senior Scientist and Head	Malda KVK
47.	Bhabani Das	SMS (Agronomy)	Malda KVK
48.	Suddasuchi Das	SMS (Horticulture)	Malda KVK
49.	Uttam Mondal	Senior Scientist and Head	Murshidabad KVK
50.	Abu Taleb	SMS (Soil Science)	Murshidabad KVK
51.	Sujan Biswas	Senior Scientist and Head	Murshidabad (Addl.) KVK
52.	Chanda Saha	SMS (Horticulture)	Murshidabad (Addl.) KVK
53.	Debashis Roy	SMS (Plant Protection)	Murshidabad (Addl.) KVK
54.	Ajoy Das	SMS (Agronomy)	Murshidabad (Addl.) KVK
55.	Deepak Kumar Mohanty	Senior Scientist and Head	Mayurbhanj-II KVK
56.	Surajyoti Pradhan	SMS (Agronomy)	Mayurbhanj-II KVK
57.	Satya Niranjan Mishra	Prog. Assistant	Mayurbhanj-II KVK
58.	Anil Kumar Swain	Senior Scientist and Head	Nayagarh KVK
59.	Gyanaranjan Sahoo	Scientist (Forestry)	Nayagarh KVK
60.	Debasish Nayak	Farm Manager	Nayagarh KVK
61.	Babulal Tudu	Senior Scientist and Head	North 24 Parganas KVK
62.	Pabitra Adhikary	SMS (Agronomy)	North 24 Parganas KVK
63.	Tanmay Samajdar	Senior Scientist and Head	North 24 Parganas (Addl.) KVK
64.	Rinku Bharali	SMS (Horticulture)	North 24 Parganas (Addl.) KVK
65.	Y Ramakrishna	Senior Scientist and Head	Port Blair KVK
66.	Manas Kumar Bhattacharya	Senior Scientist and Head	Purulia KVK
67.	Bisweswar Mahato	SMS (Soil Science)	Purulia KVK
68.	D C Mahato	SMS (Agri Engineering)	Purulia KVK
69.	Surya Narayan Mishra	Senior Scientist and Head	Puri KVK
70.	Sarthak Pattanaik	SMS (Soil Science)	Puri KVK
71.	Chandan Mondal	Senior Scientist and Head	South 24 Parganas KVK
72.	Somnath Sardar	SMS (Agronomy)	South 24 Parganas KVK
73.	Aritra Sarkar	SMS (Horticulture)	South 24 Parganas KVK
74.	N C Sahu	Senior Scientist and Head	South 24 Parganas (Addl.) KVK
75.	Abhijit Ghoshal	SMS (Plant Protection)	South 24 Parganas (Addl.) KVK
76.	Swagatika Srichandan	Senior Scientist and Head	Sambalpur KVK
77.	Anannya Jena	SMS (Agri Extn)	Sambalpur KVK
78.	Jayant Kumar Pati	Senior Scientist and Head	Sundargarh-II KVK
79.	Samarendra Baral	SMS (Plant Protection)	Sundargarh-II KVK
80.	Sanjay Kumar Pradhan	SMS (Horticulture)	Sundargarh-II KVK
81.	Surajit Sarkar	Senior Scientist and Head	Uttar Dinajpur KVK
82.	Dhananjoy Mondal	SMS (Plant Protection)	Uttar Dinajpur KVK
83.	Moutusi Dey	SMS (Horticulture)	Uttar Dinajpur KVK

Message



डॉ. ऊधम सिंह गौतम
उप महानिदेशक (कृषि विस्तार)
Dr. U.S. Gautam
Deputy Director General (Agril. Extn.)

भारतीय कृषि अनुसंधान परिषद

कृषि अनुसंधान भवन-1, पुसा, नई दिल्ली 110 012

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Krishi Anusandhan Bhawan-I, Pusa, New Delhi – 110012

Phone: 91-11-25843277 (O)

E-mail: ddg-extn.icar@gov.in ; us.gautam@icar.gov.in



MESSAGE

Indian Council of Agricultural Research (ICAR) plays a central role in realizing the progressive increase in agricultural production. However, Indian agriculture is confronted with the challenges of soil health, water footprint, chemical use in agricultural practices and quality of agri produces on health and nutrition point of view.

A holistic approach that integrates nature and agricultural practices is need of the hour. In an era where technological advancements often overshadow our age-old practices, it is crucial to revisit the roots of agriculture. Natural Farming, a philosophy deeply rooted in working with nature rather than against it, emerges as a beacon of sustainable practices.

In the heart of sustainable agriculture lies with the wisdom of Natural Farming – a harmony with nature that nurtures both the soil and the soul. Natural farming is not just a method; it's a commitment to leaving a legacy of fertile land and a flourishing environment for generations to come. By working hand in hand with nature, we can sow the seeds of a sustainable future.

With the support of Department of Agriculture and Farmers Welfare (DAFW), Govt. Of India, Agricultural Extension Division of ICAR, New Delhi has implemented a project "Out scaling of Natural Farming through Krishi Vigyan Kendras" in 425 KVK network system in India to aware the farming community and promote the natural farming in the existing agricultural practices.

I am happy to know that the Natural Farming Project has been implemented successfully in Eastern India involving 17 KVKs of Odisha, 16 KVKs of West Bengal and one KVK of Andaman and Nicobar Island by ICAR-ATARI Kolkata.

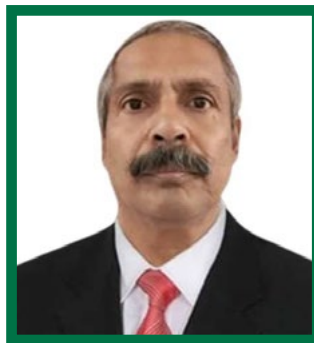
I must appreciate the entire team of ICAR-ATARI Kolkata and KVKs of Zone V bringing out this publication "Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India" for promotion and progress of Natural Farming in this Zone. The way the documentation on different activities of Natural Farming presented is praised worthy.

This document on Natural Farming will surely help to aware the farming community and encourage all the stakeholders for using various Natural Farming practices, nurturing the soil with natural resources and minimizing dependency on external inputs to save the mother earth as well as farming ecosystem.

I wish the success of Natural Farming in the days to come.


(U S Gautam)

Preface



ICAR-ATARI Kolkata has initiated Natural Farming to the grassroots of the farming community in Eastern India through 34 KVKs covering Odisha, West Bengal, Andaman and Nicobar Island since 2022. This project is basically revisiting the Indian age-old practices in the way of seeing the farming practices as a part of nature. Natural farming encourages farming without chemicals which relies on natural resources and integrates soil, crops and livestock for recovering soil health, and enhancing chemical free agricultural produces.

I thankfully acknowledge the guidance received from Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi and help, assistance and cooperation received from all Host Organizations, Deans/ Directors of Extension Education, entire KVK fraternity of this zone for implementing this Natural Farming Project successfully in Zone V. Based on the concept, various activities, such as, awareness programme, capacity-building training programme and demonstration have been undertaken with the active participation of the farmers in this zone. This is the first-time publication which portrays the achievements made so far under Natural Farming project in this zone.

Information about various events like training, workshop, meeting etc. organized by ICAR-ATARI Kolkata as well as KVKs have been reflected in this documentation. Bringing out this publication depicting a glimpse of various activities under Natural Farming initiatives has become possible only due to help and corporation of all the operating centres / KVKs.

I congratulate the Nodal Scientist, Dr. Avijit Haldar and the project staff for bringing out this publication "Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India".

A handwritten signature in blue ink, appearing to read 'Pradip Dey'.

(Pradip Dey)
Director
ICAR-ATARI, Kolkata

AN Overview



ICAR-Agricultural Technology Application Research Institute Kolkata has successfully implemented the project entitled, "Out scaling of Natural Farming through Krishi Vigyan Kendras" in 17 districts of Odisha, 13 districts of West Bengal and 1 district of Andaman and Nicobar Islands under Zone 5 in Eastern India since 2022. While the widespread adoption of chemical-intensive agriculture has brought about a range of adverse consequences for the farming and the farmers, economic dynamics within the farming communities, ecosystems, and society at large, transitioning towards natural farming practices has come into play a great role in mitigating the negative impacts of chemical-based agriculture and promoting healthier food systems and resilient agricultural landscapes.

The natural farming project has created huge awareness at the grassroots level towards natural farming practices and its benefits through organizing 579 awareness programmes involving 94,320 farmers, farm women and rural youth till December 2023. The farmers have witnessed the positive outputs of natural farming, while it is demonstrated on different crops at the farmer's field through 272 demonstration programmes with the active participation of the farmers in this zone. Besides, 34 Krishi Vigyan Kendras of this zone have built up the capacity of 2,200 farmers on the practices associated with natural farming through organizing 55 training programmes in this zone till December 2023. ICAR-ATARI Kolkata has released Rs. 90,10,000.00 during 2022-23 and Rs. 1,26,45,131.00 during 2023-24 as the first installment to 34 KVKs in this zone till date.

I express my deep sense of gratitude to the Hon'ble Deputy Director General, Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi and the Director of ICAR-Agricultural Technology Application Research Institute Kolkata for giving me an opportunity to implement such auspicious project for future sustainable agriculture in this zone.

I am grateful and thankful to the Vice Chancellors/ Directors of all Host Organizations, Deans/ Directors of Extension Education for their constant help and support to implement this project. I duly acknowledge the contributions of the Senior Scientists and Heads, PIs and Co-PIs of the project implementing Krishi Vigyan Kendras for providing data, facts and figures to prepare this document. I express my special thanks to the editors of this publication for providing valuable inputs time to time for preparing such document.

This first-time publication on "Accelerating Natural Farming to the Grassroot for Sustainability in Eastern India" is showcasing the initial progress of natural farming project in Eastern India. I believe that this document may be an eye-opener of the greater farming community to come forward in practicing natural farming in Eastern India.

A handwritten signature in blue ink, appearing to read 'Avijit Halder'.

