



# Organic Farming For Sustainable Agriculture In India: An Overview And Policy Initiatives

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## Abstract

Agriculture is an important component of the Indian economy. Agriculture directly employs over two-thirds of the country's population. As a result, any improvement in agriculture is closely related to income, wealth, happiness and well being of the people of this country. It is the most important and largest sector of the Indian economy. Indian agriculture continues to face serious challenges as the country's population grows. The cultivation of high yielding crop types that respond to fertilizers and irrigation, as well as intensive cropping practices, face the challenge of weeds, insects, and pests, resulting in massive crop and output losses. Every technology or interference in the natural ecosystem has a side effect; over the past half-century, we have used pesticides and herbicides indiscriminately to increase crop productivity, but their adverse consequences are now visible to us. Now we have achieved self-sufficiency in the production of food grains, but our next challenge is to provide people with healthy food. We are looking for a natural, chemical-free farming alternative, such as organic farming. It also helps to gain a higher price by domestic market as well as exporting chemical-free agricultural products to developed nations. Demand for healthy and chemical and pesticide free food is rising all across the world. People are increasingly willing to pay more if they know they are getting food that has been raised naturally. As a result, enhancing the certification process in the country is essential.

Key words: Organic Farming, Sustainable Agriculture, Ecosystem, Soil Management

## Introduction

Agriculture is an important component of the Indian economy. Agriculture directly employs over two-thirds of the country's population. As a result, any improvement in agriculture is closely related to the joy and happiness of the people of this country. It is the largest and most important and largest sector of the Indian economy. Indian agriculture continues to face serious challenges as the country's population grows. The cultivation of high yielding crop types that respond to fertilizers and irrigation, as well as intensive cropping

practices, face the challenge of weeds, insects, and pests, resulting in massive crop and output losses. To achieve the goal of sustainable development, sustainable agriculture is required (Suresh Patidar & Himanshu Patida, 2015). As a result, sustainable agriculture placed a high value on maintaining an agricultural growth rate capable of meeting demand.

In recent years, demand for organically grown product has increased in developing countries like India, as people have become more aware of the quality and safety of food and that organic farming has a tremendous influence on soil health, which is free of chemical pesticides. Organic cultivation has an immense prospect of income generation too (Bhardwaj and Dhiman, 2019). The soil in India is bestowed with various types of naturally available organic nutrient resources that aid in organic farming (Adolph and Butterworth, 2002; Reddy, 2010; Deshmukh and Babar, 2015).

### **Concept of Organic Farming**

In simple terms, organic farming is the production of plants without the use of chemical fertilizers or pesticides. When we cultivate organically, we must consider plants as part of a larger system within nature. Organic gardening begins with paying attention to the soil and incorporating organic matter into the soil with resources accessible locally.

Organic farming refers to farming methods that are devoid of hazardous pesticides, chemicals, and chemical fertilizers. It strictly adheres to cultivation practices that keep the soil healthy and avoid negative environmental impact by employing organic waste such as crop, animal, and farm wastes, as well as biological resources. According to the Indian Council of Agricultural Research (ICAR), “Organic Agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycle and soil biological activity. This is accomplished by using on farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs”. As per the definition of the United States Department of Agriculture (USDA) study team on organic farming “organic farming is a system which avoids the use of synthetic inputs (such as pesticides, fertilizers, feed additives, hormones, etc.) and to the maximum extent feasible rely upon crop rotations, animal manures, off-farm organic waste, crop residues, mineral grade rock additives and biological system of nutrient mobilization and plant protection (OFPA, 2010). Crop rotation, the use of crop residues, animal manure and off-farm organic wastes, mineral grade rock additions, and a biological system of nutrient mobilisation and plant protection strategies are all important in maintaining the fertility of the area under cultivation. FAO suggested that “Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs”.

