



## FROM GREEN REVOLUTION TO MILLET RENAISSANCE: COMEBACK OF TRADITIONAL CROPS IN INDIA



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*"The revival of millets is about a holistic approach to food, environment, and nutrition. It's about taking care of our soil, our health, and our planet."*

### Abstract :

Green revolution has brought significant changes in the agricultural practices, use of fertilizers and pesticides and cropping patterns of India. Selected crops such as wheat, rice, maize etc. have increased tremendously to feed the rising Indian population. The production and area under cultivation of certain crops increased and India has become food surplus country. However, it raised some of the fundamental questions like dietary diversity, nutritious food and sustainability of agriculture. The traditional and indigenous crops like millets are nutritionally rich, environmentally favourable, dry land area sustainable and also provide dietary diversity to achieve food and nutritional security. But these crops had been neglected and lost their share in the total production of food grains and area under cultivation during the green revolution era. The awareness about health and nutrition is increasing and as a result the popularity and demand of traditional and indigenous crops are increasing. It is showing positive impact on the production and cultivation of these crops. The present paper takes the review of production, area under cultivation, dietary values and nutritional richness of millets in India.

**Key Words:** Traditional and indigenous crops, millets, green revolution, nutrition, food security.

### Introduction:

#### The Green Revolution Effect

The Green Revolution, a period of agricultural modernization in India from the 1960s to the 1980s, brought about significant changes in the agricultural landscape of the country. It involved the introduction of high-yielding crop varieties, irrigation, Mechanisation, fertilizers and pesticides, which led to a significant increase in agricultural production. While the Green Revolution was successful in increasing the production of crops like wheat and rice, it had a significant impact on the production and area under cultivation of Indian millets. Millets, which were once a staple food crop in India, saw a decline in production and area under cultivation as a result of the Green Revolution. Before the Green Revolution, millets were a major crop in India, grown in about 45 million hectares of land. The high-

yielding varieties of wheat and rice introduced during the Green Revolution were promoted by the government and agricultural scientists, and farmers were incentivized to adopt these crops. As a result, millets were seen as inferior crops and were gradually replaced by wheat and rice.

According to data from the Indian Council of Agricultural Research (ICAR), the area under millet cultivation in India decreased from 44.8 million hectares in 1965 to 28.4 million hectares in 1980. During the same period, the area under rice and wheat cultivation increased from 33.6 million hectares to 50.7 million hectares and from 10.7 million hectares to 23.5 million hectares, respectively. According to the data from the Ministry of Agriculture and Farmers Welfare, the area under cultivation of millets in India decreased to 16.5 million hectares in 2019-20. The production of millets also declined from 24.4 million tonnes in 1965-66 to 11.8 million tonnes in 2019-20.

This decline in the production and area under cultivation of millets had significant implications for food security and nutrition in India. Millets are highly nutritious and are a rich source of protein, fiber, and minerals, and are also gluten-free, making them suitable for people with celiac disease or gluten intolerance. However, the decline in millet production led to a decline in their consumption, resulting in a shift towards less nutritious and less diverse diets.

### The Other Side of Green Revolution

The use of fertilizers and pesticides in agriculture has greatly increased the yield and quality of crops, but it has also raised concerns about its impact on human health. While the use of these chemicals has undoubtedly brought benefits to agriculture, it has also led to a range of negative health effects. Pesticides are designed to kill pests and other organisms that harm crops, but they can also harm human health. Farmers and agricultural workers who come into contact with these chemicals through their work can suffer from acute poisoning, which can lead to nausea, vomiting, and other symptoms. Long-term exposure to pesticides has also been linked to an increased risk of cancer, reproductive problems, and neurological disorders.

