

(A No. 180) **Organic Farming: Basic Concept**

Jasveer Singh, Rajveer

Swami Keshwanand Rajasthan Agricultural University, Bikaner, India

Abstract

In India and across the world, during the past three to four decades, the increasing population has led to excessive use of chemical fertilizers and toxic pesticides to boost agricultural production. This situation has proved harmful to human health, soil fertility, and the environment. At present, along with ensuring food quality, awareness about environmental conservation has also increased. To provide safe and nutritious food to the growing population and to maintain ecological balance, organic farming has emerged as an essential and effective alternative.

Organic farming is considered a gift of India's ancient agricultural tradition. Farmers in our country have been practicing agriculture for centuries using natural resources. In simple terms, organic farming is a system of agriculture in which, while maintaining soil health and vitality, only organic residues, organic manures, and biological inputs are used for sustainable crop production. Organic farming is a sustainable production system based on natural processes and resources. Its main principles include proper use of locally available natural resources, effective utilization of sunlight and the natural capacity of biological systems, conservation and enhancement of soil fertility, recycling of organic residues and plant nutrients, restriction on the use of chemical fertilizers, pesticides and genetically modified organisms, and conservation of biodiversity with respect for all living beings and animals.

In organic farming, soil is considered a living system. Microorganisms, earthworms, and other biological components present in the soil play an important role in maintaining soil fertility. This helps in sustaining land productivity over a long period.

Benefits of Organic Farming

- Improves soil quality, fertility, and productivity
- Reduces cost of cultivation as chemical inputs are not required
- Organic produce fetches higher prices after certification, increasing farmers' income
- Ensures human health safety as food is free from chemicals

- Protects the environment and reduces pollution of water, soil, and air
- Maintains long-term agricultural sustainability and ecological balance

Methods of Organic Farming

Organic farming mainly depends on seed management, soil health management, crop nutrition management, and crop protection management. It involves the balanced use of traditional knowledge along with modern organic techniques.

(a) Seed and Seed Treatment

In organic farming, preference is given to local and traditional seed varieties. The use of chemically treated and genetically modified seeds is prohibited. Healthy, disease-free seeds with high germination capacity are essential. Important organic seed treatment methods include treatment with hot water at 53°C for 20–30 minutes, use of cow urine or cow dung solution, asafoetida solution (250 g in 10 liters of water), turmeric powder mixed with cow urine, and bio-preparations such as Beejamrit, Panchgavya, and Dashparni. Biological agents like *Trichoderma viride* (4 g per kg seed), *Pseudomonas* (10 g per kg seed), and biofertilizers such as *Rhizobium*, *Azotobacter*, and PSB are also used for seed treatment.

(b) Soil Health Management

Healthy and living soil is the foundation of organic farming. Organic matter, microorganisms, and earthworms help maintain soil fertility. Major practices include recycling of crop residues, preparation of compost using cow dung and cow urine, use of vermicompost, NADEP compost, BD-500 and BD-501, application of Panchgavya,





Jeevamrit and Dashgavya, use of lime and phosphate in acidic soils, and green manuring crops such as dhaincha, sunhemp, and cowpea. Use of human waste is strictly prohibited.

(c) Crop Nutrition Management

In organic farming, nutrients are supplied through natural sources such as vermicompost, farmyard manure, green manure, animal-based manures, biofertilizers like Rhizobium, Azotobacter, Azospirillum and PSB, foliar sprays of Panchgavya and Jeevamrit, crop rotation, and mixed cropping.

(d) Crop Protection Management

In organic farming, pests, diseases, and weeds are managed using natural methods such as crop rotation, intercropping, timely sowing, neem-based products, light traps, pheromone traps, sticky traps, conservation of beneficial insects, biological control agents like Trichoderma, Beauveria and Metarhizium, use of botanical extracts like Dashparni, Neemastr and Brahmastra, and cow urine-based formulations for disease control.

Useful Organic Inputs and Their Information

NADEP compost is prepared using a small quantity of cow dung along with a large quantity of organic waste (biomass) and sieved soil. Aeration is maintained during the process, and compost is ready within 90 to 120 days. It generally contains 0.5–1.5% nitrogen, 0.5–0.9% phosphorus, and 1.2–1.4% potash along with sufficient micronutrients. About 2000 to 5000 kg per acre is applied before sowing.

Vermicompost involves earthworms, known as farmers' friends, which mix organic matter, humus, and soil, improving soil structure, aeration, and water-holding capacity. It enhances the availability of nutrients like nitrogen, phosphorus, and potassium. It is odorless and does not attract flies or mosquitoes. Vermicompost is usually ready within one and a half to two months and contains about 2.5–3.0% nitrogen, 1.5–2.0% phosphorus, and 1.5–2.0% potash.

Biofertilizers are special formulations of beneficial microorganisms prepared in carriers like lignite, charcoal, or liquid media. These

microorganisms fix atmospheric nitrogen and convert unavailable forms of phosphorus, potash, and zinc into available forms for plants. They help increase soil fertility, reduce the need for chemical fertilizers, and protect the environment.

Rhizobium is the most commonly used biofertilizer for pulse crops and is crop-specific. It can fix about 50–135 kg nitrogen per hectare, increasing crop yield and leaving residual nitrogen (about 45–75 kg per hectare) beneficial for subsequent crops.

Azospirillum is another important biofertilizer that promotes root growth and fixes atmospheric nitrogen, making about 30–50% of nitrogen available to plants.

Phosphate-solubilizing microorganisms convert insoluble phosphorus, potash, and zinc into soluble forms. Normally, only 10–30% of applied phosphorus is utilized by plants, while the rest becomes fixed in the soil. These microorganisms make such nutrients available, increasing yield by about 10–25%.

Methods of Applying Biofertilizers

Seed treatment involves mixing biofertilizer in a jaggery solution and coating seeds before sowing. Root treatment is mainly used for transplanted crops by dipping roots in biofertilizer solution before planting. Soil treatment involves mixing biofertilizer with compost or soil and applying it to the field before sowing.

Organic Pest and Disease Management Practices

Cow urine is stored and used as a spray (12–15 ml per liter of water) at regular intervals to develop resistance in crops against pests and diseases. Neem products are widely used; for example, neem leaf extract is prepared by soaking 10–12 kg leaves in 200 liters of water for four days and then spraying it for pest control. Neem cake applied at 6–8 quintals per acre controls termites and soil-borne diseases.

Trichoderma is an effective biofungicide used for seed, soil, and root treatment to control fungal diseases.



SCAN
OR
FOR
MORE

Volume 11 Issue 111

www.kisangazette.in



For caterpillar control, a mixture of neem leaves fermented in cow urine is sprayed. Termite control can be done using traditional trap methods with crop residues.

Panchgavya is prepared from five cow products (cow dung, cow urine, milk, curd, and ghee) and promotes crop growth and disease resistance. Jeevamrit is a fermented mixture of cow dung,

cow urine, jaggery, pulse flour, and soil that enhances soil microbial activity and plant growth. Beejamrit is used for seed treatment to control seed-borne diseases. Amrit Pani is a liquid organic fertilizer prepared from cow dung, cow urine, milk, ghee, and honey, which improves crop growth and disease resistance when applied in the field.

कृषि विज्ञान की मासिक पत्रिका

किसान गज़ट

