



# SOME OTHER FORMS OF AGRICULTURE IN ORGANIC MANAGEMENT



## 1. BIODYNAMIC AGRICULTURE

Biodynamic agriculture is a method of farming that aims to treat the farm as a living system which interacts the environment, to build healthy, living soil and to produce food that nourishes and vitalizes and helps to develop man kind. The underlying principle of biodynamics is making life-giving compost out of dead material. The methods are derived from the teachings of Rudolf Steiner and subsequent practitioners.

The important components of biodynamic farming are as follows:

a. Turning in plant materials such as green crops

and straw

- b. Not using chemical fertilizers and pesticides
- c. Avoiding soil compaction by machinery or animals, particularly in wet weather
- d. Keeping soil covered by pasture, crops or mulch not destroying the soil structure by poor farming practices such as excessive use of rotary hoe or cultivation in unsuitable weather (too wet or too dry)
- e. Fallowing the land by planting deep-rooting permanent pasture species or using green crops. Use of preparations BD-500 and BD-501

- g. Compost made with preparations BD-502 – BD-507
- h. Liquid manure made with preparations BD-502 – BD-507
- i. Cowpat pit manure made with preparations BD-502 – BD-507



These biodynamic preparations named BD-500 to BD-507 are not food for the plants, but they facilitate the effective functioning of etheric forces. They are also not the usual compost starters, but can stimulate compost organisms in various ways. In short they are biologically active dynamic preparations which help in harvesting the potential of astral and ethereal powers for the benefit of the soil and various biological cycles in the soil.

So far 9 biodynamic preparations have been developed, named as formulation 500 to 508. Out of these, formulation-500 (cow horn compost) and formulation-501 (horn-silica) are very popular and are being used by large number of organic farmers. Formulations-502 to 507 are compost enrichers and promoters, while formulation 508 is of prophylactic in nature and helps in control of fungal diseases.

## 2. RISHI KRISHI



Drawn from Vedas, the Rishi Krishi method of natural farming has been mastered by farmers of Maharashtra and Madhya Pradesh. In this method, all on-farm sources of nutrients including composts, cattle dung manure, green leaf manure and crop biomass for mulching are exploited to their best potential with continuous soil enrichment through the use of Rishi Krishi formulation known as “Amritpani” and virgin soil. 15 kg of virgin rhizosperic soil collected from beneath of Banyan tree (*Ficus bengalensis*) is spread over one acre and the soil is enriched with 200 lit Amritpani. It is prepared by mixing

250 g ghee into 10 kg of cow dung followed by 500 g honey and diluted with 200 lit of water.

This formulation is utilized for seed treatment (beej sanskar), enrichment of soil (bhumi sanskar) and foliar spray on plants (padap sanskar). For soil treatment it need to be applied through irrigation water as fertigation. The system has been demonstrated on a wide range of crops i.e. fruits, vegetables, cereals, pulses, oilseeds, sugarcane and cotton.

## 3. PANCHGAVYA KRISHI

Panchgavya is a special bioenhancer prepared from five products obtained from cow; dung, uine, milk, curd and ghee. Dr Natrajan, a Medical practitioner and scientist from Tamilnadu Agricultural University, has further refined the formulation suiting to the requirement of various horticultural and agricultural crops. Ingredients and methods of preparation of Panchgavya and enriched Panchgavya (Dashgavya) has already been described in preceding pages. The cost of production of panchgavya is about RS. 25-35 per lit.

Panchgavya contains many useful microorganisms such as fungi, bacteria, actinomycetes and various micronutrients. The formulation act as tonic to enrich the soil, induce plant vigour with quality production. Strength of various microorganisms detected in panchgavya are as follows:

- i. Total fungi 38,800/ml
- ii. Total bacteria 1,880,000/ml
- iii. Lactobacillus 2,260,000/ml

- iv. Total anaerobes 10,000/ml
- v. Acid formers 360/ml
- vi. Methanogens 250/ml

Physico-chemical studies have revealed that panchgavya possess almost all macro and micronutrients and growth hormones (IAA, GA) required for plant growth. Predominance of fermentative microorganisms such as yeasts and Lactobacillus helps improve the soil biological activity and promote the growth of other microorganisms. For foliar spray 3-4% panchgavya solution is quite effective. Four to five sprays ensure optimum growth and productivity: (a) two sprays before flowering at 15 days interval, (b) two sprays during flowering and pod setting at 10 days interval and (c) one spray during fruit/pod maturation.

Application of panchgavya has been found to be very effective in many horticultural crops such as mango, guava, acid lime, banana, spice turmeric, flower-jasmine, medicinal plants like Coleus, Ashwagandha, vegetable like cucumber, spinach, okra, radish and grain crops such as maize, green gram

and sunflower. Panchgavya has also been found to be reducing nematode problem in terms of gall index and soil nematode population. As due to application of panchgavya a thin oily film is formed on the leaves and stem, it reduces evaporation losses and ensures better utilization of applied water.



