

# **MANAS RURAL DEVELOPMENT INSTITUTE**

## ACTIVITY REPORT



**SUNFLOWER CULTIVATION IN ORGANIC FARMING**

**YEAR - 2021-2022**

### **ADDRESS**

**304, Sunflower Tower, Kharkar Lane,  
Thane - 400 601. MAHARASHTRA, India.**

## Message from Chairman' Desk



This is a first Activity Report of the Company after the global pandemic first wave and subsequent wave which shook the entire world. The year 2020-2021 was a big halt that was witnessed by the global activities the shadow lingered over the 2021- 2022 as well and the activities were slowly began under the fear of pandemic.

We were no exception and activities at our projects were stalled for some time. It was “blessing in disguise” for us and we utilized the time for planning of the further course of activities ensuring thrust on Rural Development along with the organic agriculture focus.

This Report outlines the result of the thinking process that was under gone during the halted time.

There nothing much to describe here due the reasons mentioned herein above.

**Vyankatesh Kulkarni**

Chairman

**Manas Rural Development Institute**

## **MANAS RURAL DEVELOPMENT INSTITUTE**

Manas Rural Development Institute (MARDI) has pleasure to present this 17<sup>th</sup> Activity Report for the year ended 2021-2022. The Company is registered under the provisions of Section 25 of Company Act, 1956. The provisions depict the Company as “Non Profit Company”.

The following programs are already in operation and as result of such programs the observations and achievements are been taken as stock of the working.

### **Popular Organic Farming Systems**

After going through this unit you will be in a position to understand:

- The different organic farming systems which are popular
- The concept of Zero Budget and Bio-dynamic Farming
- The Homa Jaivik Krushi

### **Introduction**

- It is interesting to mention that in India, as alternative number of organic farming systems such as:
  - Biodynamic Krishi,
  - Rishi Krishi,
  - Natural Farming,
  - Nateuco Farming or Amrit Kheti
  - and Panchagavya Krishi have been conceived and are being promoted by group of farmers.
  
- In span of one and half decade We at Manas also tried to see impacts of these systems and tried to understand strength and limitations of these systems.

We conceived a new concept of Homa Jaivik Krishi (Pathak and Ram, 2014), with integration of various viable elements of various organic systems developed by others.

### **Lessons learnt from Conventional Agriculture**

- Great burden on government to manage agro chemicals;
- Farming community to use it as per need of crop;
- Consumers has to pay more and ill effects on human health;
- Society is to face climatic disasters and deterioration in human values;
- -This calls for rampant change in farming system approach and our mind set;
- -As viable alternative we propose Homa Jaivik Krishi. Pathak

### **Manas Homa Jaivik Krushi Definition**

- “Homa Jaivik Krishi is cow centric integration of bunch of technologies from the organic farming systems,
- capable of enhancing Rhizosphere and Biosphere simultaneously
- and assuring sustainable agriculture, without any use of agrochemicals.

It is based on synergistic & systematic harnessing cosmic and solar energies which ensures high quality production, improvement in soil fertility, water quality, availability and resolving environmental pollution in a given area wherein resonance point have been established”. Pathak

### **Steps for harnessing cosmic and solar energy: through Homa Jaivik Krishi**

- Practice of adopting Farming System Approach;
- Adopting use of agriculture calendar for various farm activities;
- Encouraging massive plantation and development of water bodies for creation of organic environment;
- Integration of legumes in the cropping system to harness atmospheric nitrogen;
- Integration of indigenous cows with hump and use of her products in farming;

Enhancing biological quality of soil through increased humus to harness & retain the energy; Integration of Homa Organic Farming known to heal the ailing environment and most potential tool to harness cosmic and solar energy.

