

# SUBHASH PALEKAR NATURAL FARMING: A WAY TO HEAL THE CHEMICALLY DEGRADED SOILS

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## Abstract

Now a day's our quest for maximizing agricultural production is leaving a trail of adverse impact on the ecosystem and biological activity of the soil, making it lifeless in many areas. The impact of the green revolution has shifted the farmers from the use of the traditional self-sufficient natural farming system to a highly intensive chemical based cropping system which has shown a harmful impact on nature and human life. Subhash Palekar Natural Farming (SPNF) of using in-farm inputs like jeevamrit, ghanjeevamrit, etc made from the local indigenous cow reared on the farm with its beneficial effects is becoming the need of the hour. It is one of the sustainable strategies for sustainable agriculture productivity without the use of harmful chemical-based inputs. In India, many states are adopting natural farming, Himachal Pradesh government also took a resolution to make the state fully natural by 2022 through the promotion of schemes and subsidies for adopting natural farming. However natural farming and its future adaptability need to be enhanced by increasing awareness among farmers through different government schemes and more research in this field to make our agriculture sustainable for the future.

## Introduction

Throughout the world, intensive agriculture has frequently led to a decline in soil health and has posed serious concerns of environmental pollution, health hazards, loss of biodiversity and threat to sustainability. Inorganic fertilizer has played a significant role in increasing crop production since the "green revolution" however they are not a suitable solution for sustaining crop yield. The overuse of mineral fertilizer accelerates soil acidification and affects both soil



biota and biochemical processes. Thus, the responsiveness towards organic farming needs to be created to sustain soil fertility and plant productivity. Among all the organic farming practices like Rishi Krishi, Panchgavya Krishi, Homa Farming, Biodynamic Agriculture, EM Technology etc the natural farming is becoming the most favorable between the researchers and the government.

The Prime Minister of India aims to empower the farmers by doubling their income and making agriculture an attractive and sustainable enterprise. There are many working models of natural farming all over the world but nowadays the SUBHASH PALEKAR NATURAL FARMING (SPNF) is the most popular model in India which is utilized by various farmers across the different states in India. This comprehensive, natural, and spiritual farming system was developed by Padma Shree Sh. SUBHASH PALEKAR. This farming is practiced across different states with its adaptation first in Andhra Pradesh in India. In Himachal Pradesh, this project of natural farming is also growing very fast. This system of farming not only offers a way to achieve the aim of doubling farmer's income but it is considered as the most desired system to replace the chemical based intensive agriculture. Therefore, the adoption of this traditional practice of natural farming will not only reduce the pressure of indebtedness among farmers brought by the high cost of inputs and mechanization but also is an eco-friendly and sustainable approach to agriculture for the future.

### **What is natural farming how natural farming is different from other organic farming practices?**

Natural farming is an ecological farming approach established by MASANOBU FUKUOKA (1913–2008), a Japanese farmer and philosopher, who introduced it in his 1975 book "The One-Straw Revolution". It is also referred to as "THE FUKUOKA METHOD", "THE NATURAL WAY OF FARMING" or "DO-NOTHING FARMING". It focuses on working with nature to keep the land healthy, to produce healthy food and to keep ourselves healthy. This method of farming believes that valuing nature is the best way to achieve top quality and yield. In this farming, farmers grow their crops according to the laws of nature and not by challenging them whereas in organic farming use of naturally available resources to enhance productivity after intervening with the natural resources with more effort and cost is practiced. In organic farming, inputs like vermicompost, biofertilizer, etc which are cost

intensive are used whereas in natural farming in-farm inputs like jeevamrit, ghanjeevamrit, etc which are made by local indigenous cow reared on the farm are utilized for farming practices.