#### 4. Natural farming



Natural farming emphasizes on efficient use of on-farm biological resources and enrichment of soil with the use of Jivamruta to ensure high soil biological activity. Use of Bijamruta for seed/ planting material treatment and Jivamruta for soil treatment and foliar spray are important components. The use of both these ingredients have been incorporated in the package described above.

Jivamruta has been found to be rich in various beneficial microorganisms. As per the studies conducted by Bio Centre Bangalore the Jivamruta contains following microorganisms:

- Azospirillum-  $2 \times 10^6$
- PSM-  $2 \times 10^6$
- Pseudomonas-  $2 \times 10^2$
- Trichoderma-  $2 \times 10^6$
- Yeasts and moulds-  $2 \times 10^7$

200 lits of jivamruta is needed for one application in one acre. It can be applied through irrigation water by flow, by drip or sprinkler or even by drenching of mulches spread over the field or under the tree basin.

#### 5. NATUECO FARMING

The Natueco farming system follows the principles of eco-system networking of nature. It is beyond the broader concepts of organic or natural farming in both philosophy and practice. It offers an alternative to the commercial and heavily chemical techniques of modern farming. Instead, the emphasis is on the simple harvest of sunlight through the critical application of scientific examination, experiments, and methods that are rooted in

the neighborhood resources. It depends on developing a thorough understanding of plant physiology, geometry of growth, fertility, and biochemistry. This can be simply achieved through:

#### **'Demystification of Science'**

Prayog Pariwar has demonstrated that dissemination of relevant and often sophisticated science can be achieved in the local idioms of the common man. This can be very effective in bringing about a 'gray matter revolution'. With a new techniracy (technical literacy) for the management of soil, water, and canopy of leaves,



it promises high yields with minimal external inputs and optimal harvesting of sunlight.

### **Natueco Farming Step by Step**

Natueco Farming emphasizes 'Neighborhood Resource Enrichment' by 'Additive Regeneration' rather than through dependence on external, commercial inputs. The three relevant aspects of Natueco Farming are:

- a) **Soil** - Enrichment of soil by recycling of the biomass by establishing a proper energy chain.
- b) **Roots** - Development and maintenance of white feeder root zones for efficient absorption of nutrients.
- c) **Canopy** - Harvesting the sun through proper canopy management for efficient photosynthesis.

### **Basic Principals of Natueco farming**

**Harvesting the sun** : In all biological processes, energy input is required and solar energy is the only available resource. No time and no square foot of sun energy should be lost by not harvesting it biologically. Lost sun energy is lost opportunity. Photosynthesis is the main process by which Solar Energy is absorbed. It is of course the objective to obtain a higher degree of photosynthesis. Although genetically photosynthesis efficiency is around 1.5% to 2.5%, we can increase leaf index [area of leaf for every square meter of land] by caring for healthy canopies, use of multiple canopy utilizing direct and filtered sunrays.

### **Five Stages in plant life**

Every plant goes through five stages in its life: [1] Childhood [2] Puberty [3] Youth [4] Maturity and [5] Old age. These stages are of roughly equal duration and external interventions at specific stages are most important. (e.g. There is no use giving fertilizer dose when the plant has become old and is dying)

Generally, plants can be classified as having a seasonal, short duration life span [90 to 130 days], medium life span of 4 – 5 years, or perennial long life span. For short duration life span, all 5 stages become very critical. For example, if sumptuous roots are not developed in the first 15-20 days [20% of

lifespan] no amount of external inputs, thereafter will be useful or effective. Leaves and Branches also show these stages in their life cycles. Yellow, old leaves can only fall and cannot be rejuvenated. Old branches eventually become deadwood.

### **Medium for root zone**

Generally, this is soil. However, one can do without it as in the case of hydroponics.

The main purpose of the medium is

- To give support to the plant and anchoring it by means of shoot root and feeder roots.
- To supply nutrients to the feeder roots.
- To provide moisture to the plant roots.
- To provide good air circulation to the roots.

It is always possible to prepare an ideal soil by human intervention. The soil also supports a whole range of life starting from microorganisms up to earthworms. The presence of these life forms provide essential

benefits to the plant roots, in that they convert minerals found in nature into root-absorbable forms.

### Plants manufacture their own food

Unlike animals, plants manufacture their own food. By means of photosynthesis, water and carbon dioxide, is converted into sugar: glucose, which is then converted to other forms of sugar, lignin, fats, etc. Plants produce 3 – 4g of dry mass/ square foot of photosynthesis area / per one sun-day of 8 – 10 hrs. From this: (i) 1g is used in plant metabolism (ii) 1g is used to build plant body, roots, stem, leaves, etc and (iii) 1g is either stored or used for producing fruits.

It is very useful and instructive to know, especially about the timings and places of storage of food/ energy and how to tap them at appropriate time. Without the knowledge of this the enzymes and hormones [Gibberlic acid, Indol acetic acid] may lead to a stage, where plants grow with luxurious growth but scarce fruiting.