(Avijit Halder)
Principal Scientist
ICAR-ATARI, Kolkata

CONTENTS

1	Introduction	9
2	Aims of the Project	9
3	Principles of Natural Farming	10
4	Four Pillars of Natural Farming	10
5	Standard Operating Procedures (SOPs) for Natural Farming Practices	11-12
6	Objectives of the Project	12
7	Activities Conducted under Natural Farming Project	12
8	Natural Farming Project in Odisha	13-14
9	Natural Farming Project in West Bengal	15-16
10	Natural Farming Project in Andaman & Nicobar Islands	17
11	Awareness Programme	18-31
	11.1 Odisha	20-24
	11.2 West Bengal	25-30
	11.3 Andaman & Nicobar Islands	31
12	Demonstration Programme	32-47
	12.1 Performance of Brinjal under Natural Farming	34-35
	12.2 Performance of Tomato under Natural Farming	35
	12.3 Odisha	36-41
	12.4 West Bengal	42-46
	12.5 Andaman & Nicobar Islands	47
13	Training Programme	48-58
	13.1 Odisha	50-54
	13.2 West Bengal	55-58
	13.3 Andaman & Nicobar Islands	58
14	Workshop/ Meeting	59-60
15	Success Stories on Natural Farming	61-65
	15.1 From soil to soul: The Natural Farming odyssey of the Bankura Farmer	61
	15.2 Tea cultivation under Natural Farming in Terai zone of West Bengal	62-63
	15.3 Lentil cultivation under Natural Farming in Old Alluvial zone of West Bengal	64
	15.4 Organic Madam	65
16	Publications and Coverage	66-67
	16.1 Leaflet/Booklet	66
	16.2 Newspaper Coverage	67
	16.3 Mass-Media Coverage	67

1. Introduction:

The World's population is predicted to expand to approximately 10 billion by 2050. It is expected that in a situation of modest economic growth, this will boost agricultural demand up to 50%, in comparison to 2013 (FAO 2017, the future of Food and Agriculture- Trends and challenges). Expanding food production and economic growth have often come at a heavy cost to the natural environment. There has been significant decrease in forest cover and biodiversity over the years. Groundwater sources are also getting depleted rapidly. High-input, resource-intensive farming systems have caused massive deforestation, water scarcity, soil depletion and high levels of greenhouse gas emissions. Under such situations, chemical-free, no external inputs, locally available resources and livestock-based Natural Farming may be the way of agricultural practices for sustainability.

Masanobu Fukuoka, a Japanese farmer and philosopher, first conceived the idea of growing crops in tune with nature in his book "The One-Straw Revolution" in 1975. Masanobu Fukuoka is considered as the Father of Modern-

day Natural Farming. In India, Padma Shree awardee and an agriculturist Shri. Subhash Palekar started searching for sustainable agricultural practices since 1986, discovered a natural system existing in forest ecology, experimented many farming strategies and finally concluded the concept of Zero Budget Natural Farming (ZBNF), which was further promoted by him massively first in Maharashtra and thereafter in many parts of the country. Hence, Shri. Subhash Palekar is known as Father of Natural Farming (NF) in India.

In order to deal with excessive fertilizer uses and its bad impact, Department of Agriculture & Farmers Welfare, Govt. of India sanctioned a flagship project entitled "Out scaling of Natural Farming through Krishi Vigyan Kendras" in 2022-23, aiming to aware, promote and adapt the natural farming practices in Indian agricultural system. Thus, a total of 34 Krishi Vigyan Kendras (KVKs) of this Zone V comprising of 17 KVKs of Odisha, 16 KVKs of West Bengal and one KVK of Andaman & Nicobar Islands were included under this project.

2. Aims of the Project:

- To preserve natural flora and fauna
- To restore soil health and fertility and soil's biological life
- To maintain diversity in crop production
- To utilize land and natural resources (light, air, water) efficiently
- To promote natural beneficial insects, animals and microbes in soil for nutrient recycling and biological control of pests and diseases
- To promote local breeds for livestock integration
- To use of natural/local resource-based inputs
- To reduce input cost of agricultural production

3. Principles of Natural Farming:



Fig. 1: A schematic diagram showing principles of natural farming

4. Four Pillars of Natural Farming:

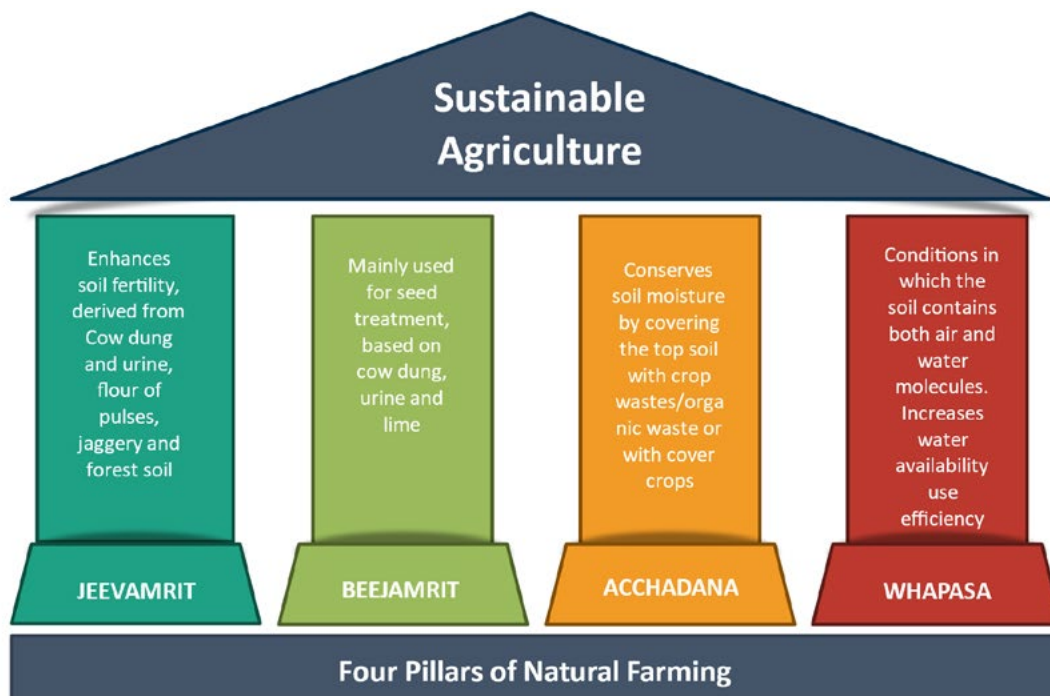


Fig. 2: A schematic diagram showing four pillars of natural farming

5. Standard Operating Procedures (SOPs) for Natural Farming Practices:

Natural Farming is an approach that focuses on working with natural processes to cultivate crops. Although both Natural Farming and Organic Farming method have many similarities but they are two different approaches. In case of Organic Farming, organic fertilizer and manures are used and added from external sources, but in Natural Farming, no external fertilizer is added to soil. Ploughing, interculture operation are required for organic farming, but in natural farming no ploughing, no tillage and weeding is done. There are some general Standard Operating Procedures (SOPs) for Natural Farming:

5.1 No external inputs:

Natural farming focuses on reducing dependence on external inputs such as chemical fertilizers and pesticides. Farmers are encouraged to use organic manures, crop residues, and other natural materials to enhance soil fertility and manage pests.

5.2 Soil health management:

Natural farming aims to maintain soil fertility. Several measures may be taken for soil health management.

- a. Regular soil testing to assess nutrient levels and pH.
- b. Incorporation of organic matter into the soil, such as compost or well-rotted manure.
- c. Avoiding excessive tilling to prevent soil erosion and disturbance of beneficial microorganisms.
- d. Application of Jeevamrit, a natural fermented mixture preparation of cow dung, cow urine, jaggery, gram flour, and soil, to the soil for enhancing microbial activity and improving nutrient availability.

5.3 Seed and its treatment:

- a. Use of quality seeds from non-genetically modified and disease-resistant local varieties.
- b. No seed treatment with fungicides, insecticides, *Trichoderma* spp., *Rhizobia* and plant-growth-promoting bacteria.
- c. Treatment of seeds with Beejamrutha, a fermented natural solution made from plant extracts, cow dung, and cow urine, to enhance seed germination, seedling vigor and overall plant growth.

5.4 Mulching:

- a. Application of mulch using organic materials like straw, leaves, or crop residues.
- b. Maintaining an adequate layer of mulch to conserve soil moisture, suppress weeds, and regulate soil temperature.

5.5 Conservation of water and air molecules in soil:

- a. No ploughing, no tillage and no weeding.
- b. Integration of cover crops to protect and improve the soil fertility, prevent soil erosion and suppress weeds.
- c. Selection of cover crops based on the specific needs of the main crops and local conditions.
- d. Application of effective and right irrigation methods to use water efficiently.
- e. Consideration of rainwater harvesting and storage for sustainable water use.

5.6 Crop residue recycling:

- a. Incorporation of crop residues into the soil to improve organic matter content.
- b. No burning of crop residues to prevent air pollution and nutrient loss.

5.7 Intercropping and diversification:

Natural farming promotes biodiversity in agriculture to enhance ecological balance by encouraging intercropping, cultivation of diverse crops and preservation of native plant varieties.

5.8 Crop rotation:

Natural farming directs crop rotations to break pest and disease cycles, reduce vulnerability to specific disease and improve soil health.

5.9 Eco-friendly disease control:

- a. No use of synthetic/ chemical pesticides, insecticides etc.
- b. Encouraging natural predators and beneficial insects.
- c. Use of Neemastra, Brahmastra, Agnistra, Dashaparni Ark etc. for controlling pests and diseases of plants.

5.10 Social awareness and farmers' participation:

1. Creation of social awareness and promotion of community participation of all stakeholders towards natural farming practices.
2. Validation and record keeping of natural farming practices with the active participation of the farmers.
3. Boosting mutual assistance and knowledge-sharing mechanism among the farmers for natural farming practices.

6. Objectives of the Project:

- I. To spread Awareness Programme
- II. To conduct Field Demonstration
- III. To organize Training Programme

7. Activities Conducted under Natural Farming Project:

Table 1: Total activities conducted during 2022-23

Awareness Programme	No. of Participants	Training Programme	No. of Beneficiaries	No. of Demonstration conducted
579	94,320	55	2200	272

8. Natural Farming Project in Odisha:

Total 17 KVKs in Odisha are implementing the Natural Framing Project.