### Why Natural Farming?

Natural farming is an eco-friendly approach with the following features which make it useful for the farmers and the environment:

- No pesticide
- No herbicide
- No tillage
- No chemical fertilizer
- No pollution
- No artificial heating

### What is Subhash Palekar Natural Farming (SPNF)

Subhash Palekar Natural Farming involves the use of low cost and locally sourced available inputs. In this type of farming bio-fertilizers and bio-pesticides which are prepared from indigenous cow dung and urine are used. This technique is heavily dependent on the rearing of indigenous cows. Thus, the purchase of indigenous breeds of cows is one of the primary requirements to adopt this system. Cultural practices like intercropping, mixed cropping, crop rotation, raised bed cultivation, etc. are also considered as a key component for disease management by making natural barriers in this type of farming.

### Main pillars of Subhash Palekar Natural Farming

The practice of SPNF basically involves the substitution of external inputs like fertilizers pesticides by natural inputs which are described through these four pillars in Table-1.

<b>Table-1 Basic pillars of SPNF</b>			
	<b>Application</b>	<b>Composition</b>	<b>Benefit</b>

<b>Jeevamrit</b>	Inoculation of a fermented microbial culture derived from cow dung and urine, jaggery, pulse flour and soil	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 10 kg cow dung</li> <li>• 5-10 lit. cow urine</li> <li>• 1-1.5 kg jaggery</li> <li>• 1-1.5 kg pulse flour</li> <li>• One feast of soil from any bund of a basin of an old tree</li> </ul>	Stimulate microbial activity to make nutrients bioavailable and protection against pathogens, also provide some traces of nutrients like nitrogen to the plants.
<b>Beejamrit</b>	Seed treatment using local cow dung and cow urine	<ul style="list-style-type: none"> <li>• 20 lit water</li> <li>• 5 kg local cow dung</li> <li>• 5 lit. local cow urine</li> <li>• 50 gm lime</li> <li>• One feast of soil from any bund of basin of old tree</li> </ul>	Protects young roots from fungus and seed borne or soil borne diseases
<b>Achadan/ Mulch</b>	Covering the topsoil with cover crops and crop residues i.e., soil mulch, straw mulch and live mulch		Produces humus, covers topsoil, increases water retention, encourages soil fauna, prevents weeds

<b>Wapsa/ Moisture</b>	Irrigation during noon in alternate furrows to make air and water molecules to remain in the soil.		Increase water availability, water use efficiency and increase resilience to drought
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### Other Pillars of Subhash Palekar Natural Farming

#### ➤ **Intercropping and Crop Rotation**

Cultivation of two or more crops in a definite pattern i.e.combination of monocot or dicot plants or long and short life span species is practiced in SPNF, it helps to break the habitat and act as a barrier to insect pests and diseases. Wider spacing of crops to facilitate inter cropping and mixed cropping of cereals, millets, leguminous crops, horticulture crops particularly vegetables and even medicinal plants is recommended in SPNF which reduces the single crop failure and widens the income source of farmers.

#### ➤ **Contours and bunds**

Construction of bunds and contours helps to reduce water borne erosion of land and conserve rainwater for crop production.

#### ➤ **Indigenous species of Earthworms**

The presence of indigenous earthworm species in the deeper soil is known to enhance soil fertility after the addition of organic matter (Achadan).

#### ➤ **Cow dung**

The dung and urine of indigenous cow species are only recommended in SPNF as Indian species contain more beneficial microorganisms than foreign breeds for benefits in crop production.

#### ➤ **Plant Protection**

Natural pesticides derived from natural bioproducts are used in SPNF for controlling various seed, soil and airborne diseases as well as insects like aphids, jassids, mealy bugs, whiteflies, etc(Table 2).

#### ➤ **Plant Nutrition**

Some natural inputs like Ganjeevamrit, Jeevamrit, sapatdanyankur prepared by using cow dung and urine of only indigenous cow are used in SPNF for plant nutrition.

