

NFC Model: A new paradigm for sustainable agriculture

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In pursuit of sustainable agriculture, a revolutionary model has emerged, one that places primary importance on the symbiotic connection between nature, farmers, and consumers. This ground-breaking model, named 'Nature-Farmer-Consumer' (NFC) model, promotes a drastic shift from conventional, linear supply chain frameworks and upholds the idea that consumers are not passive observers but active influencers in the journey for sustainable transformation within agri-food systems.

Keywords: Consumers, Model, NFC, Sustainable agriculture

The Triple Fracture: In the traditional agricultural scenario, consumers find themselves confined to the role of passive viewers who express their preferences primarily through their purchasing decisions. This perspective aggravates the disconnection that exists among consumers, producers, and nature, ultimately resulting in what experts have termed a 'triple fracture.' The NFC model emerges as a remedy, a blueprint for healing this fracture by fostering a much-needed reconnection between these three critical components of the food system.

Empowering role of consumers in the NFC model

At the heart of Nature-Farmer-Consumer (NFC) model is the pivotal role given to consumers. This model asserts that consumers, by virtue of their proximity to nature and farmers, possess significant control in promoting sustainability within agriculture. Their conscious choices regarding the food they consume hold the potential for profound influence on agricultural practices, ultimately contributing to the development of more sustainable and ecologically

responsible food systems. To illustrate this concept further, let's examine a real-life scenario where a consumer frequently visits a local farmer's market. In this scenario, the consumer enjoys a unique opportunity to engage in meaningful dialogue and interact directly with the farmers responsible for cultivating their food. Consumers can inquire about farming methods, about pesticide usage, and gain insights into the treatment of farm workers. Armed with first-hand knowledge from direct interaction about the origin and production practices of the food they purchase, consumers can exercise their power by consciously selecting products that align with their ethical and environmental considerations. This simple act of choice has a ripple effect, influencing not only individual purchasing decisions but also sending signals to the farmers and agricultural industry



about consumer preferences for sustainability. Therefore, the NFC model highlights that consumers are not mere passive participants in the food system. Rather, they play an active and influential role in shaping the path towards a more sustainable and attentive approach to agriculture.

Key practices of NFC model of farming

- **Seed preservation in friendly seed banks:** The farmers collect and donate seeds from their harvests to the friendly seed banks. These seeds are typically of open-pollinated, and non-hybrid varieties that are well-adapted to local environment. Farmers provide information about the seeds they donate, such as the type of crop, variety, growing conditions, and specific traits or qualities the seeds possess. Farmers can access seeds from the seed banks for planting and contribute back seeds after harvest, thus perpetuating the cycle of seed preservation and exchange within the community. Friendly seed banks aim to protect and share seeds of diverse and traditional varieties,

safeguarding agricultural heritage and biodiversity.

- **Chemical-free farming, opting for cover crops to enhance soil fertility:** Farmers opt for organic and natural soil amendments such as compost, organic manure, and bio-fertilizers to boost soil fertility without relying on synthetic chemicals for increased microbial activity, preventing soil erosion and enhancing the availability of nitrogen in the soil. Farmers gather animal waste and combine it with organic materials like crop residues, kitchen scraps, and plant matter. The resulting compost is used for improving soil structure, providing nutrients to crops, and overall soil health.
- **Soil testing:** With the results of soil testing from certified laboratories, deficiencies, and necessary amendments or adjustments to improve soil health is done by adding organic matter, using natural fertilizers or compost.
- **Intercropping and crop rotation to support biodiversity:** Intercropping increases biodiversity, leading to better nutrient utilization and soil health. By growing different crops simultaneously, NFC farmers make more efficient use of the available land, maximize yields and reduce the risk associated with depending solely on one crop. Crop rotation prevents soil depletion by alternating crops with varying nutrient needs. Thus, legumes help fix nitrogen in the soil, benefiting subsequent crops. Rotating crops disrupts pest and disease cycles also.
- **Multi-layer farming for diverse crops:** In multi-layer farming, different crops of different height are grown in the same area creating different height level or layers. One example is Ginger-Amaranthus-Papaya. Within 2-3 weeks of planting, the amaranths covers the soil leaving no space for weed to grow. The amaranthus is



Multi-layer farming in Akash Chaurasia's farm
(Source: The Better India)

harvested by uprooting instead of cutting which loosens the top soil thus helping sunlight and oxygen to penetrate into the soil making the crop below like ginger, more healthier. The water consumption is also significantly reduced. Around 80% of Indian farmers have landholdings of less than 5 acres indicating great scope for multi-layer farming in India.

- **Sustainable equipment choices:** Country tools such as hoes, hand planters, and hand weeders are preferred for tasks like planting, weeding, and harvesting. These manual tools reduce reliance on fossil fuels and minimize environmental pollution. Irrigation by drip or sprinkler irrigation is used instead of flood irrigation to minimize water wastage. Solar pumps are used instead of using diesel engines. NFC farmers employ low-till or no-till equipment, which prevents erosion, and promotes soil health by preserving soil structure and organic matter.
- **No-tillage:** NFC model follows no-till or zero-till farming practices aim at working with nature and not against it. Zero tillage involves growing crops without disturbing the soil through ploughing, harrowing, or other mechanical means. Zero tillage reduces soil erosion and water runoff, which helps to conserve soil moisture and

nutrients. It improves soil structure and fertility, which enhances crop growth and yield besides saving time, labour, and fuel. Zero tillage is beneficial for the consumers and the environment too.