Fig. 3: A map of Odisha where  denoting natural farming operational districts

Table 2: Agro-climatic zone and major cropping sequence of operational districts in Odisha

Agro-climatic Zone	Name of KVK	Major Cropping Sequence
North Eastern Coastal Plain	Balasore	Paddy-Vegetables
	Bhadrak	Paddy -Pulses -Vegetables
East & South Eastern Coastal plain	Kendrapara	Paddy-Pulses
	Nayagarh	Paddy-Vegetables
	Puri	Paddy-Vegetables
	Cuttack	Paddy-Vegetables
	Jagatsinghpur	Paddy-Vegetables
Western Central Table Land	Baragarh	Paddy- Vegetables-Fallow
	Sambalpur	Vegetables-Vegetables
North Central Plateau	Mayurbhanj-II	Paddy-Maize-Vegetables
	Keonjhar	Paddy - Vegetables
Mid Central Table Land	Angul	Vegetables -Vegetables
	Dhenkanal	Vegetables-Vegetables
North Western Plateau	Sundargarh-II	Vegetables -Vegetables-Vegetables
North Eastern Ghat	Kandhamal	Vegetables- Vegetables
Western Undulating Zone	Kalahandi	Vegetables-Vegetables
Eastern Ghat Highland	Koraput	Paddy-Vegetables

9. Natural Farming Project in West Bengal

Total 16 KVKs in West Bengal are implementing the Natural Farming Project.



Fig. 4: A map of West Bengal where  denoting natural farming operational districts

Table 3: Agro-climatic Zone and Major cropping sequences of KVKs under Natural Farming Project in West Bengal

Agro-Climatic Zone	Name of KVK	Major Cropping Sequences
Red & Laterite	Bankura	Paddy-Oilseed/Pulses/Vegetables-Paddy
	Jhargram	Fallow-Paddy-Vegetables
	Purulia	Fallow-Paddy-Vegetables
Old Alluvial	Murshidabad	Pulses/Vegetables-Vegetables
	Murshidabad (Addl.)	Vegetables-Jute-Pulses
	Malda	Paddy/Black gram - Vegetables/Lentil - Jute/Fallow
	Dakshin Dinajpur	Jute-Fallow-Vegetables
New Alluvial	Hooghly	Paddy-Potato/Vegetables/Mustard- Sesame/Vegetables
	Howrah	Rice-Potato/Vegetables/Vegetables
	North 24 Parganas	Paddy-Mustard-Vegetables/Sesame
	North 24 Parganas (Addl)	Jute- Kharif Paddy/Vegetables-Rabi Vegetables
Terai	Uttar Dinajpur	Paddy-Mustard/Potato-Maize
	Cooch Behar	Jute-Paddy-Vegetables
Saline	South 24 Parganas	Paddy - Moong/Okra/Lathyrus/Cotton
	South 24 Parganas (Addl)	Paddy- Vegetablse-Vegetables, Paddy-Fallow-Green gram
Hill	Darjeeling	Maize-Paddy-Vegetables

10. Natural Farming Project in Andaman & Nicobar Islands

Port Blair KVK is implementing Natural Farming Project in Andaman & Nicobar Islands.

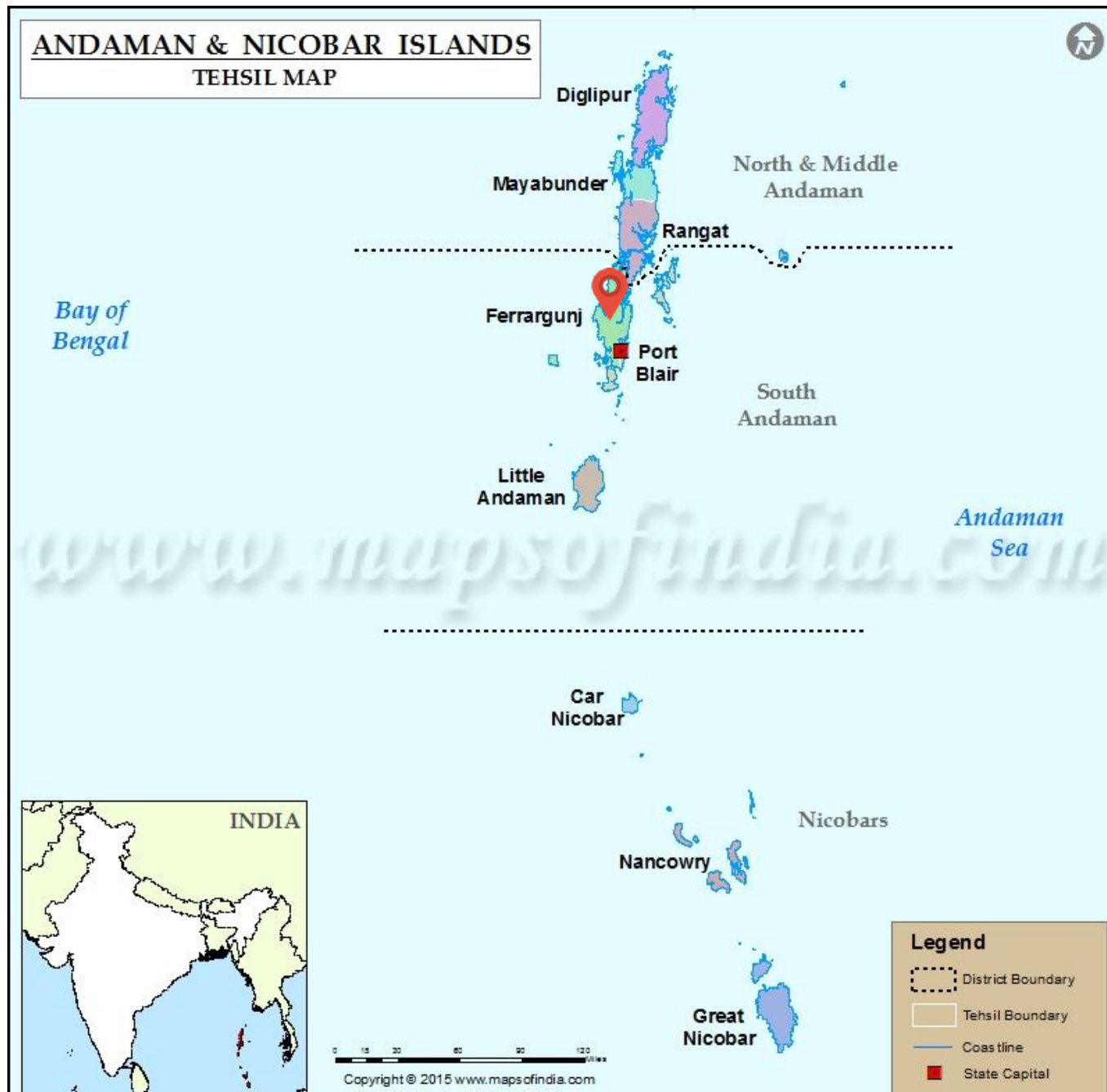



Fig. 5: A map of Andaman and Nicobar Islands where  denoting natural farming operational district

Table 4: Agro-climatic zone and major cropping sequence of operational districts in Andaman and Nicobar Islands

Agro-Climatic Zone	Name of KVK	Major Cropping Sequence
The Islands Region	Port Blair	Vegetables-Vegetables



Awareness Programme

প্রাকৃতিক কৃষি: মান

জীবামৃত
ছুর তলায় অদূষিত মাটি, গোবর, গোমূত্র ও সনের মিশ্রণ-জৈব সার

বীজামৃত
সামান্য চুন সহযোগে গোবর ও গোমূত্রের মিশ্রণ-বীজ শোধক

আচ্ছাদন
আবরণ শস্য, ফসলের অবশিষ্টাংশ, শুকনো খড়ের আবরণ

ওয়াপসা
এমন একটি অবস্থা যেখানে জলের অণু এবং বায়ুর অণুগুলি মাটিতে অবস্থিত থাকে


পদ্ধতিতে ফসলের শত্রু নিয়ন্ত্রণ


বন্ধু পোকা সংরক্ষণ


খামার / গোবর সারের ব্যবহার


সন


ফসল বৈচিত্রকরণ


সবুজ

11. Awareness Programmes

Awareness programmes include exhibition camps, meeting, kisan mela with main focus on natural farming, field day, mobile tableau for mass campaign, awareness, workshop for extension functionaries as well as distribution of leaflets, literatures, posters and other extension materials on different facts of natural farming for making the farmers aware about the natural farming. Total awareness programme conducted in this zone is presented in Fig. 6.

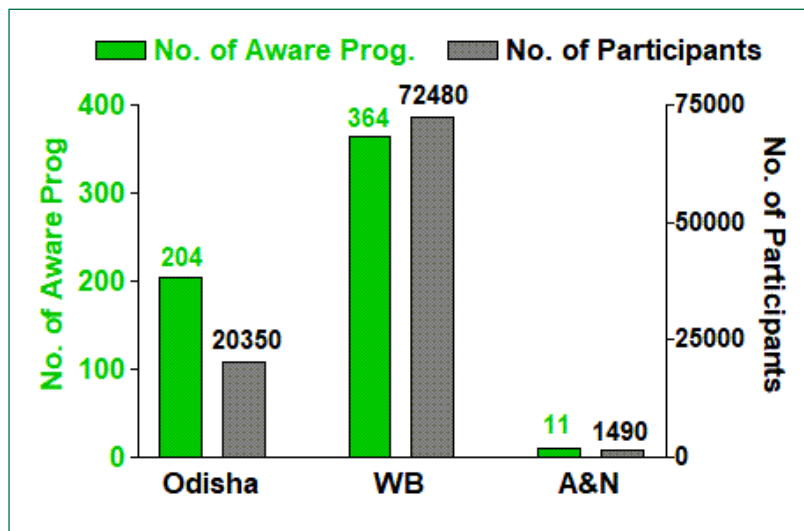


Fig. 6: State-wise total awareness programme conducted and total number of participants till December 2023

11.1 Odisha

Total of 204 awareness programmes involving 20,350 farmers were organized in Odisha as presented in Table 5.