### **Principles of Calendar**

- Descending Sun & Moon activities below the ground is accelerated-good for soil & compost preparation, its use including BD-500,activities related with under ground crops-**soil breath in**
- In ascending phase above ground activities are accelerated –good for cutting, layering, grafting, avoid tree pruning-**soil breath out**
- Moon opposite to Saturn is ideal for any crop sowing & Spray of BD-501
- Node days need to be avoided for any agricultural activity Cont.
- In general,12-18 % increase yield & 12-15% reduction in pest & disease incidence is obtained

### **Points to be considered**

- Plants get their nutrition quantitatively from atmosphere and qualitatively from soil
- Plants require around 30 + elements;
- Each leaf blade of plant contains 30+ elements;
- Solar energy is available around 300 days in India ;
- Almost 75-80,000 t of N is freely available per hectare in the environment;
- Plenty of P in non available form in soil;
- Potash is non constituent element ,burrowed from soil and return it back through bio mass;
- Rhizosphere soil of few select trees are potent source for beneficial microbial consortia;
- Humus content is best accumulator of solar, cosmic energy and moisture from atmosphere;
- Quality humus is produced by decomposition of organic and animal waste without interference of any agro-chemicals;
- Pests & soil erosion is indicator of reduced Aura energy of soil.

### **NATURAL FARMING**

- This is the simple and cheap system
- Can be popularized with minimum infrastructure and hands on training

- Four wheeler system of Natural farming
- It consist of use of two bio formulations-***Bijamrita*** and ***Jiwamrita***
- *Next two are use of **mulching** and ensuring **Wafsa (Moisture)***
- It has been tried over large number of crops
- With 2 cows, 10-15 hectares area can be managed organically

### **Mulching**

- Mother earth always prefers to be covered with some vegetation. Role- Mulching is an integral component of Organic Farming
- It consist of spreading of dry organic (mono & dicot) wastes locally available. A thick mulch around basin, drench with Jivamrtita
- The vacant spaces in fruit orchard need to be covered all round the year
- It can be a covered through green plants of mono cot and dicot
- It helps in moisture conservation. It protects in erosion of soil fertility. Effective weed management
- Provide congenial conditions for increased activity of macro and micro fauna
- Reduces fruit drop
- Improves fruit quality. Improves soil fertility. Well suited for tropical climate

### **TREE PASTING**

- Tree paste prepared by thoroughly mixing cow dung +urine + clay
- Incorporation of dung ash or Agnihotra ash is more effective
- A thick coating should be smeared on tree trunk and main branches
- It should be pasted twice in September and February-March
- It is helpful in management of gummosis,pests and encourages vascular activities

### **NUTRIENT MANAGEMENT**

- Grow legumes as crop/ cover/inter/ green manure or as mulch material whenever & wherever possible
- Apply 3-5 T/ha for close spaced and 20-25 kg/tree enriched compost

- Mulch the interspaces with locally available organic wastes
- Drench with bio enhancers viz: Jivamrita Amrit Pani/CPP + BD-500/Vermiwash
- Spray bio enhancers viz; Jivamrita/ Panchagavya/Vermiwash/Biosol

### **Pest & Disease Management**

- A wide range of options are available. Encourage proper habitat management
- Adopt appropriate crop rotation including trap crops
- Prefer local seeds and regionally adopted conventional varieties
- Cow urine and butter milk are potent source for protection
- Local herbs viz: Neem, Castor, *Pongamia*, *Lantana*, *Caliotropis*, Neetle, kalmegh, chilies, garlic, drumstick, bael etc after proper decomposition are quite effective in management
- Initial experience will be required for different crops and pests

### **SUPER TECHNOLOGY FOR SUSTAINABLE AGRICULTURE**

- Homa Organic farming can take care of soil improvement, water purification, neutralising toxic elements in the atmosphere and improve functioning of earthworms and honey bees
- The answer lies in the super technology of Vriksha Ayurveda HOF

### **HOMA Organic Farming**



## **INGREDIENTS USED IN PANCHAGVYA**

<b>Fresh cow dung</b>	<b>5 kg</b>	<b>Cow's ghee</b>	<b>½ kg</b>
<b>Cow's urine</b>	<b>3 L</b>	<b>Cow's milk</b>	<b>2L</b>
<b>Cow's curd</b>	<b>2L</b>	<b>Sugar cane juice</b>	<b>3 L</b>
<b>Tender coconut juice</b>	<b>3L</b>	<b>Toddy/ grape juice</b>	<b>2 L</b>
<b>Ripe banana</b>	<b>12</b>		

