

# Organic Farming in North Eastern Region, India: Scopes and Challenges

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## Abstract

Organic farming has emerged as a substitute to conventional agriculture that preserves soil health and provides nutritious food by abstaining from using fertilizers and pesticides. The North Eastern Region of India is largely unharmed by modern agricultural practices. Therefore, the region is a natural choice for promoting organic farming in the country. An analysis of NSSO survey data on cultivation practices shows that the North-East hill states have retained traditional practices viz., jhum cultivation, Zabo cultivation, apatani cultivation, bamboo drip cultivation and bun cultivation and therefore shows an inclination towards organic agriculture that is harnessed for the development of the region with ecological benefits.

## Introduction

The concept of organic farming was theorized in the early 1900s by British botanist Sir Albert Howard, F.H. King, Rudolf Steiner, and others who noticed that using animal droppings, biological pest control methods, practising crop rotation and cultivating of cover crops resulted in a better farming system as compared to conventional farming.

Organic farming has emerged as a substitute to conventional agriculture that preserves soil health and provides nutritious food by abstaining from using fertilizers and pesticides. Organic farming uses biological fertilizers, vermicompost and green manure to promote soil health and biodiversity and provide healthy food (Das *et al.*, 2021; Reganold & Wachter, 2016). General Assembly (2008) defined organic farming as: a production system that sustains the health of soils, ecosystems, and people. Organic farming was developed as a response to the environmental harm caused by the use of chemical pesticides and synthetic fertilizers in conventional agriculture. In current years, organic farming is gaining momentum worldwide, both in developed

and developing countries. This detail can be verified by the noteworthy increase in demand for organic products and also more agricultural lands are accounted for organic farming (Willer *et al.*, 2022).

## Scopes of organic farming

1. **Economical:** No usage of fertilizers, pesticides or High Yielding Variety seeds for farming, therefore, there is no extra expense.
2. **High demand:** High demand for organic products across the globe, which generates more income through export.
3. **Profit margin:** With usage of locally available inputs, a farmer can make a good profit.
4. **Nutritious:** Compared to chemical and fertilizer-utilized products, organic products are more nutritional, tasty and beneficial for health.
5. **Environmentally friendly:** Organic farming is chemical free and hence, does not harm the environment.

## Major organic crops exported from India

Sl.no	Type of commodity	Products
1	Spices	Cardamom, black pepper, Ginger, Turmeric, nutmeg, chilli, clove and vanilla
2	Plantation	Tea, coffee, cocoa
3	Pulses	Red gram, black gram
4	Fruits	Mango, banana, pineapple, passion fruit, orange, cashew
5	Nut	Walnut
6	Vegetables	Okra, brinjal, onion, tomato, potato
7	Oil seeds	Sesame, castor, sunflower
8	Others	Cotton, herbal extracts

(Source: APEDA)

### Scopes of organic farming in NER, India

The North Eastern Region of India is largely unharmed by modern agricultural practices. The region is a natural choice for promoting organic farming in the country. Sikkim is the first organic state in India and has already shown the way for the other states in the region (FAO Report -2003).



**Fig. 1 Local organic vegetable vendors**

An analysis of NSSO survey data on cultivation practices shows that the North-East have retained traditional practices and shows an inclination towards organic agriculture that is harnessed for the development of the region with ecological benefits. The region has remarkable advantages of fertile and organically rich soils, sufficient rainfall and water resources, and great climatic variety supporting assorted cropping potentials.

### Growing trends of organic farming in NER

The North Eastern Region has a total area of 18.37 million hectares, out of which 5.5 million hectares is by far cultivated land, but organic farming covers only 3 percent. The state of Sikkim accounts for more than three-fourths of the said areas. Other states like, Meghalaya and Assam have shown marvellous progress in implementing organic farming. Again, as per the available statistics, another 77,600 hectares is in the process of shifting over to organic cultivation. (APEDA 2017-18).

### Low consumption of chemical

Organic farming is economically practicable in areas where resources are available within the farm and least dependent on outside resources. North Eastern region of India has lots of biomass, available

from forest, weeds, crops etc. The amount of chemicals used in farming is significantly lower than the national average.



(Source: Arunachal Observer)

**Table 2: Organic farming area and production**

Fig.in lakh State	2000-2021		2017-2018	
	Area (ha)	Product ion (tons)	Area (ha)	Producti on (tons)
Arunach al	1.84	2.03	2.01	3.33
Assam	28.88	41.67	27.67	48.76
Manipur	1.64	3.78	2.64	5.92
Meghala ya	1.31	2.03	1.32	2.39
Mizora m	0.61	1.24	0.53	0.66
Nagalan d	2.11	2.77	2.98	5.68
Sikkim	0.76	1.03	0.76	1.10
NER	39.69	59.78	40.67	74.99

(Source: D. Niranjan (2023), International Journal of Creative Research Thoughts (IJCRT))  
**NER is responsible for 45% of India's total pineapple output**

The export of fresh pineapples from North-eastern Region have seen a hike in the international demand. The NE region witnesses an 85.34 per cent growth in the export of agricultural products in the last six years as it increased from USD 2.52 million in 2016-17 to USD 17.2 million in 2021-22. The major destination of export has been Bangladesh, Bhutan, the middle east. The UK and Europe.