Table 5: KVK-wise awareness programme conducted in Odisha till December 2023

Sl. No.	Name of KVK	No. of awareness programmes	No. of Participants
1	Angul	9	350
2	Balasore	14	890
3	Baragarh	18	610
4	Bhadrak	19	1335
5	Cuttack	7	352
6	Dhenkanal	11	695
7	Jagatsinghpur	28	854
8	Kalahandi	5	550
9	Kendrapara	11	7000
10	Keonjhar	18	3080
11	Koraput	9	400
12	Kandhmal	7	395
13	Mayurbhanj-II	6	511
14	Nayagarh	13	630
15	Puri	11	1445
16	Sambalpur	6	778
17	Sundargarh-II	12	475
Total		204	20,350



Fig. 7: Awareness programme among the Women SHG members conducted by Balasore KVK



Fig. 8: Tableau of natural farming was inaugurated at Bhadrak KVK



Fig. 9: Tableau of natural farming was inaugurated at Jagatsinghpur KVK



Fig. 10: Awareness programme conducted by Nayagarh KVK



Fig. 11: Awareness programme conducted by Mayurbhanj-II KVK



Fig. 12: Play “Amruta Dhara” with the main theme of natural farming was organized by Puri KVK



Fig. 13: Awareness Programme conducted by Kalahandi KVK



Fig. 14: Awareness Programme conducted by Sundargarh-II KVK

11.2 West Bengal

Total of 364 awareness programmes involving 72,480 farmers organized in West Bengal as presented in Table 6.

Table 6: KVK-wise awareness programme conducted in West Bengal till December 2023

Sl. No.	Name of KVK	No. of awareness programmes	No. of Participants
1	Bankura	39	1830
2	Cooch Behar	12	2428
3	Dakshin Dinajpur	12	669
4	Darjeeling	8	771
5	Howrah	15	820
6	Hooghly	12	1394
7	Jhargram	8	1299
8	Malda	12	596
9	Murshidabad	34	1512
10	Murshidabad (Addl.)	37	8432
11	North 24 Parganas	63	4400
12	North 24 Parganas (Addl.)	10	1150
13	Purulia	10	1590
14	South 24 Parganas	35	1824
15	South 24 Parganas (Addl.)	21	3432
16	Uttar Dinajpur	36	40333
TOTAL		364	72,480



Fig. 15: Presence of the Hon'ble Secretary (DARE) & DG (ICAR) along with Vice-Chancellor, BCKV and Director, ATARI-Kolkata in an awareness programme organized by Bankura KVK



Fig. 16: Awareness programme conducted by Malda KVK



Fig. 17: Rally on natural farming organized by Howrah KVK



Fig. 18 Tableau of natural farming was inaugurated by South 24 Parganas (Addl.) KVK



Fig. 19: A Tableau on natural farming was showcased by Cooch Behar KVK



Fig. 20: Awareness programme conducted by Murshidabad KVK



Fig. 21: Tableau on natural farming was showcased by Purulia KVK



Fig. 22: Awareness programme was conducted by Hooghly KVK



Fig. 23: Tableau along with cycle rally conducted by Murshidabad (Addl.) KVK



Fig. 24: Awareness Programme conducted by Darjeeling KVK



Fig. 25: Tableau of natural farming was inaugurated at North 24 Parganas KVK

11.3 Andaman & Nicobar Islands

A total of 11 awareness programmes involving 1490 farmers was conducted in Andaman & Nicobar Islands as presented in Table 7.

Table 7: KVK-wise total awareness programme conducted in Andaman & Nicobar Islands till December 2023

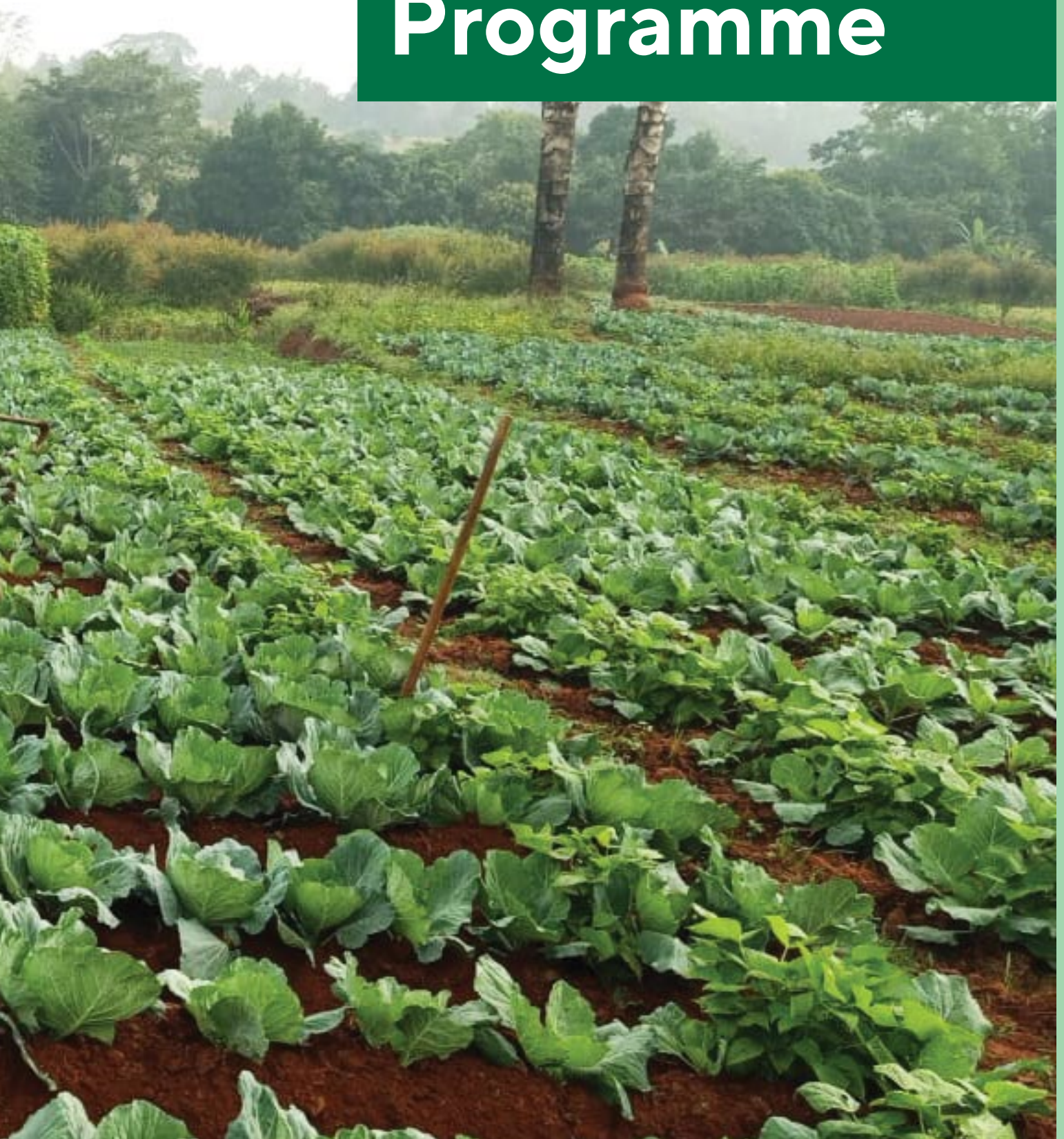
Sl. No.	Name of KVK	No. of awareness programmes	No. of Participants
1	Port Blair	11	1490
Total		11	1490



Fig. 26: Awareness programme conducted by Port Blair KVK



Demonstration Programme



12. Demonstration Programmes

Demonstration programmes include preparation and application of jeevamrit and ghanajeevamrit in soil, seed treatment with beejamrit and foliar application of neemasthra, brahmastrha, agniasthra and sour butter milk for insect pest and disease management. Local crop varieties were selected for demonstrations. Intercropping/ mixed cropping was also followed in demonstration field. Straw mulching is followed to conserve soil moisture. Ridge and furrow irrigation method is followed to maintain whapasa. Total demonstration programmes conducted in this zone is presented in Fig. 27.

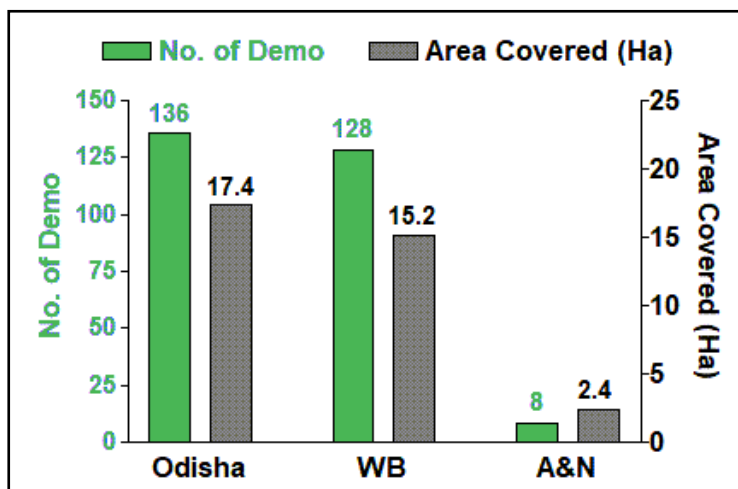


Fig. 27: State-wise total demonstration programme conducted during 2023

12.1 Performance of Brinjal under natural farming

To popularize natural farming practices (NFPs) in place of chemicals and fertilizer-based farming, NFPs covering jeevamrit, beejamrit, neemasthra, agniasthra and others were demonstrated in 31 districts of Odisha, West Bengal, Andaman and Nicobar Islands. The results of NFPs on brinjal depicted that the cost of cultivation per hectare for brinjal (Rs. 1,14,083.59) under NFPs was lower ($P \leq 0.05$) than the cost of cultivation per hectare for brinjal (Rs. 1,56,938.78) grown without NFP. Though the average yield per hectare of brinjal (259.71 ± 11.66 q) under NFP was less ($P \leq 0.05$) as compared to brinjal (288.93 ± 6.70 q) harvested from the plot without NFP. Benefit Cost (BC) Ratio for brinjal from NFP plot (3.14) was higher ($P \leq 0.05$) as compared to brinjal harvested from the plot without NFP (2.67). The net income per hectare for brinjal from NFP plot (Rs. 2,39,005.36) did not differ ($P > 0.05$) with the net income per hectare for brinjal collected from the plot without NFP (Rs. 2,15,473.57).