**Container – wide mouth mud/plastic/concrete pot**

## **STEPS FOR PREPARATION**

- Mix thoroughly cow dung with ghee and place in container for three days;
- Mix other ingredients on 4<sup>th</sup> day and stir thoroughly;
- Stir thrice, cover its mouth and keep in shade;
- Panchagavya is ready on 18<sup>th</sup> day;
- In general 3% solution has been found effective in all cases

## **Properties of Panchagavya**

Presence of microorganisms per gram of *Panchagavya* **SGS Laboratory-Chennai**

- **Nitrogen fixing *Azospirillum*** **10 X 10**
- **Nitrogen fixing *Azotobacter*** **10 X 9**
- **Phosphorus solubilizing phospho bacteria** **10X 7**
- **Immunity enhancer-*Pseudomonas*** **10X6**

## **Bio dynamic farming**

Biodynamic agriculture is an advanced organic farming system that is gaining increased attention for its emphasis on food quality and soil health.

## **Principle and Advantages Substance and energy :**

- Life is more than just chemicals; it depends on the interaction of matter and energies.
- The interaction of substance and energy forms a balanced system.

- plants which have grown in a balanced soil can give us energy (through trace minerals, enzymes, growth hormones) as well as substance.

### **Soil**

- To produce healthy, vital plants, one must concentrate mainly on the structure and the life of the soil.
- The nutrients, the trace elements, the microorganisms, the worms and other animals present in the soil.

### **Organic matter**

- In order to create this balanced, living soil, what is required is skilful use of organic matter.
- This is done by building compost heaps and using the Biodynamic compost preparations.

### **Humus**

- This mysterious, magical substance supports life and is the carrier of all that the plants need to grow.
- It holds the fertility of the soil in a stable way, and retains water.
- Humus is completely digested crude organic matter: rich, dark, and moist with a fresh odour.
- This is the base for building up the soil and fostering its formation should be the first priority when converting to Biodynamic farming.

### **Cow manure**

Cow dung is special because of the lengthy digestion process of the cow which adds much beneficial bacteria to the substance. It is used in building the compost heaps as a starter and for its nitrogen content and in preparing the Biodynamic preparations.

### **Biodynamic preparations**

Dr Steiner gave two preparations - to be sprayed directly on the soil or the plants - numbered 500 and 501. six preparations to be used when making compost - numbered 502 to 507.

### **Crop rotation :**

Intelligent planning to let the soil rest after heavy-feeding crops (such as potatoes, tomatoes, cabbage), by sowing green manures (legumes, clover) and covering the soil (grass, clover) so that it may build up its humus content and nitrogen levels.

## **Converting a farm to biodynamic**

- All short term manuring use of water soluble fertilizers for quick growth is discontinued. This not only damages soil structure but also produces plants that are nutritionally unbalanced.
- Stop all chemical weed control methods that will leave undesirable residues which inhibit the development of active soil life.
- The type of stock carried in the farm is important as it has unique effect on soil fertility
- Encourage legume growth, earthworm activity and other soil micro-organisms.
- This is enhanced by the biodynamic preparations.
- This brings about microbiological life to the soil and exerts a balancing effect on availability of minerals.
- They also influence the permanent build up of humus.
- Need of adequate trees to provide shelter and shade as conservation of moisture, protection from wind and also act as predators.

## **Two Groups:**

- First group - 6 different herbal substances - 502-507.
- Second group - 500 and 501.
- **BD 500 Cow horn manure**
- fermented cow dung - buried in Sept./Nov and lifted in Feb/March.
- Materials / Cow horns / Fresh cow dung from a lactating cow.
- Average 50-150 gms dung/horn (depends on horn size)

Keep burial pit soil moist and shaded. Check for dung fermentation. Green cow dung has turned into dark, smooth earthy smelling humus (BD 500) they are ready to be lifted

## **Application process :**

- 25 grams BD 500/acre in 15 litres rain/pure warm water
- Stir for 1 hour alternately clockwise and anti-clockwise forming a vortex
- Spray in the late afternoon or evening
- Spray 4 times a year

## **Storage**

- Place in glazed earthenware pots with loose fitting lids.
- Bury in a box surrounded with coir pith, which is kept moist and can be closed.
- Keep in dark and at temp of not more than 25 °C.
- Use within 1 year.

