

## A Study of Indigenous Farming Practice- Role of the Government in Current Scenario in India

**Dr. Mugdha Deshpande,**  
Dayanand Arya Kany Mahavidyalaya,  
Jaripatka, Nagpur

### Abstract

Agriculture has been practiced in India since Neolithic age. The wisdom of the farmers, reflected in traditional farming practices is well documented. With limited population to support and subsistence based agriculture, all was well.

But today after the fourth industrial revolution agriculture also has undergone a sea change. Uncontrolled growth of population meant more mouths to feed, on the other hand low agricultural productivity, poverty, frequent floods and droughts, migration of labor to urban areas in search of employment added to the farmer's woes. Embedding achievements of science and technology encouraged use of chemical fertilizers, insecticides and pesticides, genetically modified seeds, irrigation accurate weather forecasting improved yield but made agricultural output chemical infested and dangerous for human consumption. Forest cutting on large scale and other activities led to creation of ecological disturbances.

Trying to imbibe western developments of science and technology into Indian agriculture by ignoring our traditional practices was like trying to fit a square peg into a round hole. It brought along a whole lot of problems.

Now the key lies in rejuvenating traditional farming methods, shifting towards organic agriculture and weaving it with science to get maximum benefits for the farmer and the nation.

This paper makes an attempt to understand various traditional farming methods and their relevance today. Special importance has been given to policies and plans of the Government of India for reviving agriculture. Food security issues have also been touched. However most important policies have been implemented after 2017 and hence their outcomes remain a matter of study

### Introduction

Agriculture has been practiced in India since nearly 7500BC. Indian history has documented proof of depth of knowledge of ancient farmers regarding soil fertility, crop selection, seasons of sowing, harvesting, manuring of fields and so on. Over the years there has been refinement of knowledge due to experience and weaving of technological development in agriculture and allied fields .

The fourth industrial revolution heralded an exponential pace of technological change. The digital revolution combined with advances in computing power, biotechnology, artificial intelligence has transformed not only industry but also society. Burgeoning population migration of labor to urban areas, low productivity in agriculture, poverty, lack of access to land and irrigation credit, climate change, frequent floods and droughts demand action on part of the government.

With the above mentioned issues agriculture still engages 50% of our population and contributes to 6.1 % of our GDP ( as per reports of 2017) hence the need of the hour of to combine traditional knowledge with modern developments to solve problems faced by farmers. Enable technology based solutions; improve productivity, output and standard of living of the farmer.

### Objectives

#### The purpose of this study was to find out

1. The effect of development of technology and its seeping into the fabric of Indian society, 50% of which comprise of people engaged in agriculture.
2. Impact of technology itself on agriculture. Whether there is embedding of technology to solve issues faced in farming
3. How indigenous farming practices have changed or have been helpful to guide farmers

to current position

4. Food safety and security issues arising out of development of science and technology
5. Last but not least role of government and their policies leading to change.

#### Data Type and analysis

The study is based on secondary data provided by the GOI Indigenous farming methods

They have evolved over time region wise as per differences in climatic conditions. For eg

- \* Podu' or 'Penda' in Andhra Pradesh,
- \* Pama Dabi' or 'Koman' or Bringa' in Orissa
- \* Jhumming' in the North-Eastern states, Bastar district of Chattisgarh, and in the Andaman and Nicobar Islands.
- \* Kumari' in the Western Ghats
- \* Bewar' or 'Dahiya' in Madhya Pradesh
- \* Khil' in the Himalayan region 'Valre' or 'Waltre' in South-eastern Rajasthan
- \* Kuruwa' in Jharkhand

Crops grown: Some of the crops grown through the primitive method are bananas, cassava, rice, maize, and millet.