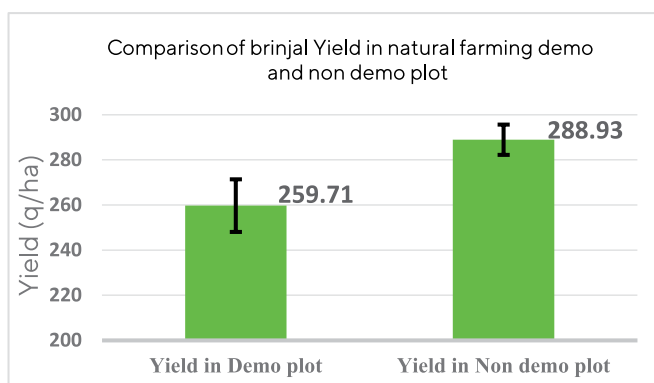


Fig 28: Comparison of brinjal yield in natural farming demo plot and non-demo plot

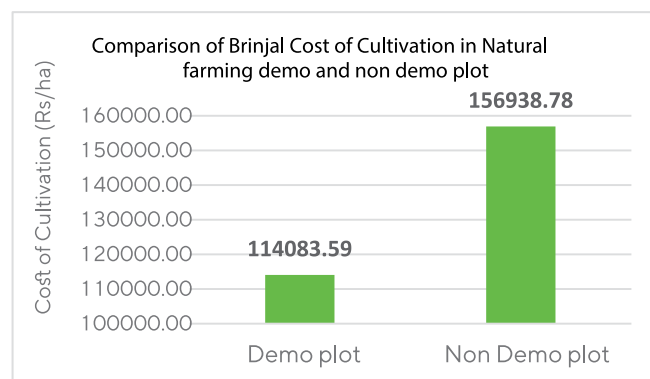


Fig. 29: Comparison of brinjal cost of cultivation in natural farming demo plot and non-demo plot

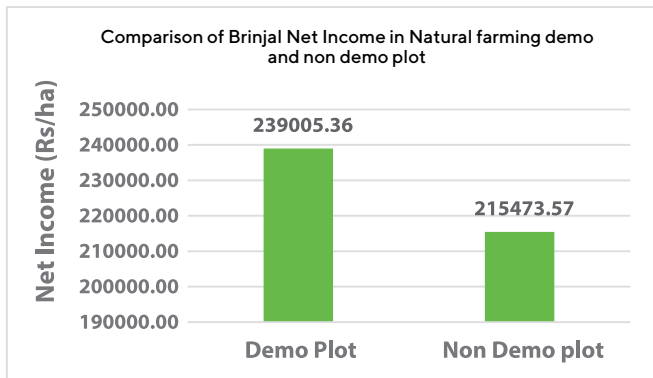


Fig 30: Comparison of brinjal net income in natural farming demo plot and non-demo plot

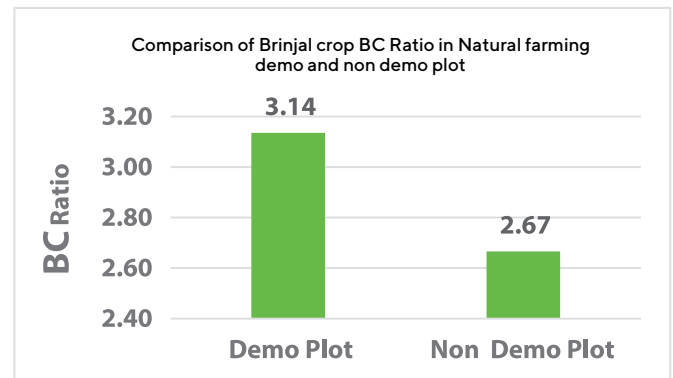


Fig 31: Comparison of brinjal BC ratio in natural farming demo plot and non-demo plot

12.2 Performance of Tomato under natural farming

The results of NFPs on tomato depicted that the cost of cultivation per hectare for tomatoes (Rs. 90,893.79) under NFPs was lower ($P \leq 0.05$) than the cost of cultivation per hectare for tomatoes (Rs. 1,27,591.14) grown without NFP. The average yield per hectare tomatoes (240.70 ± 12.34 q) under NFP was less ($P \leq 0.05$) as compared to tomato (310.45 ± 15.35 q) harvested from the plot without NFP. However, BC Ratio for tomato from NFP plot (3.36) was higher ($P \leq 0.05$) as compared to tomato harvested from the plot without NFP (2.88). The net income per hectare for tomato from NFP plot (Rs. 2,12,302.56) did not vary ($P > 0.05$) with the net income per hectare for tomato collected from the plot without NFP (Rs. 2,24,132.21).

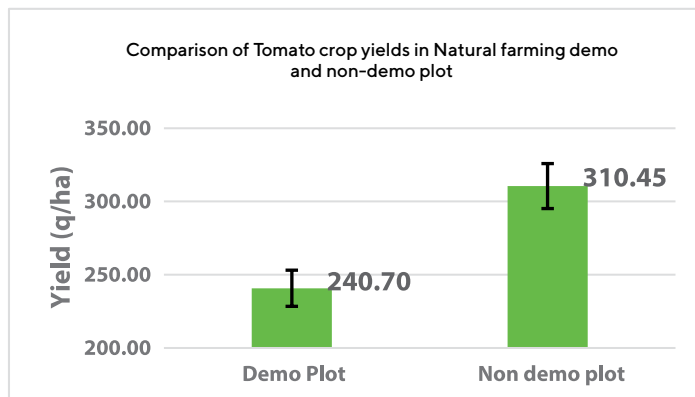


Fig 32: Comparison of tomato yield in natural farming demo plot and non-demo plot

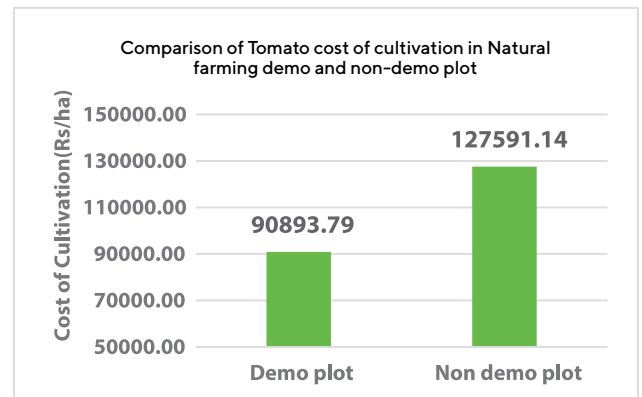


Fig 33: Comparison of tomato cost of cultivation in natural farming demo plot and non-demo plot

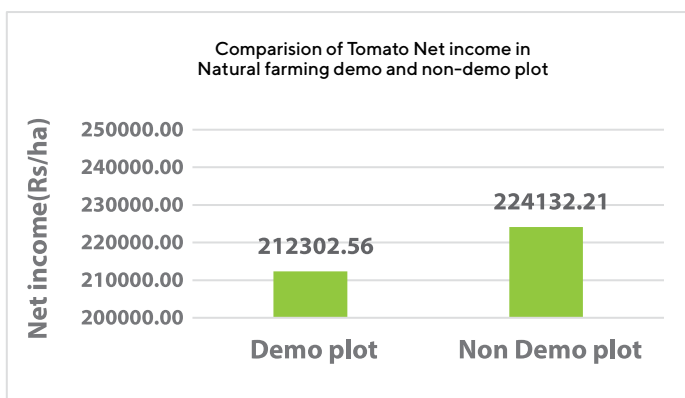


Fig 34: Comparison of tomato net income in natural farming demo plot and non-demo plot

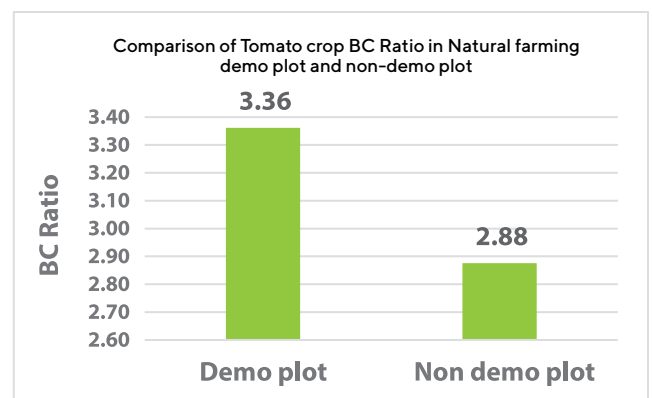


Fig 35: Comparison of tomato BC ratio in natural farming demo plot and non-demo plot

12.3 Odisha

Demonstration programmes conducted in Odisha is presented in Table 8.

