



# PRODUCTION AND PRODUCTIVITY GROWTH TREND OF MAJOR SPICES IN NAGALAND; A DESCRIPTIVE STUDY

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## • *Abstract*

*Nagaland is the 16<sup>th</sup> state of India which flourishes in agrarian sector and have rich fertility in land. The Department of Horticulture Nagaland aims to harness the vast potentialities of the region so that the livelihood of the farmers gets improved through economic prosperity in the region. The production and productivity of the spices are not planned because of lack of irrigation purposes, lack of investment, problem of using insecticide and pesticide, lack of market knowledge, and the farmers lack using proper fertilizers for proper growth of the spices planting. The study had found that Ginger spice has the highest productivity among all the spices that cultivates in Nagaland. The growth rate of ginger production was found 20.79M.T from 2010-11 to 2020-21, followed by Naga King Chilli with found 5.378 M. T, turmeric with 3.59 M. T and cardamom with 0.27 M. T in the same period.*

*Keywords: Spices, Naga King chilli, Turmeric, Cardamom, Ginger.*

## 1. Introduction:

The history of spices has a very engrossing connection with many important events in man's life. The usage and cultivation of spices are known to the ancient cultivation in India, China, Egypt, Greece, and Rome<sup>1</sup> [1]. The origin of spices was known from the early references in ancient literature like the Veda, the bible and Quran set. The first ever record, mentioned about spice traces were used back to nearly 2600 BC to 2100 BC – the pyramids of Age of Egypt. The Archelologies had excavated that in the Indus Valley before 1000 B.C species were used<sup>2</sup> [2]. Spices are comprised as an important cash crop agricultural product. India has a goodacre-climatic condition which enjoys the growth of amble annual and perennial spices. Spice had a profound influence in the duration of human civilization. The spices were natural, aromatic plant components or mixture which can be used as flavoring, seasoning and transfuse aroma to the food. Spices are constituted as economic importance as it can be exported as whole, essentials oils, powdered form, or variety of mixtures. And exporting also can enlarge the income source of the farmer for more production and productivity<sup>3</sup>[3]. With the faster growing of the world, spice industry has been playing a vital role in economic development. The Indian government also shows concern for the production and productivity as it earns a good portion of foreign currency in terms of export.

**Cardamom:** The Cardamom spice is known as the 'queen of spices. It is regarded as an indigenous herb to the southern stretch of evergreen forests of Western Ghats. This spice also plays an important role in the export to the international market. It has been still known that India is one of the countries in largest production. This spice also has health benefits and used for reduction of fatty liver, diabetes, and control high cholesterol.

**Ginger:** Ginger has been considered as an important cash crop spice. And it has been seen that cultivation of spice is more economical than the plantation of other spices. The positive impact of ginger cultivation is it can be grown in verities of soil provided there is enough rainfall or proper irrigation facilities<sup>4</sup>[4]. Ginger can be used in many forms like dry ginger, paste ginger, candy adding sugar, health benefits for digestion, weight loss, nausea, osteoarthritis etc.

**Turmeric:** Turmeric is considered as a traditional spice grown crop in India. It also has a good impact in the international market which is the third largest exporter from India. Apart from considering as a spice usage it is also used for cosmetics purpose like for glowing skin and has medicinal benefits like remedy for stomach, blood purifier, antiseptic, carminative, tonic, and vermicide. Turmeric can also help in good circulation of blood and protects against atherosclerosis<sup>5</sup> [5].

**Naga King Chilli:** Naga King chilli also known for its scientific name Capsicum Chinese is found to be cultivated not only in Nagaland State but also grown widely in Assam, Manipur, and other Northeastern part of the country. Nagaland is the homeland to cultivate Naga king chilli which cultivates in hilly jhum fields or in the backyard of the Garden<sup>6</sup> [6].