The use of fertilizers and pesticides can result in the contamination of soil, water, and food with toxic chemicals. When crops are sprayed with pesticides, the chemicals can remain on the surface of the produce, leading to ingestion by humans. Similarly, fertilizers can leach into groundwater and surface water, contaminating drinking water sources. Consuming contaminated food and water can lead to a range of health problems, including cancer, reproductive problems, and developmental disorders. Antibiotics are commonly used to promote growth and prevent disease in livestock, but their overuse can lead to the development of antibiotic-resistant bacteria. These bacteria can then spread to humans, making it more difficult to treat infections and increasing the risk of antibiotic-resistant diseases. Fertilizers and pesticides have negative impacts on the environment, leading to soil erosion, water pollution, and biodiversity loss. These environmental impacts can, in turn, affect human health by reducing the availability of clean water and food sources.

### The Millet Renaissance

Over the past few years, there has been a growing awareness about the health benefits of millets in India. Millets, which are small-seeded grasses, have been traditionally cultivated in India for centuries, and they have been gaining popularity as a nutritious and sustainable food crop. One of the main reasons for the increasing awareness about millets is their high nutritional value. Millets are rich in protein, fiber, vitamins, and minerals, and are gluten-free, making them a suitable food option for people with celiac disease or gluten intolerance. They also have a low glycemic index, which means they do not cause a rapid increase in blood sugar levels, making them an ideal food for people with diabetes.

In addition to their health benefits, millets are also a sustainable food crop. They require less water and fertilizer compared to other crops like rice and wheat, and can be grown in dry and arid regions, making them a suitable crop for farmers in drought-prone areas. Millets are also pest-resistant, reducing the need for chemical pesticides. The increasing awareness about millets in India is a positive development. Millets are a nutritious and sustainable food crop that can play a vital role in ensuring food security and mitigating the impact of climate change. With the right policies and initiatives, millets

can be promoted as a mainstream food crop and contribute to a healthier and more sustainable food system in India.

### Nutrition Rich Food:

The decline in the cultivation and production of millets had significant consequences for the nutrition and food security of rural communities in India. Millets are an important source of nutrition for millions of people, especially in arid and semi-arid regions where they are the only crop that can be grown. They are also an important source of income for small and marginal farmers.

Millet	Calories (gram)	Protein (gram)	Fiber (gram)	Minerals (mg)	Iron (%)
Sorghum	339	10.4	3.6	613	03
Pearl Millet	378	11.8	1.3	564	14
Finger Millet	336	07.3	3.6	348	18
Foxtail Millet	351	11.2	3.6	321	11
Little Millet	341	07.7	7.6	383	08
Kodo Millet	353	08.3	9.0	658	11

**Source:** (National Institute of Nutrition, 2011)

Millets have been an important part of the traditional diet in India for centuries. They are highly nutritious and provide a range of health benefits. Millets are a good source of protein, with some varieties containing as much as 11-14% protein. This makes them an important source of dietary protein, especially for vegetarians. They are also a good source of dietary fiber, with some varieties containing as much as 10-12% fiber. It makes them an important food for maintaining digestive health and reducing the risk of chronic diseases such as diabetes, heart disease, and obesity. The nutritious values of Indian millets are given in the table 01. 100 gram of pearl millets provide as much as 11.8 gram of protein and kodo millets provide 9 gram of dietary fibres.

Most of the millets are low in fat, with some varieties containing as little as 1-2% fat. Therefore they are an ideal food for those looking to maintain a healthy weight and reduce the risk of chronic diseases such as heart disease and stroke. Millets are rich in a variety of minerals, including iron, magnesium, and phosphorus. For example, one cup of cooked foxtail millet contains 3.8 mg of iron, which is approximately 21% of the recommended daily intake for adult men and women. Millets are naturally gluten-free, which makes them an important food for those with gluten intolerance or celiac disease.

### The Revival:

In recent years, there has been a renewed interest in millets, both in India and globally. Millets have been recognized for their nutritional value and sustainability, and several initiatives have been launched to promote their cultivation and consumption. As a result, there has been a gradual increase in the area under millet cultivation in India in recent years. According to the Ministry of Agriculture and Farmers Welfare, the area under millet cultivation in India was 12.81 million hectares in 2019-20, an increase of 3.3% over the previous year.