## Organic Agriculture in the World

Organic agriculture is practiced in 187 countries, with at least 3.1 million farmers managing 72.3 million hectares of agricultural land organically. Australia has the greatest organic agricultural land (35.69 million hectares), which is followed by Argentina (3.63 million hectares) and Spain (2.35 million hectares). Organic agricultural land has increased across the entire region. In 2019, global sales of organic food and drink exceeded 106 billion euros. According to the latest FiBL survey on organic agriculture worldwide, organic farmland increased by 1.1 million hectares, and organic retail sales continued to grow. Apart from land dedicated to organic agriculture, there are further areas of organic land dedicated to organic activities. The major part of these is wild collection areas beekeeping and areas for livestock. Forest, Aquaculture, and grazing grounds are examples of non-agricultural areas. There are 35 million hectares in all. And the total organic land was 107.4 million hectares (Organic World 2021). Australia holds the most certified organic hectares of any country. Australia presently has 35 million certified organic hectares, accounting for 54% of the world's certified organic farmland and 8.8% of all agricultural land in Australia.

### Review of Literature

Kundu and Pillai (1990) discovered that soil productivity is determined by its chemical, physical, and biological qualities. Inorganic fertilizers can only address the chemical components of soil fertility, but organic manures can maintain and improve the biological qualities of soils. The prolonged and overall availability of lower amounts of nutrients throughout time frequently contributes to a sustained improvement in grain yields.

**Save and Sanghavi (1991)** found that after their intensive experiments with organic farming and narrating the results to the informed, it is time that the governments and farmers are brought around. They firmly state that the economic profitability of organic farming can be proven.

**Save (1992)** found that after three years of switching over to natural cultivation, the soil was still recovering from the after effects of chemical farming. When the soil regained its health, production increased, and the use of inputs decreased. The farm, which was yielding 200 to 250 coconuts per tree, gave 350 to 400 per annum.

**Rahudkar and Phate (1992)** describe organic farming experiences in Maharashtra. Individual sugarcane and grape producers using vermicomposting observe increased soil fertility, irrigation reduce by 45 percent, and quality of sugarcane improved. According to the authors, net profits from sugarcane and grape harvests are high in organic farms.

According to **Balasubramanian (1994)**, the agricultural practices used in organic farming are managed by ecological principles. It is not an alternative farming system, but rather a component of the life philosophy of knowing the actual spirit and shape of nature. Organic farming is built on biologically active soil. good plants produced in good soil are more resistant to diseases and pests caused by nature.

**Kaushik (1997)** analyses the issues and policy implications in the adoption of sustainable agriculture. The concept of trades off has a forceful role to play in organic farming both at the individual and national decision making levels. Public v/s private benefits, current v/s future incomes, current consumption and future growths, etc. are very pertinent issues to be determined. The author also lists a host of other issues. While this study makes a contribution at the conceptual level, it has not attempted to answer the practical questions in the minds of the farmers and other sections of the people.

**Anon (1998)**, emphasis on marketing the organic products on the basis of reputation and credibility. In Japan, the farmers sell the produces directly to the consumers. The Kenyan farmers have seen that in organic farming, costs go down and profits increase. A farmer from UP who allotted a portion of his land exclusively for organic farming found that the yields of sugarcane, wheat, rice and vegetables were lower than those under chemical farming. An Englishman, settled in Tamil Nadu, who runs an organic farm in 70 acres planted with coffee, citrus, other fruits, rice pepper and vegetables says that he does not earn a profit and does not have confidence in organic farming.

According to **Bemwad Geier (1999)**, there is no other farming method that is so clearly governed by norms and laws as organic agriculture. The organic movement has decades of expertise practicing sustainable agriculture as well as building inspection and certification methods to provide customers with assurance and confidence in reality. Organic farming uses fewer external inputs and takes a more holistic approach to farming. He describes the global success stories of organic farming based on the performance of major western countries.

**Sharma (2001)**, stated that organic farming as the most widely recognized alternative farming system to the conventional one. Other alternatives in the form of biological farming, natural farming and permaculture are also described. The focus is on the organic farming, which is considered as the best and thus is discussed extensively. The work is not addressing the relevant issues in the adoption of organic farming on ground

**Sankaram Ayala (2001)** opined that practically all benefits of high yielding varieties-based farming accrue mostly in the short term and have negative long-term consequences. A corrective action is urgently required. The author rules out organic farming based on the complete absence of fertilizers and chemicals, not just now but also in the foreseeable future. There should be an appropriate blend of traditional farming systems and their replacements.

