

## Natural Farming: Principle and Prospects

\*SOWMYALATHA, B. S.<sup>1</sup> AND SAHANA, S. R.<sup>2</sup>

<sup>1</sup> Assistant Professor of Agronomy, Department of Agronomy, College of Agriculture, V.C. Farm, University of Agricultural Sciences, Bengaluru And <sup>2</sup>Junior Research Fellow, ZARS, V.C. Farm, Mandya, Karnataka, India

ARTICLE ID: 052

### Natural Farming

The word 'budget' refers to credit and expenses, thus the phrase 'Zero Budget' means without using any credit, and without spending any money on purchased inputs. 'Natural farming' means farming with nature and without chemicals.

This model eliminates the cost of fertilizers, pesticides and seeds and greatly reduces the incentive to borrow, one of the chief causes for farmer suicides in the country. Hence its evocative title ZERO BUDGET NATURAL FARMING.

According to FAO - "Zero Budget Natural Farming (ZBNF) is a holistic agroecological alternative based on modern and traditional science that mitigates the consequences of climate change, reduces input costs and creates sustainable agricultural livelihoods".

### Principles of Natural Farming

Masanobu Fukuoka, in his book, One-straw Revolution, indicates four basic principles of natural farming

- ❖ No plant protection
- ❖ No weeding
- ❖ No chemical fertilizers
- ❖ No ploughing

### Philosophy behind Natural Farming

- ❖ Nothing has to be purchased from the outside.
- ❖ The theory and practice of green philosophy.
- ❖ All things required for the growth of the plant are available around the root zone of the plants.
- ❖ Subhash Palekar, believes in a method of cultivation which makes the already existing nutrients in the soil such as phosphate, potash, zinc and calcium available in absorbable form by the plants.
- ❖ The whole philosophy behind this system is to make the farmer Self-reliant so that he is freed from the clutches of money lenders and market dispensed high-cost inputs.

### Core principles of Natural Farming

- ❖ Go adharita vyavasaya (Cow based farming): one local cow can meet the requirements of natural farming for 30 acres of land.
- ❖ Seed treatment through 'beejamrutha'
- ❖ Use of desi cow: One gram of desi cow dung contains 300 to 500 crores of beneficial effective microbes.
- ❖ Multi-layer farming / Polycropping / intercropping
- ❖ Mulching

- ❖ Use of local inputs for pest management
- ❖ Use of local seeds

### Four pillars of Natural Farming

1. Jeevamrutha/ Jivamrita
2. Beejamrutha/ Beejamruta
3. Acchadan/ mulching
4. Whapasa/ moisture

#### 1. Jeevamrutha/ Jivamrita:

##### Preparation

- ❖ Take 200 liter water in barrel
- ❖ Add 10 kg Cow dung + 10L Cow urine
- ❖ Mix 2 kg Jaggery + 2 kg Pulse flour + 30 gm farm soil in a heap
- ❖ Allow to ferment for 5-6 days
- ❖ Apply along with irrigation water or through spraying

#### 2. Beejamrutha

##### Preparation

- ❖ Take 5kg Cow dung + 5 liters cow urine and mix with 20 liters of water
- ❖ It is soaked for 12 hrs
- ❖ Then it is squeezed in water tub
- ❖ Then add 50ml lime water & cow urine
- ❖ It should be stirred well
- ❖ Later ready to be added to the seeds

#### 3. Mulching (Acchadana)

Mulching with organic residues or live mulching reduces tillage and consequently labour requirements, suppresses weeds, promotes humus formation and enhances the water holding capacity of the soil. Mulching enhances the biological activity and replenishes the nutrient base of the soil. Adequate mulching keeps the top and sub soil moist and enhances the water holding capacity of the soil and also reduces water loss due to evaporation so that the crop will be better equipped to tide over drought conditions.

#### There are three types of mulching:

##### Soil Mulch

- ❖ Light cultivation upto 10-15 cm
- ❖ Purpose: Air circulation in soil, conservation of rain water and weed management

##### Straw Mulch

- ❖ It is the cover of dried straw biomass of the previous plants or crops
- ❖ Improves soil moisture content and conducive to the growth of microorganisms and earthworms.

##### Live Mulch

- ❖ Intercrops and mixed crops which give the symbiosis to the main crop
- ❖ Complimentary effect with respect to sunlight, moisture and soil nutrient availability.

#### 4. Whapasa / Moisture

Palekar challenges the idea that plant roots need a lot of water, thus countering the over reliance on irrigation in green revolution farming. According to him, what roots need is water vapour. Whaphasa is the moisture condition where there are both 50% air molecules and 50% water molecules in the form of water vapour are present. All the roots take the molecules of water vapour. 92% microorganisms and 88-95% root hair are working in the top 10 cm

surface soil. So, that air must be circulating in this layer and vapour molecule must be available in this layer only. Whaphasa will be maintained, if we irrigate outside the canopy of the plant i.e. at alternate furrows only at noon. The roots that take water are situated at the outer canopy. ZBNF farmers report a significant decline in need for irrigation in ZBNF.

Whapasa - focuses on improving water use efficiency by reducing the quantity and frequency of irrigation water applied as only a limited amount of water is needed (in form of vapour) for the crop growth.

### **Ghana jeevamrutha**

Generally recommended for dryland/rainfed areas where there is shortage of water to apply ghana jeevamrutha

#### **How to Prepare Ghana jeevamrutha?**

Take 100 kg local cow dung, 2 kg jaggery, 2 kg Pulses flour, handful soil from the bund. Then mix it well by adding of 3 liter cow urine. Then spread it under the shade for drying. Later make it powder by hand sieve and fill in gunny bags. The mixture can be used up to one year.