## **Effect/result**

- Promotes root activity
- Stimulates/increases soil micro-life
- Regulates lime and nitrogen
- Helps to release trace elements / Increases germination

## **Amrut Jal and Amrut Mitti**

### **Preparing Amrut Jal and Amrut Mitti**

- Ingredients for Amrut Jal
- 1 liter cow dung
- 1 liter cow urine
- 50 gms black jaggery
- 10 ltrs water

(substitute ingredient for black jaggery: 6 over ripe bananas or 2 glasses of plain sugar cane juice or 6 pieces of over ripe jackfruit or other over ripe sweet fruit that is may be locally available).

- Mix all the above together and keep for 3 days.
- Stir the mixture 2 to 3 times in a day, clock wise and anti-clock wise.
- On 4th day, take one liter of this concentrate mixture and mix it with 10 liters of water.
- This preparation is called Amrut Jal/Water.

### **How to prepare Amrut Mitti**

- The following are the simple steps to make “Amrut Mitti”:
- Build a square or triangle shaped boxed regions, using bricks.
- The logic behind the brick slabs is that they act as aerated containers.

- This is because the process of composting generates heat which needs to be scattered.
- Ingredients in Amrut Mitti range from cow dung, cow urine, biomass like dry and decayed leaves, extracted version of the sugarcane fibre, black sand, black silt , chemical free black jiggery or Ash wood, or household kitchen waste like vegetable peels.
- For the soil, you will require the top layer of soil that is found right underneath the big trees.
- Scrape, instead of digging the top soil. The reason for using topsoil is that it comprises of dormant microbes, which when mixed with the biomass, stimulates to produce rich nutrients to the plants.
- Now, as you have collected the necessary ingredients pour and mix them in a tub.
- You can choose to add “Amrut Jal” (a mixture of cow dung, cow urine and black jaggery) or any cow derived mixture like Panchagavya.
- Add heaps of biomass, depending on the space of the slab or container.
- Let this mixture settle and then turn it after a week. Ensure that the Amrut Mitti receives proper air circulation or else anaerobic conditions will emerge and spoil your efforts.
- After a span of 30 days, the Amrut Mitti will become plant ready. All you need to do is choose the plants of your favourite variety and witness the blossom of a healthy and happy flora.

### **Amrut Mitti- the rich Organic soil**

- The ideal soil for plants and trees is the one which boasts of essential microbes, minerals, adequate water retaining as well as drainage capacity and suitable pH value (acidity of the soil).
- Adding chemical fertilizers to the soil may be an easy gateway for ensuring soil fertility, but in the long race, the health of the soil will be compromised.
- Nothing can beat the healthy organic soil.

### **Things to remember**

- Choose the site for placing the brick slabs in such a way, that it gets adequate amount of sunlight and is well ventilated.
- The brick slab should be placed in such a manner that it does not lead to seepage of the mixture.

- The drainage system should be such that the water supplied to the seedlings won't stagnate.
- Balanced ventilation should be the key priority, or else plants won't grow in an efficient fashion.

### **Let us Sum up...**

- Indiscriminate use of agro-chemicals and water over 5-6 decades, have adversely affected soil fertility, crop productivity, and produce quality.
- In India, as alternative number of organic farming systems such as Biodynamic Krishi, Rishi Krishi, Natural Farming, Nateuco Farming, and Panchagavya Krishi have been conceived and are being promoted by group of farmers.
- All these alternate farming systems are cow centric where is different products like dung, urine, milk, curd, horns etc are extensively used
- These systems are developed by the experts to restore the soil fertility and organic carbon in the soil.

In Homa Jaivik Krishi, major emphasis is given to enhance cropping intensity and encourage diversification in agriculture through inclusion of different components as per climate, soil, family/ market need for domestic and even export of few select commodities for income earning

## **The Programs to be introduced**

### **The project**

The project that MARDI initiated is "Eco Friendly Partnership of Farmer & Consumer". The project envisages the cultivation of organic crop & supplying to end consumer dully processed with confirmed produce quality & back traceability in order to establish the emotional bond between producer & consumer. This ensures optimum price returns to producer & good consistent quality of material to consumer.