**Singh and others (2001)**, recording the experiments on rice-chick pea cropping sequence using organic manure, found the yields substantially higher compared to the control group. Similar results were obtained for rice, ginger, sunflower, soybean and sesame.

According to **Sakthi Ganapathi (2011)**, agricultural development in the country has primarily focused on improving crop yields, especially in the last 5-6 decades. While the fact that yields improved significantly, farmers and the environment paid a high price for this progress. With low farm produce prices and high

chemical input costs making agriculture unprofitable, farmers explored new ways to raise farm earnings in order to survive.

In their study, **Jayasree Das and Deepto Bhattacharyya (2018)** investigated the difficulties faced by organic farming in Sikkim, as well as the causes and solutions to these challenges. The author finds that organic farming is the only realistic option that has emerged. In this regard, the story of Sikkim stands out because it has demonstrated the guts to be the only state in the country to produce crops entirely organic.

### **Objectives of the Paper**

- (i) To understand the state wise area under Cultivation and production of Organic Farming
- (ii) To understand the need and importance of organic farming in India.
- (iii) To analyse the government initiatives in promoting organic farming in India

### **Organic Farm Production Status in India**

India ranks first in terms of the number of organic farmers and ninth in terms of organic farming area; major organic product exports from India include medicinal plants, pulses, rice, flax seeds, sesame, soybean and tea,. Over 3.92 percentage of India's net farm area was under organic farming in fiscal year 2022, a rise over the previous year. In general, the area under organic farming has grown steadily, displaying rising call for organic foods. India produced around 2.9 million MT (2022-23) of certified organic products, which include all varieties of food products along with cereals, millets, pulses, oil seeds, fibre, sugar cane, cotton, fruits, spices, dry fruits, aromatic and medicinal flora, tea, coffee, veggies, processed meals, and so on.

Over the last two decades, Sikkim has emerged as a frontrunner in sustainable development. It's also India's first and only state to achieve hundred per cent coverage of sanitation and get rid of open defecation. They are almost completely literate, and they are the best state in the country that has extended its forest cover, which presently accounts for roughly half of the state's land area. In 2016, Sikkim became India's first and only state to claim itself spontaneously. Tripura and Uttarakhand are presently India's only completely organic states. Madhya Pradesh: the second one-largest state in India in terms of size, Madhya Pradesh has emerged as the champion of organic farming.

## State-wise Area under Organic Certification NPOP 2022-23

S.NO.	State Name	Cultivated Area		Total Area (In Ha)
		Organic Area (In Ha)	Conversion Area(In Ha)	
1	Madhya Pradesh	686208.31	831168.8	15,17,377.11
2	Maharashtra	258638.55	1025675.6	12,84,314.15
3	Gujarat	84404.36	851526.64	9,35,931.00
4	Rajasthan	216440.36	364239.43	5,80,679.79
5	Odisha	77950.82	117128.66	1,95,079.48
6	Uttarakhand	32634.01	65,759.72	98,393.73
7	Telangana	7288.85	77,185.37	84,474.22
8	Karnataka	44342.45	37,673.11	82,015.56
9	Sikkim	75453.18	22.096	75,475.28
10	Uttar Pradesh	52422.44	15,584.61	68,007.05
11	Andhra Pradesh	26949.05	35,966.97	62,916.02
12	Tamil Nadu	18652.5	39,914.20	58,566.70
13	Jharkhand	1499.76	52,620.11	54,119.87
14	Kerala	32602.71	11,511.74	44,114.45
15	Bihar	17594.82	15,152.76	32,747.58
16	Jammu & Kashmir	25093.94	7,510.56	32,604.50
17	Meghalaya	21652.71	2,356.33	24,009.04
18	Assam	15593.93	7,473.49	23,067.42
19	Mizoram	4796.84	15,264.10	20,060.94