Table 3: Indian production of Pineapple 2021-22

Sl.no	State	Production (in tonnes)	Share (%)
1	West Bengal	356.32	19.71
2	Assam	338.98	18.75
3	Karnataka	169.54	9.38
4	Tripura	144.60	8.00
5	Meghalaya	138.93	7.69
6	Manipur	134.82	7.46
7	Nagaland	114.77	6.35
8	Bihar	113.76	6.29
9	Kerala	89.05	4.93
10	Andra Pradesh	66.77	3.69
11	Tamil Nadu	41.44	2.29
12	Mizoram	29.02	1.61
13	Orissa	25.62	1.42
14	Arunachal Pradesh	22.87	1.27
15	Maharashtra	13.47	0.75
16	Sikkim	0.99	0.05
18	Jharkhand	0.69	0.04
18	Others	5.96	0.33
	Total	1807.60	

(Source: APEDA)

### Time tested indigenous farming system

#### ➤ Jhum cultivation



Jhum cultivation is a traditional agricultural technique practised in the North East Region that involves clearing land of trees and other vegetation, burning it, and then cultivating it for a set number of years. Natural vegetation that has been burned and turned into ash supplies nutrients to the crops and acts as a natural fertilizer.

#### ➤ Alder based farming

Alder based agroforestry system is an age-old ecological farming practice of some indigenous tribes viz., Angami, Chakhesang, Chang, Yimchunger and Konyak of Nagaland. Here, crops are grown as intercrop with alder trees. Crops co-cultivated with alder, forms a very remunerative agroforestry system. Conversion of wasteland into agricultural land through this system is very much practicable.



#### ➤ Zabo farming system



Zabo is a water harvesting system practiced in Nagaland, India. It combines water conservation with forestry, agriculture and animal care. In hilly areas, the rainwater that runs off along the slope passes through various terraces and is collected in pond-like structures in the middle terraces.

#### ➤ Wetland rice cultivation

Wet rice cultivation cum fish farming system practiced in elevated regions of about 1600 m and gentle sloping valleys, having an average annual



rainfall about 1700 mm. This system harvests both ground and surface water for irrigation.

#### ➤ Bamboo drip irrigation



The tribes in northeast India have used bamboo drip irrigation as a means of bringing water to seasonal crops since ancient times. The advantages of

using bamboo are: it prevents leakage, increasing crop yield with less water, and makes use of natural, local, and inexpensive material.

#### ➤ Bun system of cultivation



Bun cultivation is practiced widely in slopes and valleys. It provides an improved production system, helps conserve soil moisture, and prevents land degradation and soil erosion.

In this system, bench terraces are built on the hill slopes. 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.

#### Challenges in organic farming

In the future some imminent challenges would be to -

- ✓ Maintain the environmental benefits related to organic farming
- ✓ Short shelf life
- ✓ Increase yield of organic products using naturally available resources (chemical free)
- ✓ Organic products are more pricey than other products and price rise of organic products might be an obstacle in the future
- ✓ Climate change might also have an adverse effect.
- ✓ Increase in population of the people whilst the land area remains same or even reduces might be a problem in the future.

#### Conclusion

The North East region of India has a great potential for organic farming yet its full potential is not harnessed. Organic farming is an alternate practice that would make crop production more sustainable and productive but the region is not being able to take advantage of it. Organic farming does not mean simple replacement of chemical fertilizer and other chemicals with organic inputs and biological active formulation. Demand for green food is on the rise and harnessing the potential of organic farming in which soil health, human health and environment health is considered of greater significance. There is scope for employment opportunity in this system. The State government and other government nodal agencies should come forward to promote organic farming to make NEH region as 'organic hub'. The issue of food security, poverty and livelihood, production level of the region along with the certification process, accessibility to marketing infrastructure etc. should be thoroughly assessed in order that organic farming is properly tapped on commercial scale.