1) Other methods include 1. Crop Rotations has been used successfully used for thousands of years in agriculture and is still in use. Crop rotation is the practice of growing different crops on the same land so that no bed or plot sees the same crop in successive seasons. By doing so the productive capacity of the soil is preserved, pests and diseases are minimized and chemical use is reduced, and manage nutrient requirements, all of which help to maximize yield. It builds better soil structure and increases the ability to store carbon on farms

2. Polyculture systems involve growing many plants of different species in the same area, often in a way that imitates nature. By increasing plant biodiversity, polyculture systems promote diet diversity in local communities, are more adaptable to climate variability and extreme weather events, and are more resilient to pests and diseases. Polycultures are integral to

permaculture systems and design and provide many advantages such as better soil quality, less soil erosion, and more stable yields when compared to monoculture systems

3. Agroforestry involves the deliberate maintenance and planting of trees to develop a microclimate that protects crops against extremes. Blending agricultural with forestry techniques, this farming system helps to control temperature, sunlight exposure, and susceptibility to wind, hail, and rain. This system provides a diversified range of products such as food, fodder, firewood, timber, and medicine while improving soil quality, reducing erosion, and storing carbon. Navdanya is an NGO based in India founded by Dr. Vandana Shiva that is actively involved in the rejuvenation of indigenous knowledge and culture through organic farming. Navdanya's biodiversity based organic farming methods help small farmers build living soils through providing locally adaptable cropping practices, including mixed cropping and crop rotations.

4. Mixed-/Inter-cropping In this system of cropping in which farmers sow more than two crops at the same time. By planting multiple crops, on one hand land use is maximized while reducing the risks associated with single crop failure. Intercropping creates biodiversity, which attracts a variety of beneficial and predatory insects to minimize pests and can also increase soil organic matter, fumigate the soil, and suppress weed growth.

5. Shifting cultivation: This is a popular method in Meghalaya, also called "the slash and burn" farming practice. Commonly called the Jhum. Shifting cultivation involves the clearing of forest areas to grow agricultural crops for a short period of time, ranging from over 1 to 10 years. After this period, the cultivation is moved to another site.

6. Water Harvesting is defined as the redirection and productive use of rainfall, involving a variety of methods to collect as much water as possible out of each rainfall. Many water harvesting structures and systems are specific to the eco regions and culture in which it has been developed. This may involve collecting water from rooftops, from swollen streams and rivers during monsoon season, or from artificially constructed catchments.

This ensures that farmers have a substantial amount of water stored up in the case of drought or limited rainfall.

7. **Bun or Terrace Cultivation:** is practiced widely in slopes and valleys and in Meghalaya. It provides an improved production system, helps conserve soil moisture, and prevents land degradation and soil erosion. Bench terraces are built on the hill slopes. The gap between each bun is leveled using the cut-hill method. The vertical break between each terrace is one meter. Thus, preventing erosion and maintaining a balanced water holding capacity within the slopes. It also helps to safely dispose-off the additional runoff from the slopes to the lower areas.

8. **Primitive Subsistence Farming** This is a primitive farming method and farmers still practice it in some parts of the country. While this type of subsistence farming is typically done on small areas of land, it also uses indigenous tools like a hoe, Dao, digging sticks, etc. Usually the output for their own consumption. This is the most natural method, where the growth of crops dependent on the rain, heat, fertility of the soil and other environmental conditions. In this practice, once the crops are grown and harvested, the farmers burn the land. They then move to a clear patch of land for a new batch of cultivation. As a result, the land gains back its fertility, naturally. Because no fertilizers are used for cultivation, the primitive subsistence method yields good quality crops and also retains the properties of the soil.

**Issue of food safety and security** - Be it intensive subsistence farming or commercial farming high volume of yields is the focus. It involves use of chemical fertilizers, genetically modified seeds, pesticides and insecticides. These not only affect the quality of output making agricultural output chemically infested and dangerous for human consumption but also soil quality and add to environmental pollution.

### 1. Intensive Subsistence Farming

This is yet another variation of subsistence farming. In this method, cultivation happens across larger areas of land and thus, it is labor-intensive. Also, to get a high quantity of produce chemical fertilizers and different irrigation methods are used to yield more crops.