Table 8: KVK-wise demonstration programme conducted in Odisha till December 2023

Sl. No.	Name of KVK	No. of demonstration conducted	Crops taken for demonstration
1	Angul	8	Brinjal, Bitter gourd, Cowpea, Tomato, Beans, Pointed gourd
2	Balasore	8	Tomato, French bean, Marigold, Coriander, Cauliflower, Spinach
3	Baragarh	8	Pumpkin, Mustard, Brinjal, Turmeric, Marigold
4	Bhadrak	8	Brinjal, Cowpea, Okra, Bitter gourd, Pointed gourd, Marigold
5	Cuttack	8	Cowpea, Okra, Bitter gourd
6	Dhenkanal	8	Cowpea, Bitter gourd, Okra, Ridge gourd, Cucumber
7	Jagatsinghpur	8	Brinjal, Cowpea, Marigold, Tomato, Broccoli, Sweetcorn, Potato, Bitter gourd
8	Kalahandi	8	Tomato, Brinjal, Maize, Okra
9	Kendrapara	8	Tomato, Beans, Potato, Brinjal, Cowpea, Marigold
10	Keonjhar	8	Brinjal, Coriander, Tomato, Spinach
11	Koraput	8	Cauliflower, Cabbage, Bean, Tomato, Marigold
12	Kandhmal	8	Garden pea, Mustard, Sunflower
13	Mayurbhanj-II	8	Mustard, Tomato, Chilli, Brinjal, Cowpea, Coriander, Marigold
14	Nayagarh	8	Brinjal, Tomato, Chilli, Okra, Finger Millet
15	Sambalpur	8	Chilli, Tomato, Brinjal
16	Sundargarh-II	8	Brinjal, Tomato, Cabbage, Turmeric
17	Puri	8	Cabbage, Tomato, brinjal and Turmeric



Fig 36: Demonstration on hoeing in chilli conducted by Sambalpur KVK



Fig. 37: Demonstration on organic turmeric treated with natural farming components conducted by Baragarh KVK



Fig. 38: Visit of Dr. Keshava, Principal Scientist (Agril. Extension) and Nodal Scientist, Natural Farming, ICAR, New Delhi in demonstration plot on straw mulching in Okra conducted by Kendrapara KVK



Fig 39: Demonstration on straw mulching in cabbage field conducted by Koraput KVK



Fig 40: Visit of DAESI students in demonstration plot on garden pea treated with jeevamrit, beejamrit, neemastra, agnitra as conducted by Kandhamal KVK



Phone: 20.359353
 Mobile: 84.894049
 Area: 131.46±4 m
 Length: 1.7 m

Fig. 41: Applying jeevamrit on tomato intercropping with marigold as conducted by Nayagarh KVK



Fig. 42: Demonstration plot of bottle gourd using all the natural farming components as conducted by Cuttack KVK



Fig 43: Farmer's field visit by Dr. Avijit Halder, Nodal Scientist, Natural Farming of ICAR-ATARI, Kolkata organized by Bhadrak KVK.



Fig. 44: Application of ghanajeevamrita at farmer's field with the technical help of Dhenkanal KVK



Fig. 45: Acchadana/Mulching practices in demonstration plot by Mayurbhanj-II KVK

12.4 West Bengal

Demonstration programmes conducted in West Bengal is presented in Table 9.

Table 9: KVK-wise Demonstration programme conducted in West Bengal till December 2023

Sl. No.	Name of KVK	No. of demonstration conducted	Crops taken for demonstration
1	Bankura	8	Brinjal, Pea, Cabbage, Cauliflower, Cowpea, Coriander, Spinach, Tomato, Radish, Fenugreek
2	Cooch Behar	8	Tomato, Brinjal, Cauliflower, Broccoli Cabbage,
3	Dakshin Dinajpur	8	Wheat, Mustard, Lentil
4	Darjeeling	8	Cauliflower, Cabbage, Garden Pea, Coriander
5	Howrah	8	Brinjal, Tomato
6	Hooghly	8	Potato, Cauliflower, Cabbage, Pea, Pumpkin, Tomato, Coriander, Fenugreek, Carrot, Radish
7	Jhargram	8	Tomato, Cauliflower
8	Malda	8	Brinjal, Coriander, Spinach, Maize
9	Murshidabad	8	Groundnut, Pointed gourd, Ridge gourd, Okra, Leafy vegetables
10	Murshidabad (Addl.)	8	Maize, Cowpea, Cabbage, Coriander, Pointed gourd
11	North 24 Parganas	8	Mustard, Cauliflower, Tomato, Brinjal
12	North 24 Parganas (Addl.)	8	French Bean, Tomato, Cabbage
13	Purulia	8	Cauliflower, Tomato, Garden Pea, Onion, Cabbage, Spinach
14	South 24 Parganas	8	Cotton, Rice, Green gram, Okra
15	South 24 Parganas (Addl.)	8	Broccoli, Cauliflower, Coriander, Spinach, Radish, Tomato, Cabbage, Cucumber, Green gram
16	Uttar Dinajpur	8	Tomato, Brinjal, Cauliflower, Cabbage, Broccoli, Amaranthus, Spinach, Coriander



Fig. 46: Natural farming demonstration plot of Bankura KVK



Fig. 47: Application of jeevamrit at farmer's field conducted by South 24 Parganas (Additional) KVK



Fig. 48: Mulching practices in demonstration plot conducted by North 24 Parganas (Additional) KVK



Fig. 49: Brinjal demonstrated with all natural farming components conducted by Uttar Dinajpur KVK



Fig. 50: Cauliflower under natural farming practices demonstrated by North 24 Parganas KVK



Fig 51: Mulching practices in tomato-based demonstration plot developed by Murshidabad Additional KVK



Fig. 52: Application of jeevamrit in potato based intercropping plot developed by Jhargram KVK



Fig 53: Acchadana/Mulching practices at farmer's field in hilly areas shown by Darjeeling KVK

12.5 Andaman & Nicobar Islands

Demonstration programmes conducted in Andaman & Nicobar Islands is presented in Table 10.

Table 10: KVK-wise demonstration programmes completed in Andaman & Nicobar Islands till December 2023.

Sl. No.	Name of KVK	No. of demonstration conducted	Crops taken for demonstration
1	Port Blair	8	Cauliflower, Okra, Cabbage, Brinjal, Sugarcane



Fig 54: Mulching practices at cabbage based intercropping system developed by Port Blair KVK



Training Programme



13. Training Programmes

Training programmes covered preparation of different bio-formulations of natural farming (jeevamrit, beejamrit, ghanajeevamrit) and their applications, preparation of neemmastra, agnitra, dashpani ark, brhamastra for pest and disease management, Package and practices for rabi crop cultivation following natural farming technology etc. Each training programme had two days duration. Total training programme conducted till December 2023 in this zone is presented in Fig. 55.

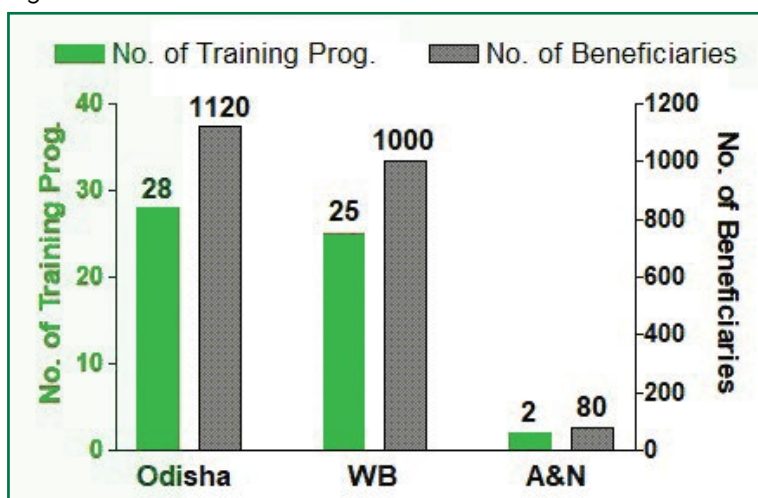


Fig 55: State-wise total training programmes conducted and total number of participants till December 2023

13.1 Odisha

Training programmes conducted in Odisha is presented in Table 11.

Table 11: KVK-wise training programme organized in Odisha till December 2023

Sl. No.	Name of KVK	No. of programme	No. of Beneficiaries
1	Angul	3	120
2	Balasore	2	80
3	Baragarh	3	120
4	Bhadrak	1	40
5	Cuttack	1	40
6	Dhenkanal	1	40
7	Jagatsinghpur	2	80
8	Kalahandi	1	40
9	Kendrapara	2	80
10	Keonjhar	1	40
11	Koraput	2	80
12	Kandhamal	1	40
13	Mayurbhanj-II	2	80
14	Nayagarh	1	40
15	Puri	1	40
16	Sambalpur	2	80
17	Sundargarh-II	2	80
Total		28	1120



Fig 56: Training programme on package of natural farming practices for rabi season conducted by Kendrapara KVK



Fig 57: Training programme on preparation of different natural farming inputs organized by Sambalpur KVK



Fig 58: Method demonstration on jeevamrit, beejamrit organized by Angul KVK



Fig 59: Training programme on making different natural farming inputs conducted by Dhenkanal KVK



Fig 60: Training programme on preparation of different natural farming inputs conducted by Koraput KVK



Fig 61: Training programme on preparation of jeevamrit, beejamrit, neemastra organized by Keonjhar KVK



Fig 62: Training programme on preparation of various natural farming inputs and their application in crop field conducted by Balasore KVK



Fig 63: Training programme on preparation of different natural farming components along with application was conducted by Kandhamal KVK

13.2 West Bengal

Training programmes conducted in West Bengal is presented in Table 12.

Table 12: KVK-wise training programme organized in West Bengal till December 2023

Sl. No.	Name of KVK	No. of programme	No. of Beneficiaries
1	Bankura	2	80
2	Cooch Behar	2	80
3	Dakshin Dinajpur	1	40
4	Darjeeling	1	40
5	Howrah	1	40
6	Hooghly	2	80
7	Jhargram	1	40
8	Malda	2	80
9	Murshidabad	1	40
10	Murshidabad (Addl.)	2	80
11	North 24 Parganas	2	80
12	North 24 Parganas (Addl.)	1	40
13	Purulia	1	40
14	South 24 Parganas	2	80
15	South 24 Parganas (Addl.)	2	80
16	Uttar Dinajpur	2	80
Total		25	1000



Fig 64: Skill development training on preparation of different bio-inputs and field application was conducted by Murshidabad KVK



Fig 65: Training programme on inputs preparation under natural farming and their field-oriented application conducted by Dakshin Dinajpur KVK



Fig 66: Training was imparted on methods of preparation of different components of natural farming and their role and application by Hooghly KVK



Fig 67: Training on preparation of jeevamrit, beejamrit, neemastra, dashaparni arka, brahmastra, saunth astra conducted by South 24 Parganas KVK



Fig 68: Training programme on preparation of different natural farming inputs and their field level application was organized by Cooch Behar KVK



Fig 69: Training programme on field level application of different natural farming inputs organized by Uttar Dinajpur KVK

13.3 Andaman & Nicobar Islands

Training programme conducted in Andaman & Nicobar Islands is presented in Table 13.