The State of Nagaland covers an area of 16,579 sq.km and lies between 250 6' and 270 4' latitude North of Equator and between the longitudinal lines 930 20' and 950 15' East. The State is bounded by Manipur on the South, Assam on the North and West, Arunachal Pradesh on the Northeast and shares a common international boundary with Myanmar on the East. Topographically, the state is mountainous, and the altitude varies approximately between 194 meters and 3840 meters above sea level. Mount Saramati in Kiphire district is the highest peak in the State, measuring 3,840 meters above sea level<sup>7</sup> [7].

## Objectives

The objectives of the study are:

- To find out the production and productivity of spices in Nagaland.
- To find out the growth trend of spices in Nagaland.
- To study the challenges and policy implication of spices in Nagaland.

### 2. Research methodology

The study is descriptive based on observation and secondary sources.

### 3. Results and discussion

India is known as the 'Land of Spices'. India is also the leading country in the world which exports spices. Thus, spices help in generating revenue to the nation income. Spice is not only used for consumption purpose as a flavored food, but it can be used as medicine, perfumes, cosmetics etc.<sup>8</sup>[8]. In India almost all states produce at least one spice or the other. There are 109 spices which are listed by the International Organization for Standardization and among which 63 are grown in India. India has been known as the largest producer, consumer, and exporter of spices in the world<sup>9</sup> [9].

#### 3.1 Production and productivity of spices in Nagaland

The production and productivity of spices (Cardamon, Turmeric, Ginger, Naga King Chilli) are shown in three tables with different years i.e., 2010-11, 2015-16, and 2020-21 in the 11 districts of Nagaland.

**Table 1 Production of spices in Nagaland (Production in M.T, Area in Hectares)**

Spices	Districts 2010-11												
		Dimapur	Kohima	Kiphire	Mokokchung	Mon	Longleng	Phek	peren	Tuensang	wokha	zunheboto	Total
Cardamon	A	0	600	80	200	400	50	600	10	290	400	550	3180
	P	0	270	40	100	200	15	300	2	100	200	250	1477
Turmeric	A	15	20	5	20	5	5	5	20	10	20	5	130
	P	45	80	25	80	25	25	25	80	40	85	25	535
Ginger	A	200	250	100	250	150	100	250	400	200	200	200	2300
	P	3000	3500	1000	3500	2500	1000	3500	6000	3000	3000	3000	33000
Naga king chilli	A	65	90	35	35	50	25	50	70	25	30	25	500
	P	260	360	140	140	200	100	200	280	100	120	100	2000

Sources: Statistical Handbook of Nagaland 2012

Table 1 shows the 11 districts of Nagaland production and productivity of spices in Cardamon, Turmeric, Ginger, and Naga King Chilli for the year 2010-2011. Among all the spices shown in table Ginger has the highest production with total 33000 M.T and area of 2300 hectares and had productivity of 14.34 M. T. The least production was the turmeric with 535 M.T with an area of 130 hectares and had productivity of 4.11 M.T. The largest area distribution was of Kohima district for cultivation of the spices mentioned in table with 960 hectares and production was 4210 M.T which shows a productivity of 4.38 M.T. and the least cultivation was of Longleng district with an area of 180 hectares and 1140 M.T which has 6.33 M. T productivity. The highest production was 6362 M. T with an area of 500 hectares with productivity of 12.72 M. T.

**Table 2 Production of spices in Nagaland (Production in M.T, Area in Hectares)**

Spices	Districts 2015-16												
		Dimapur	Kohima	Kiphire	Mokokchung	Mon	Longleng	Phek	peren	Tuensang	wokha	zunheboto	Total
Cardamon	A		609	181	185	650	217	566	126	272	465	680	3951
	P		285	51	100	500	60	222	22	98	156	435	1929
Turmeric	A	215	25	15	20	16	24	12	265	16	40	15	663
	P	4600	360	243	243	140	411	136	3204	390	525	252	10504
Ginger	A	190	279	1568	200	450	284	383	430	375	310	350	4819
	P	3100	797	392	2499	6000	4388	5268	5406	5215	5115	4896	43076
Naga king chilli	A	113	148	56	105	150	75	100	230	113	103	105	1298
	P	1010	930	213	812	930	304	546	1564	474	536	420	7739