Zero-tillage farming
(Source: The Better India)

- **Mulching for weed suppression and water retention:** Mulch forms a physical barrier over the soil, hindering weed growth by blocking sunlight and impeding weed seed germination. Farmers use straw, wood chips, or leaves as a mulch materials which contribute to weed suppression. Mulch helps to maintain soil moisture levels and soil temperature, protecting the soil from extreme heat or cold.
- **Natural pest control methods:** In NFC model, pest-repelling



Intercropping of marigold for deterring nematodes
(Source: Gardener's Path)

plants such as marigolds and onions are favoured over synthetic pesticides or insecticides. Marigolds roots release alpha-terthienyl that repel nematodes, helping to

protect neighbouring plants. Onions, garlic and chives, possess natural insect-repelling properties due to their sulfur compounds and are known for deterring pests such as aphids,

cabbage worms, and other insects. Intercropping onions or planting them as a border crop can help protect neighbouring plants from insect damage.

Challenges

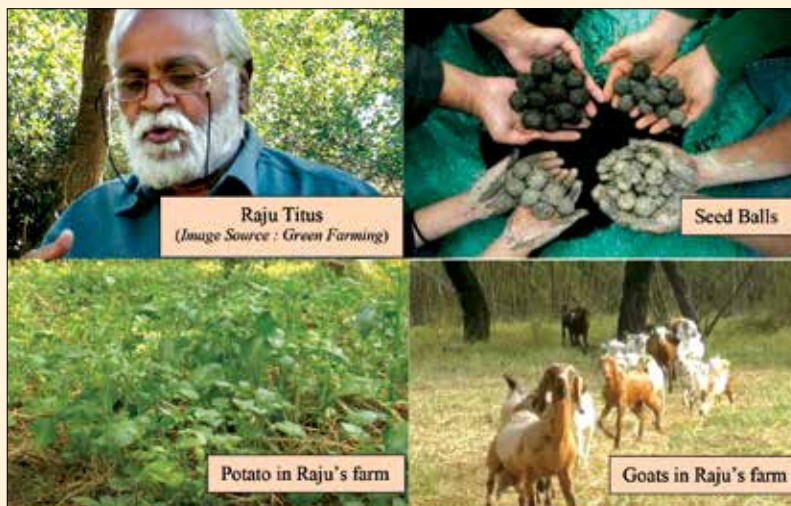
NFC model of farming promotes sustainable and eco-friendly practices, but suffer from some practical disadvantages and potential challenges that could hinder its widespread adoption. The transition from conventional farming to NFC may initially yield lower productivity due to the time required for the effectiveness of natural methods like organic pest control and soil improvement techniques to develop. Many NFC farming techniques, such as manual weeding, hand planting, and the use of traditional tools, are more labour-intensive. This can be challenging in areas where labour availability is limited besides there may be instances where certain pests or diseases become challenging

SUCCESS STORY

Raju Titus was a conventional farmer who used chemical fertilizers and pesticides to increase his crop yield. He had a 12-acre ancestral land in Hoshangabad district, Madhya Pradesh, where he grew various crops like wheat, rice, and soybean. He had a government job too but was passionate about farming. However, his farming methods proved to be unsustainable. He faced huge losses and was on the edge of giving up farming. Things however changed when his mother brought him a book called 'One Straw Revolution' by Masanobu Fukuoka, a Japanese farmer and philosopher. The book introduced him to the concept of natural farming, which is based on the principle of working with nature and not against it. Raju was intrigued by the book and decided to give natural farming a try. He stopped tilling his land and sowed a variety of seeds of grains, pulses, vegetables, and trees. He also stopped using any external inputs and let the soil regenerate itself. He switched from keeping cows and buffaloes to rearing goats, which provided him with milk, meat, and manure.

Raju's experiment paid off. His farm became a lush and diverse garden, where he could harvest different crops throughout the year. He earned nearly ₹ 1.5 lakh annually from his 13.5 acre land with net income rise by 30%. He saved about ₹ 25,000 on input costs every year. His farm became a model of natural farming and inspired many other farmers in his region. He became a pioneer and a leader of the natural farming movement in India.

Raju Titus's story is a testament to the power and potential of natural farming. He showed that it is possible to farm in a way that is beneficial for the environment, the farmers, and the consumers. He demonstrated that natural farming is not a backward or primitive practice, but a modern and innovative one. He is a living example of how one can grow and let grow.



to manage without resorting to synthetic interventions, leading to potential crop losses.

SUMMARY

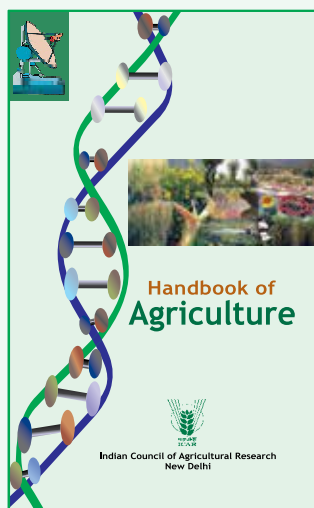
The 'Nature-Farmer-Consumer' model emphasizes the pressing need for a comprehensive approach to sustainable agriculture — one that engages all stakeholders, from farmers to consumers, and acknowledges their interconnectedness. By nurturing

a closer and more symbiotic relationship among consumers, farmers, and nature, NFC model charts an optimistic course towards the realization of more sustainable and resilient food systems. Food that is grown locally does not have to be transported long distances, thus reducing greenhouse gas emissions. In addition, consumers who have a close connection with nature are more likely to value and protect it. NFC model beckons us to recognize

that our choices, however small they may seem, have the power to nurture a sustainable, regenerative, and harmonious relationship between nature, farmers, and consumers - a relationship that holds the key to a brighter and more sustainable future for all.

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TECHNICAL SPECIFICATIONS

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