(Table3)

<b>Natural Pesticide</b>	<b>Composition</b>	<b>Benefits</b>
<b>Neemastar</b>	<ul style="list-style-type: none"> <li>• 100 lit Water</li> <li>• 10 lit cow urine</li> <li>• 2 kg cow dung</li> <li>• 5 kg neem leaves &amp; dried fruits of neem</li> </ul>	Used against whiteflies, Aphid, Jassid, Termites, Nematodes, Milli bugs, Sucking pest, Grasshoppers and fruit borers.
<b>Agniastar</b>	<ul style="list-style-type: none"> <li>• 2 kg Neem leaves</li> <li>• 500gm tobacco powder</li> <li>• 500 gm green chilly pulp</li> <li>• 250 gm desi garlic pulp</li> <li>• 20 lit cow urine</li> </ul>	Effective against all sucking pests, Small caterpillars and grubs, leafhoppers and fruit borers
<b>Brahmastar</b>	<ul style="list-style-type: none"> <li>• 20 lit. cow urine</li> <li>• 2kg (each) crushed leaves of any 5 plants whose leaves are bitter in taste, have medicinal properties and are not eaten by animals</li> </ul>	Used against sucking pests, big caterpillars and grubs
<b>Dashparniark</b>	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 20 lit. cow urine</li> <li>• 20 lit cow dung</li> <li>• 2 kg (each) crushed leaves of any 10 plants whose leaves are bitter in taste, have medicinal</li> </ul>	Used against stem borers and all types of serious insect pests.

	<p>properties and are not eaten by animals</p> <ul style="list-style-type: none"> <li>• 500 gm Haldi powder</li> <li>• 500 gm ginger pulp</li> <li>• 10 gm hing powder</li> <li>• 1 kg tobacco powder</li> <li>• 1 kg green chilly</li> <li>• 500 gm desi garlic pulp</li> </ul>	
<b>Neem malham</b>	<ul style="list-style-type: none"> <li>• 50 lit. water</li> <li>• 20 lit. cow urine</li> <li>• 20 kg fresh cow dung</li> <li>• 10 kg neem leaves/fruit pulp</li> </ul>	Effective against all stem affecting insects
<b>Jeevamrit</b>	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 20 lit Jeevamrit</li> </ul>	It contains some fungicidal properties
<b>Khatti Lassi</b> (sour buttermilk)	<ul style="list-style-type: none"> <li>• 100 lit water</li> <li>• 5 lit Khatti lassi</li> </ul>	It contains some fungicidal properties and helps to control viral diseases
<b>Jungle Ki kanthi</b>	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 5 kg dried cow dung or dried dung collected from jungle tied in a jute bag (like a tea bag)</li> </ul>	Used as a fungicide
<b>Sonthastar</b>	<ul style="list-style-type: none"> <li>• 200 gm dried ginger</li> <li>• 5 lit. milk</li> <li>• 200 lit. water</li> </ul>	Used against all fungal, bacterial & viral diseases

**Table 3: Different plant nutrition inputs used in SPNF**

Nutritional inputs	Composition	Benefits
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<b>Jeevamrit</b>	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 10 kg cow dung</li> <li>• 5-10 lit. cow urine</li> <li>• 1-1.5 kg jaggery</li> <li>• 1-1.5 kg pulse flour</li> </ul> <p>One feast of soil from any bund of a basin of an old tree</p>	Stimulate microbial activity to make nutrients bioavailable and protect against pathogens, also provide some traces of nutrients like nitrogen to the plants
<b>Ghanjeevamrit</b>	<ul style="list-style-type: none"> <li>• 100 kg dried cow dung</li> <li>• 1 kg jaggery or fruit pulp</li> <li>• 2 kg pulse flour</li> <li>• Cow urine (according to need)</li> </ul>	Provide nutrients to plants and help to stimulate microbial activity in the soil. It is more suitable for the rainfed area.
<b>Sapatdhanyankur</b>	<ul style="list-style-type: none"> <li>• 200 lit. water</li> <li>• 100 gm Till</li> <li>• 100gm green gram</li> <li>• 100gm black gram</li> <li>• 100gm cowpea</li> <li>• 100 gm moth bean</li> <li>• 100 gm wheat</li> <li>• 100 gm gram</li> <li>• 10 lit cow urine</li> </ul>	It provides shine to the product, reduces fruit fall, maintains size and shape of the product, provides good essence to product and also provide resistance from all-natural disaster