Posing the Organic Farming as central theme, overall development of farmers is envisaged through this program

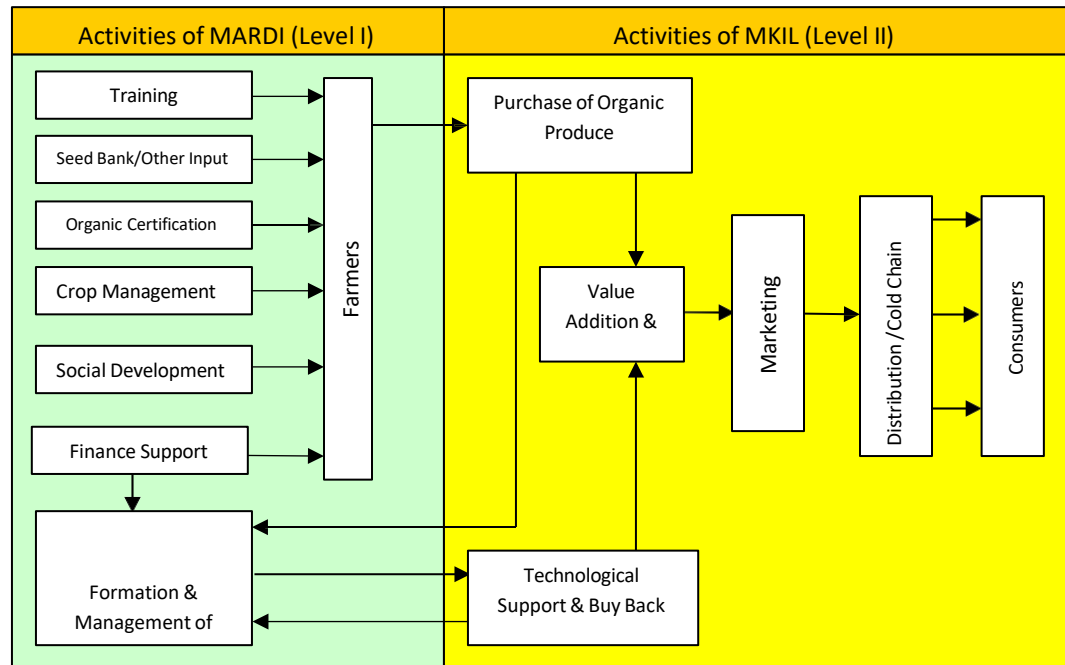
### **Scope of Project**

The Project has two levels. First level is strengthening farmer & development of village level infrastructure. The infrastructure is primarily used for organic cultivation,

formation & management of SHGs & supporting farmers by providing micro finance opportunities. These activities are direct support activities and it is also planned that indirect activities like Provision of amenities & social development of the village. These activities are managed by MARDI.

MKIL manages other commercial activities those comprise of value addition of organic produce. This is split in to two categories. One includes cleaning, grading, milling, packing & direct marketing of organic produce. The second route adds value to organic produce by processing it in to ready to cook, ready to eat & other food products.

**Process flow of Project Activities :**



**Details of Project**

MARDI is involved in promotion of Organic Farming for last five years in Shahapur area & eventually upliftment of farmers. With experience gathered, MARDI has evolved a model of Organic Farming, which includes...

1. Crop Pattern Selection
2. Seed Supply
3. Input Supply
4. Certification Process

## 5. Marketing Support

The above parameters are directly associated with Organic produce activity. MARDI however has experienced that besides these activities, in order to take up organic farming sustainable by farmers it is essential to enhance social status of farmers through complying their other needs like :

1. Drinking Water
2. Cooking Fuel
3. Electricity
4. Waste Disposal
5. Food security
6. Education
7. Health
8. Employment

## **Expected Social Impact**

The social impact of this model is far reaching. The basic intension to introduce Organic Farming initiative was taken in order to improve farming cultural practices. The input cost of crop cultivation was main focus.

Initially through our survey it was revealed that income of farmers in that region was dependent on Khariff crop only which comprises of primarily Paddy. Some of the hilly regions cultivated Nachani (Red Millet). The annual income of crop, per acre was limited to about Rs 8000 to Rs 12000 only. With help of organic practices it was enhanced to Rs12000 to Rs 16000 per acre annually.

Secondly, Rabbi Season crop was possible due to training & other support from our NGO. The other season crop was vegetables. Also perennial horticulture activities also took off with great enthusiasm.

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