AWARENESS MODULE ON

NATURAL FARMING

FOR KRISHI SAKHIS

National Centre For Organic and Natural Farming

Hapur Road, Kamla Nehru Nagar, Ghaziabad-2

☎ 0120-2764212; 2764906; Fax 0120-2764901

Email: nbdc@nic.in

Guidance by:
Dr. Yogita Rana, IAS
Joint Secretary, INM
Department of Agriculture & Farmers Welfare

Editor:
Dr. Gagnesh Sharma
Director
National Centre for Organic & Natural Farming,
Ghaziabad

Compiled By::
Sh. Kishor R. Shedge, JSO
Dr. Priyanka Pradhan, JSO
Dr. Ruchi, JSO

Edition: 2023

Published by:
National Centre for Organic & Natural Farming,
Hapur Road, Near CBI Academy
Sector 19, Kamala Nehru Nagar, Ghaziabad, U.P. 201002
Phone : 0120-2764212 , 0120- 2764906
E-mail : nbdc@nic.in Fax :0120-2764901

Natural Farming

If not Now, Then When?

Why Natural Farming?

100 Years Ago

- Few Cases of Disease/Health issues such as Blood Pressure, Diabetes Cancer etc.
- No Pollution
- Healthy Food
- Bio-diversity
- 5% Soil Organic Carbon
- Healthy Soil

What is Status Today?

- Health Issues
- Pollution
- Unhealthy Lifestyle
- < 1% Soil Organic Carbon
- Degradation of Soil
- Loss of Bio-diversity
- Climate Change
- Global Warming

Do you Know the Reasons?

Unsafe & Low Nutritional food
due to chemical fertilizers & Pesticides

- Chemical Fertilizers
- Chemical Pesticides
- Imbalance Nutrition
- Wrong Choice of Food
- Intensive Farming
- Monocropping

Impact on Human Health

Acidity

Asthama

Blood Pressure

Cancer

Sugar

Stress

What do we do to improve our health?

- Visit Doctor
- Blood Test
- Intake of Vitamins
- Intake of Minerals
- Intake of Safe & Healthy Food

Likewise to improve Soil Health...

- Visit to Soil Testing Lab
- Soil Test
- Limit the Uses of Chemical Fertilizers
- Adoption of Natural & Organic Farming

What Will be the Outcome?

- Improvement in Soil Organic Matter
- Increase in beneficial microorganisms
- Increase Moisture Holding Capacity of Soil
- Increase in diversity and activity of soil organisms like earthworms
- Improvement in Soil Health
- Balanced Nutrition & quality of Yield

How Can We Achieve?

- By adopting Natural & Organic Farming

What Will be the Result?

- Healthy and Safe Environment
- Healthy Soil
- Healthy Plant/Crops
- Balanced Nutrition in Food
- Healthy & Safe Food
- Reduction in input Costs
- Happy farmer & family

प्राकृतिक खेती से उपजे शुद्ध आहार
इसको अपनाने पर करो विचार

What is Natural Farming?

- Natural Farming is a chemical-free farming system.
- Bio-inputs used in Natural Farming are prepared on-farm.
- Optimum utilization of locally available raw materials such as cow dung, cow urine, bio-resources etc.

Is this natural farming a new technology?

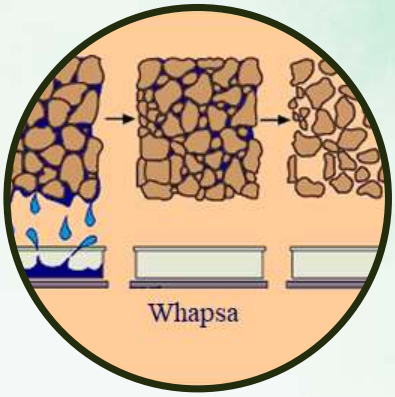
- No, Natural Farming is not a new technology.
- This is ancient Indian tradition and based on wisdom of farmers

What is the base of Natural Farming?