Sources: Statistical Handbook of Nagaland 2016

Table 2 shows the 11 districts of Nagaland production and productivity of spices in Cardamon, Turmeric, Ginger, and Naga King Chilli for the year 2015-2016. Amongst all the spices shown in table again Ginger has the highest production with 43076 M.T with an area of 4819 hectares and had productivity of 8.93 M. T. The least production was cardamon with 1929 M.T with an area of 3951 hectares which had productivity of 0.49 M.T. The highest area distribution was of Kiphere district for cultivation was 1820 hectares of the spices mentioned in table and Peren had the maximum production of 10196 M.T. and the least cultivation was of Kiphere district with an area of 1820 hectares and 899 M.T which has 0.49 M. T productivity.

**Table 3 Production of spices in Nagaland (Production in M.T, Area in Hectares)**

Spices	Districts 2020-21												
		Dimapur	Kohima	Kiphire	Mokokchung	Mon	Longleng	Phek	peren	Tuensang	wokha	zunheboto	Total
Cardamon	A		626	180	128	655	245	630	210	310	330	706	4020
	P		300	55	72	545	125	275	182	138	150	481	2323
Turmeric	A	210	25	15	20	16	22	15	260	10	40	16.5	649.5
	P	4500	360	30	125	65.1	15	175	3142	44	375	271	9102.1
Ginger	A	165	282	1498	113	452	275	385	429	400	340	355	4694
	P	2750	4802	1198	1298	3380	3380	2315	5395	2276	3115	4939	34848
Naga king chilli	A	10	25	10	8	40	10	10	282	50	40	110	595
	P	60	22	5	0.8	42	10200	80	1696	42	200	410	12757.8

Sources: Statistical Handbook of Nagaland 2021

Table 3 shows the 11 districts of Nagaland production and productivity of spices in Cardamon, Turmeric, Ginger, and Naga King Chilli for the year 2020-2021. Amongst all the spices shown in table again Ginger has the highest production with 34848 M.T with an area of 4694 hectares and had productivity of 7.42 M. T. The least production was cardamon with 2323 M.T with an area of 4020 hectares which had productivity of 0.58 M.T. The highest area distribution was of Zunehoboto district for cultivation of the spices with 1187.5 hectares mentioned in table and Longleng had the maximum production of 13720 M.T. and the least cultivation was of Kiphere district with an area of 1703 hectares and 1288 M.T which has 0.76 M. T productivity.

### 3.2 Growth Trend of Spices in Nagaland

The table below shows the growth trend of the spices produce in Nagaland in respect to 2010-11, 2015-16, and 2020-21.

**Table 4: Growth Trend of spices in Nagaland (Production in M.T, Area in Hectares)**

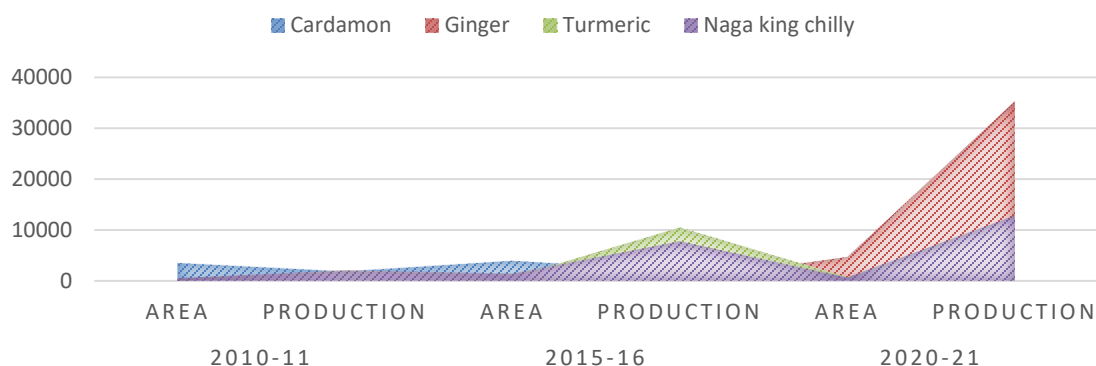
Spices	2010-11		2015-16		2020-21	
	Area	Production	Area	Production	Area	Production
Cardamon	3491	1815	3951	1929	4020	2323
Ginger	150	1620	-	-	4694	35303
Turmeric	150	1980	663	10504	649.50	9102.10
Naga king chilly	500	2000	1385	7739	595	12757.80