20	Tripura	2490.13	17,124.31	19,614.44
21	Chhattisgarh	13258.18	3,641.68	16,899.86
22	Arunachal Pradesh	3109	9,773.68	12,882.68
23	Nagaland	7550.61	5,002.56	12,553.17
24	Goa	11203.22	1,193.19	12,396.41
25	Himachal Pradesh	8507.25	2,557.85	11,065.10
26	Manipur	7682	3,003.50	10,685.50
27	Punjab	890.12	9,002.53	9,892.65
28	West Bengal	7479.66	1,314.58	8,794.24
29	Haryana	2265.54	629.22	2,894.76
30	LADAKH	0	121.42	121.42
31	Pondicherry	21.17	0.34	21.51
32	New Delhi	0.72	16.67	17.39
33	Andaman & Nicobar Islands	0	0	0.00
Total:		1764677.15	3627115.82	53,91,792.97

Source: Information provided by the certification bodies accredited under NPOP on Tracenet

## State wise Organic Farm Production for the year 2022-23

S.NO.	State Name	Organic Production (In MT)	Conversion Production(In MT)	Total Production (MT)
1	Madhya Pradesh	738,201.84	87,424.57	825,626.41
2	Maharashtra	724,946.90	65,380.40	790,327.30
3	Rajasthan	311,170.77	11,802.18	322,972.95
4	Karnataka	237,090.18	1.25	237,091.43
5	Uttar Pradesh	215,506.50	2,013.01	217,519.51
6	Gujarat	89,978.28	49,750.40	139,728.68
7	Odisha	64,976.16	65,100.84	130,077.00
8	Jammu & Kashmir	50,230.38	0.00	50,230.38
9	Uttarakhand	43,954.51	0.00	43,954.51
10	Kerala	42,729.09	5.16	42,734.25
11	Tamil Nadu	24,964.04	109	25,073.04
12	Andhra Pradesh	24,190.25	0.00	24,190.25
13	Bihar	19,853.89	0.00	19,853.89
14	Chhattisgarh	17,703.47	0.00	17,703.47
15	West Bengal	15,409.18	0.00	15,409.18
16	Assam	14,497.86	0.00	14,497.86
17	Meghalaya	9,919.69	0.00	9,919.69
18	Himachal Pradesh	6,978.06	0.00	6,978.06
19	Punjab	482.98	5,940.72	6,423.70
20	Jharkhand	4,363.09	0.00	4,363.09
21	Haryana	2,679.58	0.00	2,679.58
22	Goa	2,488.52	70.14	2,558.66
23	Telangana	837.64	433.05	1,270.69
24	Arunachal Pradesh	793.00	0.00	793.00
25	Tripura	332.78	216.04	548.81
26	Mizoram	334.00	0.00	334.00
27	Sikkim	51.90	0.00	51.90
28	Manipur	11.00	0.00	11.00
29	Pondicherry	4.00	0.00	4.00



Total:		2664679.54	288246.75	2952926.29
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(Source: The information provided by the certification bodies accredited under NPOP on Tracenet)

## Techniques of Organic farming

There are some methods by which organic farming in India practiced. Some of the methods of organic farming in India.

### i). Soil Management

Soil management is the basic technique of organic farming in India. After cultivation, soil loses its nutrients and its fertilizer goes down. The process in which soil is recharging with all the necessary nutrients is called soil management. Organic farming uses natural ways to increase the fertility of the soil. The utilization of microbes that is available in animal waste which helps in making the soil increasingly profitable and fruitful. It uses bacteria, available in animal waste. The bacteria helps in making the soil more fertile and productive. Soil Management is first in the organic farming methods list.

### ii). Weed Management

Weed is the undesirable plant that develops in agricultural fields, growing with the crop. Main aim of organic farming's is to remove the weeds. Weeds sticking with nutrients of the soil affect the production of the crops. There are two techniques which give a solution to the weed. One is moving or cutting – In this process, cut the weed. And other way is Mulching – In this process, farmers use a plastic film or plant residue on the soil's surface to block the weed's growth.

### iii). Crop Diversity

Crop diversity is one of the most famous organic farming techniques in India. According to this technique, different crops can cultivate together to meet the growing demand for crops. Monoculture is the technique utilized in the rural fields where we gather and develop just a single sort of product in a specific area. As of late, poly-culture has come in presence, where we gather and develop various types of yields to take care of the expanding crop demand and deliver the required soil microorganisms.