Panchsutra

- Natural Farming is Based on Five main Components (Panchsutra)

Which are the 5 Components of Natural Farming ? (Panchsutra)



Minimum Soil Disturbance & Whapsa

Multi-Cropping

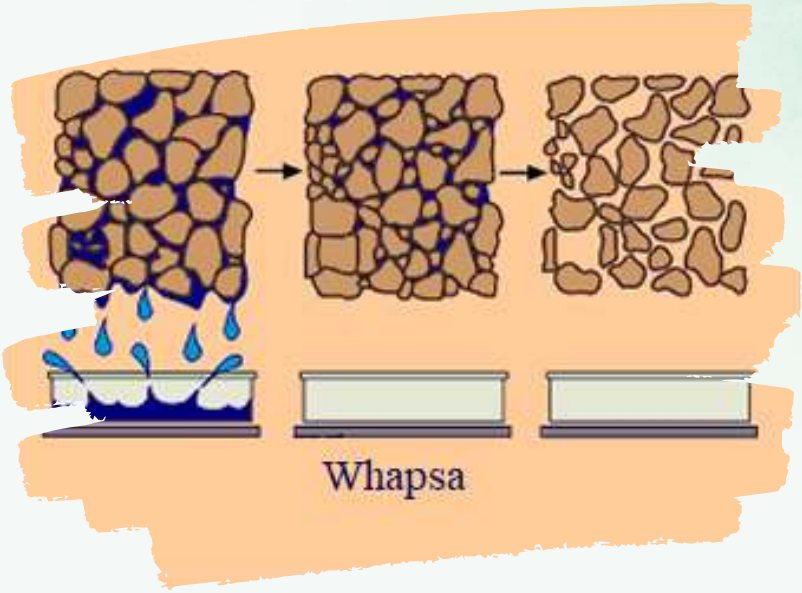
Bio-Diversity

Plant & Animal Based Bio-Inputs

Mulching & Cultural Practices

Natural Farming

Minimum Soil Disturbance & Whapsa



- **What is Minimum Soil Disturbance?**

The activities adopted during soil preparation in natural farming which reduces the disturbance in soil.

- **How it can be achived?**
  - Reduced tillage practices (such as ploughing, harrowing, and all the tillage operations ordinarily applied to prepare the soil for seed germination.
  - Direct seeding.
  - Direct application of Bio-inputs for soil Health.

- **Benefits of Minimum Soil Disturbance**
  - Improves soil stability & structure
  - Increase soil organic matter
  - Reduce soil erosion
  - Reduce fuel use (as minimum agriculture machinery used)
  - Increase carbon storage
  - Enhances water infiltration
  - Increased soil fertility through enhanced nitrogen stocks (in the long term)
  - Improves soil, water, and air quality

- **What is Whapsa?**

It is the condition where there are both air molecules and water molecules present in the cavity between two soil particles. It is the soil's microclimate on which soil organisms and roots depend for most of their moisture and some of their nutrients.

- **What are the benefits?**
  - It increases water availability
  - Enhances water-use efficiency
  - Builds resilience in plants against drought.

Multi-Cropping

- **What is Multi-cropping?**

  Multi-cropping is growing of two or more crops simultaneously on the same piece of land.

- **Benefits of Multi-Cropping**
  - Improves soil fertility
  - Increase in crop yield
  - Refuse from one crop plant help in the growth of the other crop plant and vice-versa.
  - It is an insurance against crop failure due to abnormal weather conditions.
  - It is done to reduce the competition between component crops for light, nutrients and water. If one crop fails due to shortage of moisture or insufficient availability of nutrients, the other crop can cover the risk of complete failure.
  - Growing multi-crops ensures enough fodder stocks for cattles.
  - Growing a variety of crops together minimizes pest problems and makes efficient use of soil nutrients, water, and land.
  - It helps to suppress weeds, as weeds find it difficult to grow alongside some crops.

Example: Finger millet may be mixed with pearl millet, maize, sorghum, groundnut, tapioca, pulses and vegetables.

Bio-Diversity

- **What is Bio-Diversity?**

  Biodiversity is the number and variety of plants, animals and other organisms that are living in an ecosystem.