## 2. Commercial Farming

In this farming method, the Indian farmer uses a high amount of fertilizers, pesticides, and insecticides to enhance and maintain the growth of the crops. Depending on the crop best suited to the respective weather and soil, commercial farming in India varies across different regions. The produce is mainly for export and commercial use.

### Role of Government of India

1. In Light of these issues, in 2016 India's Prime Minister Narendra Modi introduced a new national policy to double farmers income by 2022. It targeted poverty reduction, food security and climate change, which is hurting agriculture with rising temperatures, increasingly frequent floods and droughts, and a greater incidence of pests and diseases. Pradhan Mantri Krishi Sinchai Yojana (PMKSY) was launched by The Ministry of Agriculture & Farmers Welfare launched a with the aim of irrigating every Indian farm and improving water-use efficiency.

2. GOI is working to transform the country's rural economy and create skilled jobs in rural areas through its Digital India programme. For the estimated 156 million Indian rural households, most living in poverty according to India's National Sample Survey Organisation (NSSO), there is need for investment in transportation, power, and internet access to create more employment for women and youth in rural areas.

3. The Ministry of Communication and Information Technology, along with other ministries, is working to reform states' service delivery, through GOI's Goods and Services Tax (GST) system, to establish a uniform interface for taxpayers with a common IT infrastructure, shared between the central government and the states.

4. New technologies enable small farmers to shift from input-intensive to knowledge-intensive agriculture. Precision agriculture can improve the timeliness of planting, secure the best market prices through market information and e-market reforms, provide fertiliser subsidies via direct bank transfers that eliminate or reduce the cost of financial intermediaries, and improve agricultural extension. Combined with improved seed supply and land and water management, which can in turn increase

double and triple cropping, farmers' income can grow.

5. In April 2016, Modi launched eNAM (National Agriculture Market), an online platform for farmers that integrates agricultural markets online, allowing farmers and traders alike to view all Agriculture Produce Market Committee-related information and services, commodity arrivals and prices, and buy and sell trade offers, thus helping farmers bid for the best prices across markets. GOI also launched a crop insurance scheme, the Pradhan Mantri Fasal Bima Yojana (PMFBY) in 2016, which now covers 37 million farmers.

6. Additionally, GOI is investing in mapping all of India's aquifers, and using technology to manage water demand. Quantifying the relationship between rainfall and groundwater levels under alternative modes of irrigation and farming should enable prioritisation of prospective water and irrigation investments.

7. Digital India is implementing plans to connect 2.5 million gram panchayats (local governments) with high-speed internet, with hundreds of thousands already internet-enabled to facilitate communications. GOI has also mandated that all mobile phones must support at least one of 22 Indian languages, other than English and Hindi, beginning July 2017. With only 27% of villages having banking services within 5 kilometres, the government is licensing new banks and using mobile phone payment technology to an increasing extent. Mobile coverage is high over 1 billion of India's population of 1.4 billion are connected

8. Digitised land registration, mobile phones and 'Uberised' tractor services all are contributing to improved farm management. Digital India Land Records Modernisation Programme (DILRMP) is updating millions of land records, providing title guarantees and increased security of land tenure to farmers while stimulating land rentals by nonviable smallholders and land consolidation.

9. Complementing efforts to increase agricultural productivity and employment is India's triple innovation system (JAM), consisting of Jan Dhan (the Prime Minister's initiative to open universal bank accounts, depositing Rs1000 per household), Aadhaar (a unique 12-digit ID number for citizens) and mobile phones.

10. Several states have now installed electronic point-of-sale devices at FPSs to track sales of food grains to cardholders on a real-time basis. A much debated policy shift - in-kind cash transfers in place of food distribution - is also being facilitated by digital technology.

Greater investment in research, meanwhile, is needed to develop multi-resistant crops. India has lagged behind its Asian neighbors in genomics, even resisting the approval of genetically modified crops developed by its own scientists. Arguably, such crops do not involve multinational monopolies, can be grown by poor farmers, and offer increased resistance to extreme climatic conditions.

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