**Source: Nagaland Economic survey**

Table 4 shows the production of Major spices grown in Nagaland which are Cardamon, turmeric, Naga king chilli, and ginger. The production of cardamon in the year 2010-11 was 1815 M. T which gradually increased by 1929 M.T in 2015-16 and furthermore to 2323 M.T in 2020-21 from the preceding year. The production of Ginger in 2010-11 was 1620 M.T and in 2015-16 it was not cultivated but it had a tremendous increase in 2020-21 by 35303 M.T. The production of turmeric in 2010-11 was 1980 M. T and increased to 9102 M. T in 2015-16 but in 2020-2021 the turmeric spice had a decrease in area and production with 649.50 hectares along with production of 9102.10 M. T. The production of Naga King chilli in 2010-11 was 2000 M.T and increased to 7739 M.T in 2015-16 and in 2020-2021 it was increased to 12757.80 M. T.

From Table 4 it is observed that the growth rate of cardamon production was 0.27 M. T from 2010-11 to 2020-21. The growth rate of ginger was 20.79M.T. The growth rate of turmeric was 3.59 M. T and the growth rate of Naga King Chilli was 5.378 M. T in the same period.

## FIGURE 1.GROWTH TREND OF MAJOR SPICES IN NAGALAND



Sources: Nagaland Economic Survey

The above figure is depicted from table 4 growth trend of major spices from 2010 to 2021. And it is showing a growth trend of production in the state.

### 3.3 Challenges and policy implication of spices in Nagaland

Spices being as an important cash crop which along has health benefits are only regarded as least generation of income which are grown by small and marginal farmers. The farmers still use the traditional method of cultivating and planting the spices where technology in the 21<sup>st</sup> century is so advanced. Even the production and productivity of the spices are not planned because of lack of irrigation purposes, lack of investment, problem of using insecticide and pesticide, lack of market knowledge, and the farmers lack using proper fertilizers for proper growth of the spices planting. This happens when the farmers lack education. The spices which are harvested are largely sold within the State which can be seen that there is less trade relations with the neighboring States. Spices can play a vital role in the rural area by generating income, also the farmers can influence the government for investment. The farmers cultivating spices does not cultivate only one spice in their land but multiple crops which diminishes the quality and quantity of the production.

### 3.4 Some of the policy implications given by the State Government <sup>10</sup>[10]

**Mission for Integrated Development of Horticulture (MIDH):** MIDH is arguably one of the most successful schemes to be implemented in the state. Its main objective is to promote the holistic growth of the horticulture sector, under MIDH the programmed aim at crop zoning where the potentiality of a specific crop to a certain agroclimatic zone is kept in mind to minimize the import from other states and create marketable surplus for export in future.

**Rashtriya Krishi Vikas Yojana (RKVY):** An amount of Rs. 300 Lakhs was allocated for carrying out various horticultural activities. Under Value addition linked production projects of RKVYRAFTAAR, cultivation of mushroom in low-cost units as a means of income as well as nutrition with an amount of Rs. 53.00 Lakhs covering 106 units.