- **Importance of Bio-Diversity**
  - Biodiversity helps farmers understand how different species interact with one another in an ecosystem.
  - It helps in creating healthy soils, leading to better crops that contain more nutrients that are needed for human consumption.
  - Ensures food security by providing many different types of foods in a single area so that if one type of crop fails due to drought or other conditions then others will still be available for harvest.
  - It also helps provide pollinator species such as bees and butterflies that are necessary for pollinating plants such as wheat, soybeans, and corn.
  - It also provides predators which manage populations of harmful pests
  - Biodiversity is important for agriculture because it provides us with food, fiber, and medicines.

- **How Natural Farming Helps in Maintaining Bio-Diversity**
  - Natural Farming helps to increase organic matter in soil. Healthy soil supports more soil biodiversity such as beneficial microbes, earthworms etc.
  - Natural farming helps in maintaining population of beneficial insects/birds/pollinators.
  - Crop diversification increases the adaptation capacity of agricultural systems to climate change by improving soil fertility and structure, soil water holding capacity and water and nutrients distribution through the soil profile, helping to prevent pests and diseases, and increasing yield stability.

Which Inputs are Used in Natural Farming?

Beejamrit

- **Ingredients Used**

  a. Water - 20 Litre
  b. Cow Dung - 5 Kg
  c. Cow Urine - 5 Litre
  d. Lime - 50 gram
  e. Rhizospheric Soil - Handful

- **Preparation**

  a. Take 5 kg desi Cow dung and wrap it in a cotton cloth.
  b. Take 20 litre water in bucket and dip the above 5 kg cow dung wrapped in cloth into it.
  c. Leave it for 12 to 16 hours so that the cow dung extract may come into the water.
  d. Take 50gm lime in another container having 1 litre water
  e. Now mix the above two preparations and into it add 50gm rhizospheric soil.
  f. Add 5 litre of cow urine into it and leave the solution prepared for 8-12 hours.
  g. Now the Beejamrit is ready for seed treatment.

- **How to Use?**

  Add Beejamrit to the seeds of any crop; coat them, mixing by hand; dry them well and use them for sowing. For leguminous seeds, which may have thin seed coats, just dip them quickly and let them dry.


Using Local seeds and treating the seeds with Beejamrith

- **Benefits**

  a. Increase Viability of Seeds
  b. Prevents Seed Born Diseases.

Jeevamrit

- **Ingredients Used**

a. Water	-	200 Litre
b. Cow Dung	-	10 Kg
c. Cow Urine	-	10 Litre
d. Jaggery	-	2 Kg
e. Pulse Floor	-	2 Kg
f. Rhizospheric Soil	-	Handful

- **Preparation**
  a. Take 200 litre water in a barrel for one acre farmland.
  b. Add 10 litre cow urine preferably desi cow urine in the above barrel filled with water.
  a. Add 10 kg Cow dung in the above solution.
  b. Dissolve 2kg Jaggery in water in another container and add to the above solution.
  c. Dissolve 2kg any Pulse flour in water in a container and add to the above solution.
  d. Add handful of rhizospheric soil in the above solution.
  e. Stir all the above ingredients well using a wooden stick by rotating in clockwise direction.
  f. Keep the barrel covered with jute bag.
  g. Keep this solution quite stable for 48 hours for fermentation under shade.

- **How to Use?**
  a. Spray with water
  b. Along with irrigation water

- **Benefits**
  a. Promoting growth and flowering along with acting as a yield enhancer (@5-10% spray with water)
  b. Soil fertility enhancer (applied along with irrigation water)

Ghanajeevamrit

- **Ingredients Used**

  a. Cow Dung - 100 Kg
  b. Cow Urine - As required
  c. Jaggery - 1 Kg
  d. Pulse Floor - 2 Kg
  e. Rhizospheric Soil - Handful

- **Preparation**

  a. Take 100kg of well dried cow dung and spread it uniformly on ground in the form of a thin layer.
  b. Add small quantity of cow urine to it.
  c. Add 1 kg pulse floor on the cow dung.
  d. Add 2 kg Jaggery.
  e. Add handful of rhizospheric soil.
  f. Mix all the above ingredients well and make laddus.
  g. Allow it to dry.
  h. After drying crush all laddus and store in boras.
  i. This dried ghanajeevamrit can be stored upto 6 months.