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## STATE WISE CONSUMPTION OF UREA/DAP/MOP FOR FY 2017-18 TO 2021-2022

FIG. IN LMT

Sl.no	State	2017-18			2018-19			2019-20			2020-21			2021-22		
		Urea	DAP	MOP	Urea	DAP	MOP	Urea	DAP	MOP	Urea	DAP	MOP	Urea	DAP	MOP
1	Andaman and Nicobar	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Andra Pradesh	14.09	3.26	2.89	14.18	3.14	2.41	14.26	3.52	2.42	15.92	4.21	2.94	14.83	3.6	1.78
3	Arunachal Pradesh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Assam	3.71	0.57	0.81	4.39	0.58	0.79	3.63	0.65	0.71	3.46	0.79	0.8	3.6	0.52	0.55
5	Bihar	20.39	6.82	2.45	22.34	5.87	2.03	22.65	7.44	2.46	23.3	8.12	2.61	21.53	5.52	1.38
6	Chandigarh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Chhattisgarh	6.63	3.26	0.73	8.18	3.31	0.71	7.96	3.56	0.92	9.17	4.51	1.12	8	3.53	0.83
8	Dadra and Nagar	0.01	0	0	0	0	0	0	0	0	0.01	0.01	0	0	0	0
9	Daman and Diu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Delhi	0.13	0.03	0	0.21	0.02	0	0.25	0.04	0	0.22	0.04	0	0.26	0.03	0
11	Goa	0.02	0.02	0.01	0.02	0.02	0	0.02	0	0	0.02	0	0.01	0.02	0	0
12	Gujarat	22.39	5.47	1.61	20.06	4.31	1.32	23.63	5.18	1.25	23.82	6.55	1.51	21.9	5	1.09
13	Haryana	20.62	5.47	0.72	21.66	5.48	0.7	20.88	5.89	0.58	21.52	6.32	0.6	20.75	4.96	0.57
14	Himachal Pradesh	0.70	0	0.11	0.73	0	0.06	0.74	0.01	0.07	0.72	0.02	0.08	0.74	0	0.04
15	Jammu and kashmir	1.51	0.65	0.38	1.32	0.49	0.23	0.96	0.35	0.16	2.16	0.8	0.48	1.67	0.44	0.19
16	Jharkhand	2.22	0.82	0.03	2.39	0.69	0.01	2.41	0.79	0.03	2.58	1.08	0.05	2.57	0.91	0.01
17	Karnataka	13.48	4.9	2.54	13.91	4.88	2.64	14.63	5.54	2.59	16.43	6.82	3.35	17.84	5.73	2.54
18	Kerala	1.33	0.31	1.02	0.95	0.21	0.84	1.14	0.17	0.89	1.27	0.21	1.09	1.15	0.14	0.77
19	Lakshadweep	0.00	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0
20	Madhya pradesh	24.49	11.06	1.08	29.51	12.63	1.08	29.99	13.46	1.13	30.18	16.07	1.5	29.18	12.03	1.18
21	Maharastra	23.58	6.66	4.24	22.81	5.61	3.86	24.19	6.07	3.24	24.62	8.17	4.09	23.68	5.87	3.26
22	Manipur	0.21	0	0	0.24	0	0	0.26	0.05	0.01	0.22	0.04	0.03	0.14	0.01	0
23	Meghalaya	0.00	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0
24	Mizoram	0.06	0	0	0.07	0	0	0.08	0	0	0.02	0	0	0.01	0	0
25	Nagaland	0.00	0	0	0	0	0	0.01	0	0	0.01	0	0	0.01	0	0
26	Odisha	5.26	1.73	1.22	4.96	1.69	1.08	5.56	1.99	1.21	5.27	2.52	1.38	5.53	2.37	1.07
27	Puducherry	0.11	0.01	0.01	0.13	0.01	0.02	0.11	0.01	0.01	0.14	0.01	0.02	0.15	0.01	0.02
28	Punjab	28.06	6.85	0.83	29.17	7.02	0.56	29.64	7.29	0.64	29.37	7.73	0.85	31.34	6.27	0.64
29	Rajasthan	16.80	5.37	0.26	20.92	6.71	0.29	22.97	8.38	0.26	23.21	9.17	0.32	22.59	6.1	0.24
30	Sikkim	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0	0
31	Tamil Nadu	8.81	2.44	2.96	9.11	2.31	2.67	9.13	2.46	2.52	9.88	2.72	3.07	10.4	2.39	2.53
32	Telangana	14.02	2.53	2.06	13.83	2.23	1.41	15.20	2.32	1.71	17.54	3.14	2.47	17.12	2.98	1.39
33	Tripura	0.23	0.01	0	0.11	0	0	0.17	0.02	0.07	0.14	0.05	0.04	0.18	0.01	0.01
34	uttarakhand	3.10	0.29	0.06	2.75	0.22	0.03	2.45	0.44	0.07	2.40	0.38	0.06	2.09	0.31	0.04
35	Uttar Pradesh	58.92	18.08	2.97	62.86	17.17	1.82	70.95	21.94	2.40	74.13	25.76	2.78	71.12	21.20	1.91
36	West Bengal	12.41	3.23	2.93	13.23	2.75	2.42	13.11	3.43	2.40	12.78	3.94	3.06	13.3	2.70	1.89
	Total	303.3	89.84	31.92	320.04	81.87	26.98	336.98	101	27.75	350.51	119.18	34.31	341.7	92.63	23.93

(source: Ministry of chemicals &amp; Fertilizers, GoI)

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