Table 13: KVK-wise training programme organized in Andaman & Nicobar Islands till December 2023

Sl. No.	Name of KVK	No. of programme	No. of Beneficiaries
1	Port Blair	2	80



Fig 70: Training on preparation of different natural farming inputs organized by Port Blair KVK

14. Workshop/ Meeting

(i) Action plan workshop:

One virtual workshop for developing action plan for FY 2022-23 on 'Out scaling of Natural Farming through KVKs' of ICAR ATARI Kolkata was organized on 9th November, 2022. A total of 34 KVKs from West Bengal, Odisha and Andaman & Nicobar Islands participated in the workshop. Dr. N. K. Bharat, Prof. of UHF, Solan and expert of natural farming described the process of preparation of various components, their application, methodology and outcome of natural farming. All the KVKs presented their recent activities in the workshop.

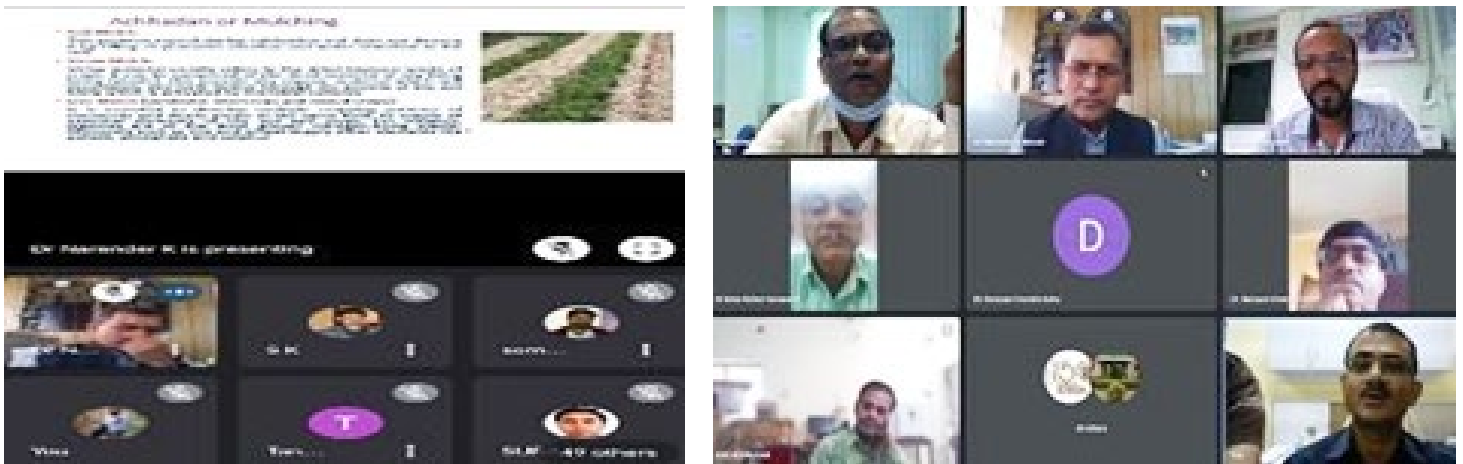


Fig 71: Virtual meeting on action plan finalization for FY 2022-23

(ii) Capacity Building Workshop:

Capacity building programme on Natural Farming for West Bengal KVKs was organized by ICAR-ATARI, Kolkata at Sasya Shyamala Krishi Vigyan Kendra, Narendrapur on 29th November, 2022. This workshop was attended by Heads and SMSs of all 16 KVKs from West Bengal. Dr. F. H. Rahman, the then Nodal Officer, Natural Farming, briefed about the objectives and principles of the natural farming. Swami Shivapurnanandaji Maharaj, Administrative Head, IRDM, RKMVERI, proposed to make innovative models and strategies for agricultural sustainability through natural farming to reduce the cost of cultivation and the need for chemical fertilizer. Dr. A. K. Singh, Former VC of BAU, Sabour emphasized the importance of Natural Farming in the present-day context. Dr. S. K. Roy, the then Director I/C, ICAR-ATARI Kolkata proposed for public awareness and participation to bring about a change in attitude. One leaflet of Sasya Shyamala KVK on Natural Farming was released during the programme.



Fig 72: Workshop organized at Sasya Shyamala Krishi Vigyan Kendra

(iii) Workshop-cum-Capacity Building Programme:

The capacity building programme on Natural Farming of KVK personnel of Odisha (17 KVKs), West Bengal (16 KVKs) and Andaman & Nicobar Islands (1 KVK) was organized by ICAR-ATARI, Kolkata on February 15-16, 2023 at West Bengal University of Animal and Fishery Sciences (WBUAFS), Kolkata. The Heads of all 34 KVKs along with Nodal SMSs of the respective KVK attended the workshop. Prof. T. K. Mondal, the then Vice-Chancellor, WBUAFS, Kolkata urged the scientists for strategic implementation of natural farming components to build a green and glorious nation. Dr. P. Dey, Director, ICAR-ATARI addressed the importance of soil health management, gender participation, decreasing cost of production, and increasing production to dovetail 3F of agro-ecosystem i.e; Farm-Farmer-Farming.



Fig 73: Workshop cum capacity building programme at WBUAFS, Kolkata

(iv) Virtual Meeting on Action plan:

Action plan meeting on Natural farming for FY 2023-24 was organized by ICAR-ATARI Kolkata on 9th Nov 2023. Total 34 KVKs from West Bengal, Odisha and Andaman & Nicobar Islands participated in this workshop. Dr. Avijit Halder, Nodal Scientist of this project, presented a brief overview on how to develop action plan as per allocated fund for FY 2023-24.

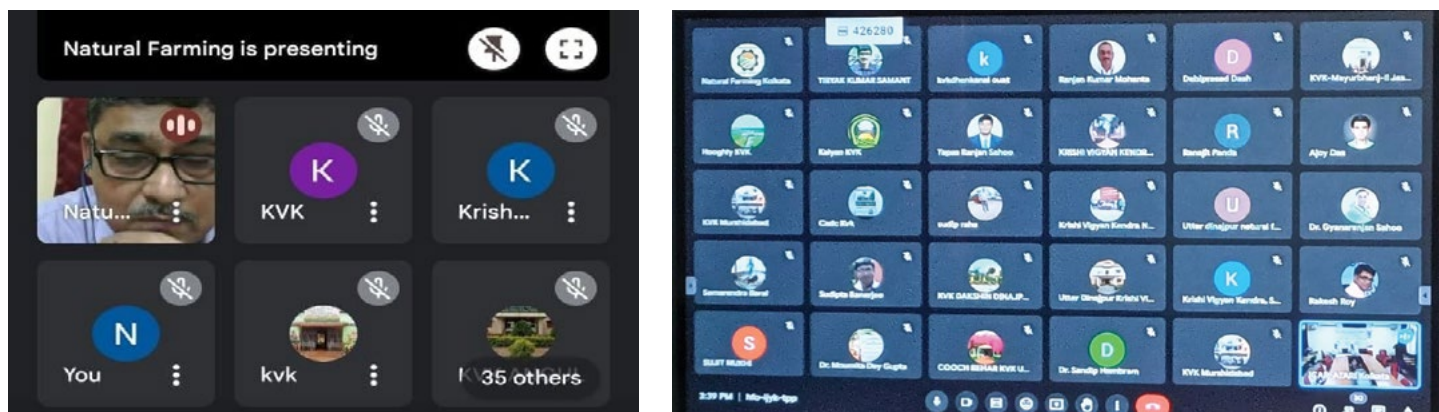


Fig 74: Virtual meeting on action plan finalization for FY 2023-24

(v) Virtual meeting on Activities and Fund utilization:

On November 17, 2023, an online meeting regarding the action plan and fund utilization was organized. All 34 KVKs from this zone participated in the meeting. Several suggestions came out from this meeting, including the necessity of soil testing in natural farming demo plot and non-demo plot.

(vi) Review Meeting on Video making:

On December 21, 2023, an online review meeting about activities undertaken in FY 2023-24 and video making on Natural farming was conducted. The nodal SMSs of all 34 KVKs participated in this meeting.

15. Success Stories on Natural Farming

15.1 From soil to soul: The Natural Farming odyssey of the Bankura Farmer



Name: Mr. Bhramar Baru

Address: Godardihi, Borjora, Bankura

- Mr Baru Bramar of sylvan village of Bankura wanted to create a farm that not only produce healthy crop but also cared for the environment.
- Mr Bramar Baru decided to embark on journey towards sustainable and natural farming practices.
- Mr Baru adopted a variety of natural techniques, including intercropping, achhadan (bio mulching), use of bijamrit, jeevamrit, ghanajivamrit, agneyastra. He owns a pair of indigenous cow and buffaloes.
- As the season unfolded, Mr Baru noticed a significant decrease in number of irrigations, more resistant of crops to pests and diseases and increase of shelf life of harvested crop.
- The positive ripple effect extended beyond the Borjora block. His natural farm became a beacon of hope, leaving a legacy of harmony, a testament to the transformative power of natural farming.
- The use of chemical fertilizer became a distant memory, as the farm embraced a harmonious balance between nature and agriculture. The comparative results between natural farming and conventional farming is shown in Table 14.