## 6. HOMA FARMING



Homa farming has its origin from Vedas and is based on the principle that “you heal the atmosphere and the healed atmosphere will heal you” The practitioners and propagators of homa farming call it a “revealed science”. It is an entirely spiritual practice that dates from the Vedic period. The basic aspect of homa farming is the chanting of Sanskrit mantras (Agnihotra puja) at specific times in the day before a holy fire. The timing is extremely important. While there is no specific agricultural practice associated with homa farming, the farm and household it is practiced in, is energised and “awakened”. The ash that results from the puja is used to energise composts, plants, animals, etc. **Homa Organic Farming is holistic**

**healing for agriculture and can be used in conjunction with any good organic farming system.** It is obviously extremely inexpensive and simple to undertake but requires discipline and regularity.

Agnihotra is the basic Homa fire technique, based on the bio-rhythm of sunrise and sunset, and can be found in the ancient sciences of the Vedas. Agnihotra has been simplified and adapted to modern times, so anybody can perform it. During Agnihotra, dried cow dung, ghee (clarified butter) and brown rice are burned in an inverted, pyramid-shaped copper vessel, along with which a special mantra (word-tone combination) is sung. It is widely believed that through burning organic substances in a pyramid-formed copper vessel, valuable purifying and harmonizing energies arise. These are directed into the atmosphere and are also contained in the remaining ash. This highly energized ash can successfully be used as organic fertilizer in organic farming.

Besides the practice of Agnihotra and the frugal distribution of Homa ash on beds and fields, a variety of further applications have also been recommended. Here are some examples:

**Impregnation of Seeds and Bulbs** - Before planting/sowing, seeds and bulbs are treated i.e., impregnated with a mixture of Agnihotra ash and cow urine. It is recommended to prepare a mixture of cow urine and water in a ratio of 50:50, to which up to 4 tablespoons of Agnihotra ash per 5 liters of solution are added and stirred. Seeds and bulbs should soak in this solution for 30-40 minutes.

This strengthens the germinating plant and makes it more resistant to pests. Like cow dung, cow urine has antibacterial effects and provides a protective coating around the seeds and bulbs. After this time of treatment, seeds are spread on filter paper, or other absorbent paper, to dry. They should be dry enough to spread, but moist enough so that the core of the seed doesn't dry out. Through the impregnation, germination is started- which would be ended if the seeds completely dried out. Bulbs may be planted immediately after being treated with the solution.

**Fertilizers** - In addition, plants can be fertilized with a mixture of Agnihotra ash, stinging nettles, and water. This special liquid fertilizer strengthens plants. The stinging nettles are fermented i.e. decomposed in the water for 7-14 days, depending on weather conditions and the amount of nettles needed. This mixture should then be diluted to a solution with a ratio of 1:9. In other words, 1 part stinging nettle solution is mixed with 9 parts water and filtered with a fine screen (sieve) into a spraying container or watering can.

**Plant Nutrient Solution** - To make an Agnihotra plant nutrient solution, up to 4 tablespoons of Agnihotra ash and up to 4 tablespoons of pulverized, dried cow dung are stirred in approximately 5 liters of water and then applied to plants. This may be repeated every 14 days, depending on how much it is needed.

**Spray Solution** - A nutrient solution to be sprayed can be made by mixing up to 4 tablespoons of Agnihotra ash with 5 liters of water. This spray solution is left standing for 3 days and then filtered through a fine screen before it is used to protect plants against pests and diseases. A spray solution can also be made from certain fern blossoms, in which approximately 150 grams of the blossoms, mixed with 2 liters of water and 2 tablespoons of Agnihotra ash, are left standing to ferment for 7-10 days. Filtered through a narrow-meshed screen and then finally distributed on the plants with a sprayer, this helps keep away pests such as snails.

**Gloria Biosol an effective homa biofertilizer** - Gloria Biosol is a very effective bio-fertilizer which can be produced simply in Homa atmosphere. Biosol liquid can be used for foliar application to nourish plants and soil. Biosol is superior to vermiwash as it contains high numbers of beneficial microorganisms and energy of homa process. Agnihotra Ash has a significant positive effect on all the materials used and makes the Biosol rich in macronutrients.

Materials required to make the Biosol are:

- Fresh cow dung
- Vermicompost
- Cow urine
- Agnihotra ash
- Water

Materials are mixed in a large tank (200, 500 or 1000 litre). One copper Shree Yantra disc is placed in the tank. The tank is then sealed and kept for 20 to 30 days. After digestion is complete, the slurry can be removed. Biosol is used diluted with Agnihotra ash water solution in the ratio of 1:10. For one hectare of agricultural area, 200 liters of Biosol in solution are required. Biosol in solution can be sprayed on any type of crop at an interval of fifteen days. The application of the Biosol solution should be made before sunrise or after sunset. If we preserve Biosol liquid in air tight cans it will last longer, say about six months. Left over solid Biosol which is having maximum macro nutrients should be mixed with any type of organic manure at a ratio of 1:5.



Contact for More Information

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