Year	Production (Million Tonnes)	Area under Cultivation (Million Hectares)
2000-01	8.43	11.30
2001-02	8.87	10.99
2002-03	9.06	11.07
2003-04	8.79	10.92
2004-05	8.82	10.88

2005-06	9.07	11.01
2006-07	8.96	10.90
2007-08	9.28	11.23
2008-09	9.69	11.24
2009-10	11.05	11.74
2010-11	11.36	11.61
2011-12	10.42	11.54
2012-13	10.64	11.69
2013-14	10.91	11.62
2014-15	11.31	12.00
2015-16	12.03	12.30
2016-17	14.02	12.51
2017-18	14.75	12.27
2018-19	15.03	12.12
2019-20	16.32	12.89

*Source: Ministry of Agriculture and Farmers Welfare*

Similarly, the production of millets in India has also been increasing in recent years. According to data from the Ministry of Agriculture and Farmers Welfare, the production of millets in India was 14.5 million tonnes in 1980-81, and it increased to 28.3 million tonnes in 2018-19, an increase of almost 100% over four decades.

According to the Ministry of Agriculture and Farmers Welfare, the area under cultivation of millets increased from 14.5 million hectares in 2015-16 to 16.5 million hectares in 2019-20. The production of millets in India has increased from 8.43 million tonnes in 2001 to 16.32 million tonnes in 2020. However, more needs to be done to promote millets and create awareness among the general public.

As can be seen in the table 02, there has been a steady increase in the production and area under cultivation of millets in India over the past twenty years, with a significant jump in production from 2015-16 to 2019-20. This is indicative of the growing interest in millets as a nutritious and sustainable food crop.

The production and cultivation of millets in India vary widely across different states. Karnataka is the largest producer of millets in India, with a production of 4.72 million tonnes in 2020-21, followed by Rajasthan with 2.64 million tonnes. Telangana has the highest area under cultivation of millets in India, with 2.92 million hectares in 2020-21, followed by Rajasthan with 2.12 million hectares. Other states with significant production and cultivation of millets include Andhra Pradesh, Maharashtra, Tamil Nadu, Gujarat, and Uttar Pradesh.

India is one of the largest producers and exporters of millets in the world. According to the Agricultural and Processed Food Products Export Development Authority (APEDA), India exported 3.2 lakh tonnes of millets worth Rs. 383.46 crore in 2020-21, which is an increase of 24.6% from the previous year's export of 2.57 lakh tonnes worth Rs. 282.54 crore.

### **The Initiatives:**

Recognizing the importance of millets for food security and nutrition, the Indian government has launched several initiatives in recent years to promote their cultivation and consumption such as the National Mission on Sustainable Agriculture. The Millets Mission, launched in 2018, aims to promote the production, processing, and marketing of millets, and to create a demand for them among consumers. The government has also included millets in the public distribution system (PDS), making them more accessible and affordable to low-income households.

In addition, several non-governmental organizations (NGOs) and private companies have also taken up the cause of promoting millets. They organize awareness campaigns, cooking demonstrations, and workshops to educate people about the nutritional and environmental benefits of millets. These

efforts have helped create a demand for millets, especially among health-conscious consumers. As a result of these initiatives, there has been a significant increase in the production and consumption of millets in India.

### Conclusion:

It is a good sign that traditional and indigenous crop of gaining importance in India. But there is still a long way to go to revive the production and consumption of millets in India. The movement of traditional and indigenous crops is just started; it needs to be accelerated. Millets face several challenges, such as low market demand, lack of processing facilities, and limited access to credit and other inputs. To address these challenges, more support is needed from the government and other stakeholders to promote millets as a sustainable and nutritious food crop.

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