### iv). Chemical Management in Farming

Agricultural farms contain useful and harmful organisms that affect farms. To save soil and crops, the growth of organisms needs to be controlled. In this method, natural or fewer herbicides, chemicals and pesticides are used to protect soil and crops. Proper maintenance is required throughout the area to control other organisms.

### v). Biological Pest Control

These techniques of organic farming are followed by Indian farmers in agriculture. In this method, use living organisms to control pests with or without the use of chemicals.

## Advantages of organic farming

- There is a high demand for organic products in India and around the world, and we can earn more money by exporting organic products.
- Organic farming in India is particularly cost effective because it does not rely on HYV seeds to sow crops, expensive fertilizers or herbicides. It has no expenses.
- Organic farming is particularly eco-friendly because it does not utilize fertilizers or chemicals.
- It is not only saves energy for both the animal and the machine, but it also lowers the risk of crop failure.
- It enhances soil chemical qualities such as nutrient availability and retention, lowers the loss of nutrients into water bodies and the environment, and promotes favourable chemical interactions.
- It aids in the sustainability of agricultural production and the preservation of the ecosystem by reducing pollutant level. It also contributes to environmental health by lowering pollutant levels.
- It guarantees that natural resources be used to their full potential in the short term while also protecting them for future generations.
- Organic items are more nutritious, delicious, and healthy than chemical and fertilizer-based ones.
- It decreases both human and animal health risks by lowering the product's residual level.
- It enhances soil chemical qualities such as nutrient availability and retention, lowers the loss of nutrients into water bodies and the environment, and promotes favourable chemical interactions.

## Limitations of organic farming

There are a certain limitations to organic farming such as

- Organic farming is labour intensive. Organic farming takes a lot of time since it necessitates more engagement between a farmer and his crop for observation.
- It is very expensive as the farmer has to carry out the transition, modify the soil structure, etc. Production in organic farming declines especially during first few years, so the farmer should be given premium prices for organic produce
- Organic manure is not widely available, and if organic inputs are acquired, it may be more expensive than chemical fertilizers in terms of plant nutrients.
- Organic food prices are not consistent and fluctuate from time to time.
- Despite being organic, these thousands of farmers cultivating millions of acres of land are not classified as such. Their produce either sells in the open market with conventionally produced product at the same price or sells as organic through select outlets and frequent specialized markets based solely on goodwill and trust. Because of the fees involved, as well as the lengthy documentation required by certifiers, many farmers may never opt for certification.
- The typical Indian farmer is unable to understand the regulations for organic farming, processing, shipping, and certification, among other things.
- Organic products have a shorter shelf life due to the absence of artificial preservatives

## Government Initiative to Promote Organic Farming

The Government of India provides assistance for promoting organic farming across the country through different schemes.

### 1. Paramparagat Krishi Vikas Yojana (PKVY)

- The "Paramparagat Krishi Vikas Yojana (PKVY)," a sub-component of the Soil Health Management (SHM) scheme under the National Mission of Sustainable Agriculture (NMSA), aims to develop models of excellence in organic farming through a mix of traditional wisdom and modern science in a value chain mode to install sustainability, ensure long-term soil fertility buildup, resource conservation, and to offer safe and healthy food grown through organic practices without the use of agro-chemicals. PKVY also aspires to empower farmers through institutional development via clusters, not only for farm practice management, input production, and quality assurance, but also for value addition and direct commercialization via innovative techniques. The Participatory Guarantee System (PGS) under the PGS-India initiative will be the primary approach of quality assurance under the PKVY.
- Launched in 2015, it aims at supporting and promoting organic farming, in turn resulting in improvement of soil health.
- Paramparagat Krishi Vikas Yojana promotes cluster based organic farming with PGS (Participatory Guarantee System) certification. Cluster formation, training, certification and marketing are supported under the scheme. Assistance of Rs. 50,000 per ha /3 years is provided out of which 62 percent (Rs. 31,000) is given as incentive to a farmer towards organic inputs.

#### Objective:

- Promote organic farming among rural youth/ farmers/ consumers/ traders.
- Disseminate latest technologies in organic farming.
- Utilize the services of experts from public agricultural research system in India.
- Organize a minimum of one cluster demonstration in a village.