### SPNF Movement in Himachal Pradesh

SPNF is a sustainable agriculture movement run by small and marginal farmers of rural India with its arrival first in Karnataka in 2002 and its fast spread to different states, particularly of South India. In Himachal Pradesh (H.P.) it began with “PrakritikKheti Khushal Kisan Yojana” schemes started in February 2018 by Govt. of Himachal with an aim to double the farmer's income. State Project Implementing Unit (SPIU) of Department of Agriculture (DOA)



H.P. formulated a working plan to meet this objective wherein one lakh farmers were inspired to adopt natural farming through training and different media. So far 1,02,253 farmers have been trained in natural farming and 1,07,564 have fully or partially taken to this method. H.P. Government has also provided assistance to farmers through subsidy in the purchase of indigenous desi cow, running of prakritik kheti sansadhan bhandar, the lining of the cowshed and on-farm input generation. In H.P. the SPNF technology is spread among the farmers by the ATMA team of DOA at the block level.

### **Some conclusions by SPIU, Department of Agriculture, Himachal Pradesh on SPNF**

As per the success stories report of district Shimla, published by the state project implementation unit (SPIU) of Department of Agriculture Himachal Pradesh, Shimla, the cost of cultivation has significantly declined in natural farming practices as compared to chemical farming which lead to an increase in the net return of practicing farmers. Less incidence of apple scab & premature leaf fall was also reported in natural farming orchards as compared to orchards maintained by chemical farming.

They also concluded that natural framing promotes the different enzyme activities in the soil such as Dehydrogenase, Alkaline Phosphatase and Acid Phosphatase. In continuation to this, the population of these enzymes were recorded highest in natural farming than in chemical and other organic farming practices.

As local species of earthworms play an important role in providing different nutrients to the plants in natural farming, their population was surprisingly recorded highest in natural farming. The highest population of local earthworms was recorded in high density apple orchards where natural framing was followed. In their denouements, they also concluded that the SPNF has been able to maintain 1.5-7.80 percent more moisture content in soil than chemical and other organic farming practices.

Field surveys by agriculture officials in Himachal have shown that the total variable cost for conventional farmers is Rs 2.29 lakh per hectare and it is only about Rs 1 lakh per hectare for growers using natural farming method. The overall productivity of apples among farmers who have switched to the new technique has increased marginally from 11.24 tonnes



per hectare to 11.65 tonnes per hectare, and the productivity of companion crops in these farms has also risen by a whopping 158 percent.

According to the surveys, 99 percent of apple growers have reported a better taste of apples grown with SPNF, 59 percent of them have reported a higher yield, 89 percent said the production cost has decreased and 99 percent reported a better drought adaptation of the crop. A deserted apple orchard at the Regional Horticulture Research and Training Station of the Dr. YS Parmar University of Horticulture and Forestry, Solan, at Mashobra had been revived by introducing the Subhash Palekar Natural Farming (SPNF) technique.

### Conclusion

SPNF system of farming has advocated a renewed sense of confidence among farmers to make farming an economically viable venture and has freed them from the debt trap. This system of farming has the potential in conserving biodiversity and ecosystem services along with strengthening climate resilience and improving livelihoods, as this farming involves the use of minimum external inputs by application of supplements like jeevamrit which improves the soil fertility by increasing the soil microflora and available nutrients. This method also encourages multi cropping biodiversity of micro and macro flora. Minimization of labor and production costs with savings on the costs of seeds, fertilizers and plant protection chemicals help farmers increase their net income. Diversification of crops in this type of farming and continued retention of crop residues help in maintaining soil health and provides a nutritional balance which in turn overcome malnutrition in rural areas. Management of pests and diseases without the use of harmful pesticides is also a key component of this type of farming. Thus, this system of farming is environmentally friendly and cost-effective which can be beneficial to both farmers or soil health and can replace industrial agriculture by promoting and engaging more farmers in this type of farming for sustainable agriculture in the upcoming future.

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