

Flourishing Multi-Layer Crops in Natural Farming - Success Story in Gujarat

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Natural Farming is an agro-ecological farming approach that promotes growing crops in harmony with nature. A five-layer agro forestry model of cultivation is practiced by a tribal farmer in Navsari district. It is a very good perennial source of livelihood for the farming community and become a mock-up farm in and around the area. Shri. Manubhai Bhikhabhai Patel native of "Bhinar" village in Vandsa taluka of Navsari district Gujarat, practicing agriculture farming since 15 years. Once he retired from the regular government job, he becomes a full-time farmer. He conducts many workshops on natural farming for a group of 40 farmers in each batch accompanied by ATMA and other agriculture departments, SAUs and NGOs. He became a resource person and said the five-layer farming model is good for soil health and the use of natural farming practices is essential for sustainable growth. Basically, multilayer cropping is a type of agro-forestry model which integrates trees with various levels of plant canopies, each layer at an optimum level to harvest the sunlight. It includes various crop and tree combinations, including living fences on the edges, and trenches for water harvesting. Farmers have further adapted this model according to their needs

and in many states and many local versions have been found.

He practiced all the four basic principles of natural farming viz., Bijamrith, Jeevamrith, Achhadan and Wapahasa as we all know Jivamrita: A fermented microbial culture derived from cow dung and urine, jaggery, pulse flour and soil It stimulate microbial activity to make nutrients bio-available. Bijamrita: a microbial coating for seeds, based on cow dung, urine, and lime it Protects young roots from fungus and seed borne or soil borne diseases. Acchadana- mulching: Covering the top soil with cover crops and crop residues; It produces humus, conserves top soil, increases water retention, encourages soil fauna, prevents weeds. Whapahasa: Soil aeration, a result of jivamrita and acchadana- represents the changes in water management brought about by improved soil structure and humus content it Increase water availability, water use efficiency, increase resilience to drought.



In the five / multi-layer farming mulching happens automatically when the farmers grow cereals, leafy vegetables, tubers and other small crops are grown. Intercropping and multi cropping is compensated by the additional income, making farming a close to zero budget activity. Continuous application of jeevamrith and other natural farming components has increased the soil microbial activity

and the revival of local deep soil earthworms through increased organic matter. It is a field practice to conserve the soil moisture and to control the weeds.



Crop residues like paddy straw, Sugar cane trash, Green gram husk, Maize stalks, Leaves, and Coir dust etc., Mulching adds humus to the soil, keeps soil cool in day and warm at night hours. Maintain optimum soil moisture, irrigation after a long dry spell results in cracking of fruits. Inter crops (up to 5 years old Mango orchards) like Millets, Pulses, Vegetables, Leafy vegetables and Creeper vegetables like Little gourd, Spine gourd and Bottle Gourd was grown in between two rows of Mango trees and plant filler fruit trees like Papaya, Drumstick, etc. were also observed in his farm. In the shady area he also cultivated Tuber crops like Turmeric, Ginger, Carrot, Beet root, Onion, Radish etc., and Leafy vegetables like spinach and

amaranthus were observed. Farmer experienced the growing of multi crops/ Inter crops in between rows in areas with sunlight, must be integral part in Mango cropping system. Income from main crop and other crops are documented.

Natural Farming and Conventional Farming

Parameters	Natural Farming (Area in ha)	Conventional Farming (Area in ha) <i>Mango as sole crop</i>
Name of Crop: Mango	1 ha	1 ha
Cost of cultivation (Rs)	65,000	1,04,900
Production (q)	100.8	80.8
Gross return (Rs)	2,52,000	2,02,000
Net return (Rs)	1,87,000	97,100
B:C ratio	3.87	1.92

Production quantity of Intercrops per ha

Year	Turmeric (tonn)	Brinjal (tonn)	Ginger (tonn)
2019	25	39	10
2020	25	40	10
2021	26	40	11
2022	28	43	13
2023	29	44	13

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