#### Major Features of the Scheme:

- The cluster chosen for Organic Farming shall be 20 ha or 50 acres in extent and in as contiguous a form as possible.
- Of the total number of farmers in a cluster, a minimum of 65 percent farmers should be allocated to small and marginal category, to be fulfilled at cluster level as far as practicable.
- Adoption of Participatory Guarantee System (PGS) certification through cluster approach.
- Adoption of organic village for manure management and biological nitrogen harvesting through cluster approach.

## 2. Mission Organic Value Chain Development for North Eastern Region

- Recognizing the potential of organic farming in the country's North Eastern Region, the Ministry of Agriculture and Farmer Welfare has launched a Central Sector Scheme titled "Mission Organic Value Chain Development for North Eastern Region" for implementation during the 12th plan period in the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. The scheme aims to develop certified organic production in a value chain mode, connecting growers with consumers and supporting the development of the entire value chain, beginning with inputs, seeds, certification, and the establishment of facilities for collection, aggregation, processing, marketing, and brand building.
- Agriculture and Farmers Welfare launched a Central Sector Scheme named Mission Organic Value Chain Development for North Eastern Region for implementation in Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura during 2015-16 to 2017-18.
- The program's objective is to promote the growth of certified organic produce along the full value chain, connecting farmers with consumers.
- The scheme was approved with an outlay of Rs. 400 crore for three years.
- Assistance is provided for cluster growth, on/off farm input production, seed/planting material supply, and the establishment of functional infrastructure, among other things.

## 3. Capital Investment Subsidy Scheme (CISS) under Soil Health Management Scheme

This scheme provides cent percent assistance to state governments and government agencies for the establishment of mechanized fruit and vegetable market waste and agro waste compost production units up to a maximum of Rs. 190 lakh per unit (3000 Total Per Annum TPA capacity). Similarly, aid is granted to individuals and commercial organizations up to 33% of the cost ceiling of Rs. 63 lakh per unit as capital investment.

## 4. National Mission on Oilseeds and Oil Palm (NMOOP)

The Mission provides financial assistance at a 50% subsidy to the tune of Rs. 300 per hectare for various components such as bio-fertilisers, the supply of Rhizobium culture, Phosphate Solubilising Bacteria (PSB), Zinc Solubilising Bacteria (ZSB), Azatobacter, Mycorrhiza, and vermi compost.

## 5. National Food Security Mission (NFSM)

Under the NFSM, financial assistance can be given for the promotion of bio-fertilizer (Rhizobium/PSB) at 50% of the cost, up to Rs 300 per hectare.

## 6. Bhartiya Prakritik Krishi Padhati (BPKP)

Since 2020-21, Bhartiya Prakritik Krishi Padhati (BPKP) has been implemented as a sub-scheme of Paramparagat Krishi Vikas Yojana (PKVY) to promote traditional indigenous methods such as Natural Farming (NF). The system focuses on eliminating all synthetic chemical inputs and promoting on-farm biomass recycling, with a particular emphasis on biomass mulching, the use of cow dung-urine formulations,

and plant-based preparations. Until date, an area of 4.09 lakh hectares has been covered under natural farming, and a total sum of Rs. 4980.99 lakh has been released in 8 states across the country.

Recently The Food Safety and Standard Authority of India (FSSAI) recently operationalized its organic food regulations, which will govern the manufacturing, sale, distribution, and import of organic food beginning July 1, 2018. The FSSAI has created a "Indian Organic Integrity Data-Base" to assist customers in verifying the authenticity of organic food. It has also introduced the "Jaivik Bharat" label for organic products. More small and marginal farmers would be able to access certified organic markets as a result of this.

## Conclusion

A holistic food production system is organic agriculture, which emphasizes the sustainable use of locally available natural resources. For its long-term growth and quality, we must take a complete approach, enlisting the help of all stakeholders, using environmentally friendly technology, building marketing infrastructure, and providing necessary financial assistance. An environmentally sustainable agricultural system, such as organic agriculture, will be able to assist in maintaining a resource balance, preventing over-exploitation of resources, and safeguarding the country's soil nutritional quality and biodiversity.

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