#### **How to use Ghana jeevamrutha?**

While ploughing or before final ploughing for every acre 200 kg Ghana- jeevamrutha broadcast in soil at equal proportion and at final ploughing cover it with soil mulch.

#### **Pest management**

Generally insect will attracts the crop when there are toxic chemicals such as arsenic, cadmium, mercury, lead etc. present in soil. If immunity develops in the soils insect attraction will be less. By spraying insecticides, kills both beneficial and harmful insects of the crop. This can be avoided by crop rotation where beneficial insects kill harmful insects.

Some of the insect repellent measures are: Insect Repellent Medicines

1. Agniastra
2. Neemastra
3. Bramhastra

#### **1. Agniastra Preparation:**

- ❖ Take 20 lit cow urine+ 2 kg neem leaf chutney+ 0.5 kg tobacco powder+ 0.5 kg hot green chilli chutney+0.25 kg any local garlic chutney. • Stir the contents with wooden stick, cover it with lid and boil it for a foam.
- ❖ Cool it for 48 hrs where all alkaloids will dissolve in it.
- ❖ Stir it for morning and evening hours for 1 minute and filter the contents.
- ❖ Take 200 lit of water add 6-8 lit of agniastra mixed and sprayed.
- ❖ The content can be used for 3 months which controls pod borers, fruit bores, sucking pests and leaf eating caterpillars.

#### **2. Brahmastra**

- ❖ Take 20 lit of cow dung urine+2 kg neem leaf chutney+2 kg pongamia pinnate leaf chutney/lantana camera+ 2 kg datura leaf chutney/2 kg custard apple chutney+ 2 kg castor leaf chutney/2 kg belpatra chutney.
- ❖ Stir it properly, while boiling the contents under low flame for 1 hour and cover with lid.
- ❖ Allow it cool for 48 hrs where all alkaloids will dissolve in it. Stir it for morning and evening hours for 1 minute and filter the contents.
- ❖ Take 200 lit of water add 6-8 lit of brahmastra mixed and sprayed.
- ❖ The content can be used up to 6 months. It controls sucking pests and leaf eating caterpillars.

#### **3. Neemastra**

- ❖ Take 200 lit water+10 lit cow urine+2 kg cow dung +10 kg neem leaves (small chaffed leaves)

- ❖ Stir the contents clock wisely with wooden stick and cover it with gunny bag and place it under shadow for 48 hrs (note: sunlight, rainfall should avoid completely).
- ❖ Stir it for morning and evening hours for 1 minute.
- ❖ After 48 hrs nimbin, homicide alkaloids dissolve in water.
- ❖ Filtrate the solution and go for spraying. It can utilize up to 6 months.
- ❖ It controls all type of sucking pests (Aphids, jassids, whitefly).

### Weed Management

- ❖ Weedicide/insecticide kills all the beneficial organisms; hence chemical control should be completely avoided.
- ❖ Straw mulching is the best method to control weeds because by straw mulching there is no availability of sunlight.
- ❖ Stale seedbed preparation: in this method before final ploughing, after irrigation/rainfall allow the weed seeds to grow up to 1-2 leaf stage and mix it in the soil either cultivator or rotavator at final ploughing.

### Disease Management

#### How to Control Pathogens/Fungus/Bacterial Diseases?

1. Take 200 lit water +10-20 lit jiwamrita mixture.
2. Take 200 lit of water + 10-20 lit of buttermilk (sour) mixture.
3. Take 2 lit of water; add 200 g dried ginger powder/200 g of asafoetida (hing) powder, stir it thoroughly to dissolve well. Boil the contents by covering lid up to half concentrate. Keep it aside for cool. Take another vessel and take 2 lit of cow milk boil it by covering the lid until a foam appears. Keep it aside for cooling and remove the cream. Take 200 lit of water, add cream less cow milk; add ginger/hing concentrate. Stir the contents with wooden stick slowly and keep it aside for 2 hrs. Filter it with muslin cloth and sprayed under 24 hrs.

**For all Types of Diseases:** Take 200 lit water; add 15 lit Jiwamrita; add 5 lit buttermilk (sour). Stir the contents and filter it with muslin cloth. Spray the mixture immediately to control any type of bacterial/fungal diseases.

#### How is the ZBNF different from organic farming?

ZBNF	ORGANIC FARMING
<b>1. Soil &amp; fertility management</b>	
• JEEVAMRITH • Acchadana (Mulching) • Whapasa (Soil moisture)	• Crop rotation • Composting and manuring • Biofertilizers
<b>2. Seed treatment</b>	
• Beejamrutha application of a homemade seed treatment consisting of cow dung and urine to seeds and seedlings.	• Cow urine or cow urine-termite mound soil paste. • Turmeric rhizome powder mixed with cow urine. • Panchagavya extract
<b>3. Pest management</b>	
• Agniastra • Bramhastra • Neemastra	• Cultural alternative • Mechanical alternative • Biological alternative • Bio-pesticides
<b>4. Certification</b>	
• No need for certificates to grow and sell natural farming products	• Certification is mandatory when selling organic products
• There is no period to converting chemical	• Conversion of land from chemical

farming to natural farming but yield stability or gaining benefit starts after the 3-year cycle.	farming to organic requires more 3 to 6 years depends on soil health.
• Low-cost farming methods	• It is expensive

**Benefits under ZBNF**

**In relation to Farm level:**

- Profit maximization
- Low input costs

**In relation to Environment:**

- Climate resilience
- Biodiversity
- Reduced chemical use

**In relation to social aspects:**

- Improved health
- Livelihoods
- Gender equality