**Mission Organic Value Chain Development for Northeast Region (MOVCD-NER):** A horticultural activity was included into the ambit of MOVCD\_NER since 2016-17. Under phase II of MOVCD-NER starting from 2018-19 to 2020-21, the process of formation of Farmers Interest Groups has been initiated for the formation of 4 no's of FPCs/FPOs for Spices in Peren district, Ginger in Wokha, Passion fruit in Wokha & Mokokchung and Kiwi in Phek, Zunheboto& Kohima cluster, covering an area of 500 Ha each.

**Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):** PMKSY was launched on 1 July 2015 with the objective to achieve convergence of investments in irrigation sector at field level. Micro irrigation is an integral component of the scheme to maximize water use efficiency at farm level.

**Rashtriya Krishi Vikas Yojana (RKVY):** Rashtriya Krishi Vikas Yojana (RKVY) was initiated during the year 2007-08 by Government of India with the objective to extend support in achieving 4% annual growth rate in agriculture sector. The programmed aims at achieving and sustaining desired annual growth by ensuring holistic development of agriculture and allied sectors by allowing states to do their own agriculture and allied sector development activities as per the district/state agriculture plan.

**National Food Security Mission (NFSM):** NFSM is a centrally sponsored scheme launched in October 2007 during the 11 Five Year Plan. The Mission consists of five components, namely i) NFSM-Rice ii) NFSM- Wheat iii) NFSM-Pulses iv) NFSM-Coarse cereal v) NFSM- Commercial crop. The main objectives of the Mission are: 1. To increase production of rice, wheat and pulses through area expansion and productivity enhancement in a sustainable manner. 2. Restore soil fertility and productivity at the individual farm level. 3. Enhance farm level economy to restore confidence amongst the farmers.

**Rainfed Area Development (RAD):** RAD is one of the components of National Mission for Sustainable Agriculture (NMSA). It is one of the 8th Missions outlined under National Action Plan on Climate Change (NAPCC). The main objective of sustainable production, remunerative and climate resilient, conserve natural resources with optimum utilization of water “Per Drop More Crop.”

**Mission Organic Value Chain Development for Northeast Region (MOVCD-NER):** Realizing the potential of organic farming in the Northeastern Region of the country Ministry of Agriculture and Farmer Welfare has launched a Central Sector Scheme entitled “Mission Organic Value Chain Development for Northeastern Region”



**Pradhan Mantri Krishi Sinchayee Yojana” (PMKSY) “Per Drop More Crop” Other Interventions:**

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) scheme is a flagship programmed of Government of India. The objective of the scheme is to promote efficient water conveyance and precision water application to ensure 'Per drop- More crop'. It was launched in the State during 2015-16 initially for preparation of District Irrigation Plan (DIP) and State Irrigation Plan (SIP)

**Sub-Mission on Agricultural Mechanization (SMAM):** Farm Mechanization is an important ongoing programmed implemented by the Government of Nagaland. During 2017-18, Farm Mechanization has been taken under Submission on Agricultural Mechanization (SMAM) & RKVY. The main objective is to boost up production and productivity by farm mechanization in the same limited area.

**Pradhan Mantri Kisan Samman Nidhi (PM-KISAN):**PM-KISAN is a central sector scheme with 100% funding from the Government of India effective from 1 December 2018.Under the scheme an amount of Rs.6000/- per year is released by the central government online directly into the bank’s accounts of the eligible farmers under Direct Benefit Transfer mode, subject to certain exclusion categories.

#### **4. Conclusion**

Spices are an important cash crop for an economy. With the cultivation of major spices in the State can not only lead to generate revenue in the economy but also create employment as spice cultivation is a labor-intensive technique and thus can generate income for their livelihood. Those farmers cultivating spices should give proper assistance of credit and storage facilities so that they could reach the maximum yield and improve the cultivation process. The farmers should also be given proper instructions for the utilization of fertilizers and pesticides also introduce modern technologies for more production which lead to trade with the neighboring States. As many of the farmers working on the field are less educated the State Government should conduct an extensive educational programmed to educate the farmers in essential areas of cultivation, preservation, and marketing. Nagaland with a good agro climatic conditions can have a healthy cultivation of variety of crops.

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