- **How to Use?**

  100 Kg dried Ghanajeevamrit per acre at the time of sowing

- **Benefits**

  Enhances the availability of nutrients through faster decomposition of bulky organic manures by boosting the microbial activity in the soil.

Neemastra

- **Ingredients Used**
  - a. Neem Leaves - 5 Kg
  - b. Cow Urine - 5 Litre
  - c. Cow Dung - 1 Kg
  - d. Water - 100 Litre

- **Preparation**
  - a. Take five kg of green leaves of neem or take five kg of dried fruits of neem and keep the leaves or fruits crushed.
  - b. Add this crushed neem or fruit powder in 100 liters of water.
  - c. Put 5 liters of cow urine in it and mix one kg of cow dung.
  - d. Stir it with wood and keep it covered for 48 hours.
  - e. Dissolve thrice a day and after 48 hours filter the solution with a cloth. Now spray on the crop.

- **How to Use?**

  2-3% Spray with water

- **Uses**

  For the management of sap sucking insects and small caterpillars.

Bramhastra

- **Ingredients Used**
- Neem Leaves - 3 Kg
- Karanj Leaves - 2 Kg
- Custard Apple Leaves - 2 Kg
- Papaya Leaves - 2 Kg
- Guava Leaves - 2 Kg
- Cow Urine - 10 Litre

- **Preparation**

a. Take 10 liters of cow urine
b. Add 03 kg of crushed green leaves of neem.
c. Add 02 kg crushed Karanj Leaves.
d. Add 02 kg crushed Custard Apple Leaves.
e. Add 02 kg crushed Papaya Leaves.
f. Add 02 kg crushed Guava Leaves.
g. Now dissolve all this mixture in cow urine and and boil it.
h. After 3-4 boils, take it down from the fire.
i. Let it cool for 48 hours and then filter the solution with a cloth.
j. Now Solution is ready to spray on the crop.

- **How to Use?**

2-3% Spray with water

- **Uses**

For the control of sucking insects and pod/fruit borer.

Agniastra

- **Ingredients Used**
  - a. Neem Leaves - 5 Kg
  - b. Green Chilli - 0.5 Kg
  - c. Garlic - 0.5 Kg
  - d. Cow Urine - 20 Litre

- **Preparation**
  - a. Take 20 liters of cow urine
  - b. Add 05 kg of crushed green leaves of neem.
  - c. Add 0.5 kg crushed Green Chilli.
  - d. Add 0.5 kg crushed Garlic.
  - e. Now dissolve all this mixture in cow urine and and boil it.
  - f. After 3-4 boils, take it down from the fire.
  - g. Let it cool for 48 hours and then filter the solution with a cloth.
  - h. Now Solution is ready to spray on the crop.

- **How to Use?**

  2-3% Spray with water

- **Uses**

  For insects living in tree trunks or stalks, all types of large bollworms and caterpillars.

Dashparni Extract

- **Ingredients Used**

a. Crush neem leaves 5 kg,
b. Vitex negundo leaves 2 kg,
c. Aristolochia leaves 2 kg,
d. Papaya Leaves 2 kg,
e. Tinospora cordifolia leaves 2 kg,
f. Custard apple leaves 2 kg,
g. Karanj leaves 2 kg,
h. Castor leaves2 kg,
i. Nerium indicum 2 kg,
j. Calotropis procera leaves 2 kg,
k. Green chilly paste 2 kg,
l. Garlic Paste 250 gm,
m. Cow Dung 3 Kg,
n. Cow Urine 5 liter

- **Preparation**

a. Take 200 liters of water.
b. Add all above ingredients to it.
c. Let it to ferment for one month and then filter the solution with a cloth.
d. Now Solution is ready to spray on the crop.