Table:14 Comparison between natural farming and conventional farming

Parameters Natural farming (1 ha)		Conventional farming (1 ha)
Crop	Cabbage (0.33) + Colored cauliflower carotina (0.17) + Tomato (0.33) + Broccoli (0.17)	Cabbage (0.33) + Colored cauliflower carotina (0.17) + Tomato (0.33) + Broccoli (0.17)
Cost of cultivation (Rs.)	46,500.00	77,400
Production (q)	105.1	145.5
Gross return (Rs.)	1,05,000	1,25,000
Net return (Rs.)	58,500	47,600
B: C ratio	2.25:1	1.61:1



Fig 75: Use of natural farming components by Mr. Baru Bramar

15.2 Tea cultivation under Natural Farming in Terai zone of West Bengal



Name: Mr. Digen Singh

Address: Premchand gachh village, Chopra, Uttar Dinajpur

- Mr. Digen Singh was attached with Uttar Dinajpur KVK from since 2021 and he attained different training programme and acquainted with KVK activities. He attained the awareness programme on natural farming and visited ongoing demonstration plots under natural farming and interacted with the practicing farmers and finally he was fully convinced for natural farming and agreed to continue with natural farming in his Tea Garden.
- Mr. Digen Singh attained the hands-on training on natural farming at Uttar Dinajpur KVK.
- After introducing of natural farming practices in his small tea garden, the cost of cultivation was reduced to 27.89% than the earlier chemical applied farming and the yield was increased 25% after natural farming.
- The net return or profit increased 112% in natural farming than the earlier chemical farming. The quality of leaf was improved after adoption of natural farming.
- The demand of tea leaves produced under natural farming has been increased.

Table 15: Cost of cultivation for 1-acre tea cultivation in Chemical Farming vs. Natural Farming

Chemical Farming			Natural Farming		
Particulars	No/unit	Amount (Rs.)	Particulars	No/unit	Amount
Cow dung & labour for Application	4 cart loads	3000.00	Cost of ingredients of Ghana jeevamrita	400 kg	5000.00
Fuel for irrigation (10-12 times)	48 l	5000.00	Fuel for irrigation (10-12 times)	48 l	5000.00
Labour of irrigation (10-12 times)	36 nos.	9000.00	Labour of irrigation (10-12 times)	36 nos.	9000.00
Pesticides, zyme & micronutrient (16 times)	3500 per times	56000.00	Preparation cost of Jeevamrita, Nemastra and Agniastra, bharamstra and sour milk (25 times)	700 per times	17500.00
Labour for application of pesticides, zyme & micronutrient	64 nos.	12800.00	Labour for application of Jeevamrita, Nemastra and Agniastra, bharamstra and sour milk	100 nos.	20000.00
Fertilizer cost		12500.00	Fertilizer cost	-	0.00
Labour for fertilizer application	20 nos.	4000.00	Labour for fertilizer application	-	0.00
leaf plucking (Rs. 2/ kg)	2800 kg / round	39200.00	leaf plucking (Rs. 2/ kg)	3500 kg/ round	49000.00
Total Cost of Cultivation		141500.00			105500.00

Table 16: Economics of 1-acre tea cultivation in Chemical Farming vs. Natural Farming throughout the year

Particulars	Yield	Total Yield (Kg)	Cost of Cultivation (Rs)	Gross Return (Rs)	Net Return/ Profit (Rs)	B:C Ratio
Chemical Farming	2800 kg / round	19600	141500.00	235200.00	93700.00	1.66
Natural Farming	3500 kg / round	24500	105500.00	294000.00	188500.00	2.79

- Now, Digen Babu is very much happy after practicing of natural farming in his small tea garden as well as vegetable fields. He motivated other farmers for adoption of natural farming in their fields.
- About 200 nos. farmers/small tea growers were trained or motivated in natural farming by him.



Fig 76: Adoption of natural farming practices in tea garden by Mr. Digen Singh

15.3 Lentil cultivation under Natural Farming in Old Alluvial Zone of West Bengal



Name of the Farmer: Mr. Ilam Sardar

Address: Radhanagar, Kumarganj, Dakshin Dinajpur

- Mr. Ilam Sardar started to apply natural farming practices since 2022 to reduce chemical fertiliser uses and thus cost of cultivation in his lentin cultivation plot.
- Earlier, Mr. Ilam Sardar Lentil cultivated lentin traditionally by broadcasting with the seed rate of 30 kg per hectare. Fertiliser was given @ 20:40:20 kg NPK per hectare. Seed treatment done with carbendazim @ 1 g/kg of seed before sowing.
- In natural farming practices, Mr. Ilam Sardar treated seed with Beejamrita. No chemical fertiliser was used for entire crop period. Jeevamrita was applied before sowing and two crop growth stages at 25 days after sowing and before flowing stage through high volume spraying. Mulching of lentil crop was done with the help of paddy straw. The crop was irrigated once at 30 days after sowing to keeping the soil moist with light irrigation. Neemastra was applied for aphid control in lentil crop twice at an interval of seven days during flowering to pod formation stage.
- Mr. Ilam Sardar recorded that the cost of lentil cultivation with natural farming practices was low with high net income.

Table 17: Comparison between Lentil crop Economics in Natural Farming and Traditional Farming Method

Natural Farming Method					Traditional Method				
Yield (q/ha)	Cost of cultivation (Rs)	Gross income (Rs)	Net income (Rs)	B:C ratio	Yield (q/ha)	Cost of cultivation (Rs)	Gross income (Rs)	Net income (Rs)	B:C ratio
10.64	14250	53200	38950	3.73	11.18	23400	55900	32500	2.38



Fig 77: Lentil field of Mr. Ilam Sardar under natural farming

15.4 Organic Madam



Name: Smt. Pramila Sethy

Address: Kaptira, Jashipur, Mayurbhanj, Pin-757091

- Smt. Pramila Sethy, higher secondary pass out, owns 8 acres of land.
- She grows paddy, maize, finger millet and arhar.
- Smt. Pramila Sethy attended training on natural farming and learnt to make Jeevamrita, Beejamrita, Neemastra, Agniastra with its detail procedures. She became interested towards natural farming.
- She participated different training programmes and upgraded her skill in making natural farming products as marketable products through proper labelling and packaging.
- She established Bhulaxmi Javika Udyog at her village under which 10 numbers of rural women prepared different products of natural farming like Jeevamrita, Beejamrita, Neemastra, Agniastra which helped them for sustainable livelihood income.
- She is now a successful entrepreneur and becomes a role model to other women within the village as well as in other villages. She becomes a master trainer for other farm women and rural entrepreneurs in natural farming.
- She received recognition from Department of Agriculture, Govt. of Odisha. OUAT awarded her in the year 2022 for natural farming.
- Smt. Pramila Sethy took huge initiatives to popularize natural farming for which she is called as “Organic Madam”.

Table 18: Economics of Smt. Sethy’s enterprise

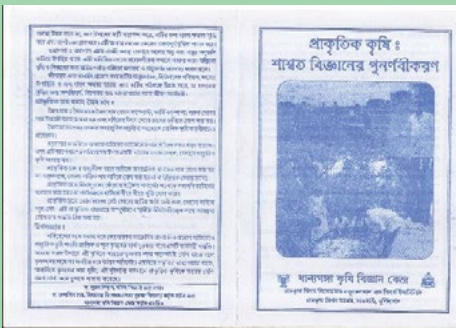
Sl. No.	Cost incurred/ Annum (Rs.)	Revenue generated/ Annum (Rs.)	Net Profit/ Annum (Rs.)
1.	25,200/-	76,224/-	51,024/-



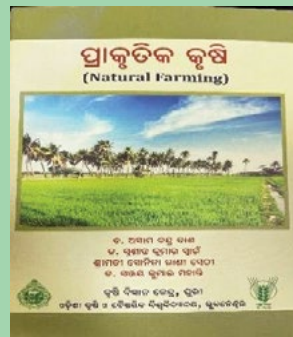
Fig 78: Smt. Pramila Sethy and her followers

16. Publications and Coverage

16.1 Leaflet/ Booklet



KVK Murshidabad Additional



KVK Puri



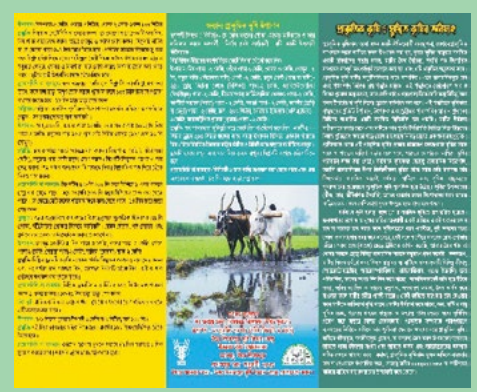
KVK Murshidabad



KVK Baragarh



KVK Angul



KVK Uttar Dinajpur



KVK Dhenkanal



KVK Mayurbhanj-II



KVK Bankura



KVK South 24 Parganas Additional



KVK Kendrapara

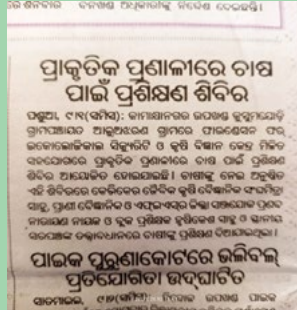


KVK Balasore

16.2 Newspaper Coverage



ICAR ATARI Kolkata



KVK Dhenkanal



KVK Port Blair



KVK Koraput



KVK Murshidabad Additional



KVK Bankura

16.3 Mass-Media Coverage



KVK Jagatsinghpur



ICAR-ATARI Kolkata



KVK Uttar Dinajpur



KVK South 24 Parganas Additional



FRONT LINE DEMONSTRATION
ON
NATURAL FARMING
Under the Project
"Out Scaling of Natural Farming through KVKs"
Season-Rabi 2023

CROPS: Brinjal
TREATMENTS:
1. Use of Mulching- Straw, Crop Residue
2. Seed treatment with Beejamrit
3. Soil Application of Ghana Jeevamrit and application of Jeevamrit@ 20011 per acre with irrigation after 25 DAS.
4. Spray of Neemastra 300ml-400ml/Et water, Brahmastra@ 3ml/lit water at 30, 45 and 60 DAS.

Conducted by:
MURSHIDABAD KRISHI VIGYAN KENDRA
(WEST BENGAL UNIVERSITY OF ANIMAL AND FISHERY
VILL. MILEBASA (DIGHA) P.O. - BHAGWANGOLA, BHAGWANGOLA, MURSHIDABAD



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