- **How to Use?**

2-3% Spray with water

- **Use:**

All types of sucking pest and for control of all caterpillars.

Mulching

- **What is Mulching?**

  Mulching is defined as covering of soil surface using both live crops and straw (dead plant biomass).

- **What are the types of Mulching?**

There are two types of mulching-

1) Crop Residue Mulch:

Crop materials leftover after harvesting such as: dried leaves, straw, small twigs etc. are used to cover the soil.

2)Live Mulch:

Live mulching is practiced by developing multi-cropping/inter cropping patterns of short durational crops in the rows of a main crop.

Example: planting wheat/rice (supply nutrients such as potash, phosphate and Sulphur)with pulses (nitrogen-fixing plants)

- **Benefits of Mulching**
  - Prevents soil against severe sunlight, cold, rain etc.
  - Saves seeds from birds, insects, and animals.
  - Conserve moisture
  - Lowers soil temperature around plant roots
  - Prevent soil erosion
  - Reduce runoff
  - Reduce weed growth.
  - Reduce the demand of a particular type of plant nutrient

- **Procedure of Mulching**
  - Carefully remove all weeds from the area where mulching has to be done.
  - The soil should be well loosened.
  - Once the soil is well-prepared, you can apply the mulch. Generally, mulch layers with a height of between 5 and 15 cm. have proven successful.
  - When spreading the mulch, be sure to leave enough distance from the stems of the plants.

Cultural Practices in Natural Farming

- **Land Preparation**
  100 Kg FYM mixed with 100 Kg Ghanajeevamrit per acre should be applied before sowing
- **Seed Treatment**
  Seed should be treated with Beejamrit for controlling seed born disease and to increase viability of seeds.
- **Pre Monsoon Dry Sowing (PMDS)**

  Raising of Pre Monsoon Dry Sowing (PMDS) with a minimum of 9 varieties of crops comprising of Pulses, Oil Seeds, Millets, Vegetables and leafy vegetables etc. The essential principle is to have 365 days green cover.
- **Application of Jeevamrit**
  After sowing, 200 litres of jeevamrit per acre should be given in soil with irrigation water. 200 litres of jeevamrit per acre should be given with irrigation water at an interval of 15 days in a month.
  Jeevamrit/Saptdhanyankur Spray:-
  1) 1st spray, after one month of planting 5 litre jeevamrit mixed with 100 litre of water.
  2) 2nd spray, after 21 days of first spray 7.5 litre jeevamrit mixed with 120 litre of water.
  3) 3rd spray, after 21 days of first spray 10 litre jeevamrit mixed with 150 litre of water.
  4) 4th spray, after 21 days of first spray 15 litre jeevamrit mixed with 150 litre of water.
  5) 5th spray, after 21 days of first spray 3 litre sour buttermilk mixed with 100 litre of water.
  6) 6th spray ,after 21 days of first spray 15 litre jeevamrit mixed with 150 litre of water.
- **Use of Growth Promotors**

  (1) Panchagavya: 4 lits in 100 litres of water/acre for 1 time at flowering stage .
  (2) **Saptdhanyakura tonic:** 700gms of paste in 200l litre of water at pod development stage (December/January).

Cultural Practices in Natural Farming

- **Mulching**
  After sowing of seeds, plant residue is used as mulching.
- **Crop Protection Measures**
  1. Use of different concoctions (Neemastra, Brahamastra, Agniastra Dashparni, Sour Buttermilk, Sonthastra etc.)
  2. Use of Pheromone Traps
  3. Use of Light Traps
  4. Use of Yellow & Sticky traps.
  5. Use of Bird Penches

राष्ट्रीय जैविक एवं प्राकृतिक खेती केंद्र

हापुड़ रोड, सीबीआई अकादमी के पास, सेक्टर 19, कमला नेहरू नगर , गाजियाबाद, उत्तर प्रदेश 201002

फोन : 0120-2764212 , 0120- 2764906

ईमेल : nbdc@nic.in फैक्स :0120-2764901