

Changing Scenario of Agriculture in Mokokchung

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Introduction

Agriculture plays a vital role in India's economy where 54.6% of the population is engaged in agriculture and allied activities (census 2011) and contributes 17.8% to the country's Gross value Added (GVA) for the year 2019-20 (at current prices). Agriculture has undergone tremendous development since the time of the earliest civilization. Despite many setbacks, Indian Agriculture scenario has surely undergone drastic changes and has achieved many milestones. Presently, Indian Agriculture is witnessing a phase of diversification and during the recent years much awareness has been generated on shifting to High-Yielding Varieties (HYV) of crops from conventional crops. This has enabled a successful transition in Indian Agriculture from its stagnation to a growth plan.

North Eastern region of India is known for its diversified cultural heritage and biodiversity. Agriculture is an important sector in the economy of the NER, with its share in State Domestic Product (SDP) ranging from 19 percent to 37 percent in different states (B. C. Barah). The state of agriculture in North East India along with its potentialities and developing thrust has been an inseparable part of the planning process. There has been a changing agricultural scenario with some vital inter-related issues like land-use, land relations, land reforms, and landless labourers emerging. The politics of land reform constitute an integral part of the scenario. A rational solution of these issues will help agricultural development. Agriculture in both plain and in the hills of North East India has been undergoing some changes in the last two decades. The introduction in limited scale of modern technology in agriculture has brought about some changes in crop pattern and production in different areas of North East India where both settled and shifting cultivation are practiced. The social and economic background of the peasants and the ecological characteristics have to be given due weight age for understanding the degree of change and sustainability of gainful agriculture (R.P Athparia).



Nagaland is a hilly state with mountainous terrain richly endowed with natural resources. Predominantly it is an agrarian state with 70% of its population engaged and dependent on agriculture. The contribution of agricultural sector in the state is very significant. Different systems have evolved over time to fit and mould into different ecosystems and agro climatic zones. Traditional farmers have adopted and adapted looking at what nature gives them and devising indigenous systems that follow ecological principle while meeting basic needs for food, fuel, and household materials. Despite the prevailing changes in agricultural system over the years in India, with the introduction of modern machines and technologies, there is shift from subsistence to commercial farming and integrated farming system but still a large part of agriculture in Nagaland is still into subsistence farming and they have been practicing and engaging themselves very efficiently in this traditional agricultural methods for survival.

Mokokchung district is endowed with varying natural conditions for farming of agricultural crops and rearing of livestock. The main crops are paddy, maize, tapioca, rice-bean. An increasing number of farmers are also engaging in fishery, dairy, poultry and tea production. Jhum and terrace cultivation are practiced in the district and rice is the staple food. Cultivation of mixed crop in Jhum is practiced. Modern technologies of agriculture such as improved seed, application of fertilizers, modern plant protection methods are in limited use. This minimum usage of agro-chemical in crop production has an advantage of acceding to organic farming.

Each farming system has its pros and cons in past as well as in present scenario. Like nature, change is an avoidable rule in agricultural practices as well. From ancient to present time we have seen development of many such patterns to get better quality and quantity using available resources with new dimensions.

Present Status of Agriculture in Nagaland

The present agricultural status of Nagaland is organic by default as the state is hilly by nature, mechanization is not feasible unlike the modern mechanized farming system in plain areas of the country. In comparison with all the states of India, Maharashtra alone has about 0.5 million ha area which is under organic farming, out of this 10,000 ha is certified area, while in Nagaland, out of 7,22,464 ha total cultivated area, only 300 ha of land is under certified organic farming benefitting 3,575 farmers growing crops like maize, soybean



French-bean, ginger, large cardamom, passion fruit and chilli. Among the various crops (maize, oilseeds, tapioca, millets, jobs tears, taro, yam and potato) rice being the staple food of the people, occupying maximum area under cultivation and constitutes about 75% of the total food production in the state.

Present Status of Agriculture in Mokokchung

Agriculture and allied activities are the principal means of livelihood for the vast majority of the population residing in the rural areas. Although a variety of land-use systems are practiced in Mokokchung, shifting cultivation continues to be the most dominant land-use form in the district. The gross cropped area is 38250 Ha and rice is the major food crop occupying 57% of the total cultivated area. Other major crops grown in the district are maize, millets, tapioca, soybean, orange and vegetables. Now-a-days some of its farmers are applying various advanced technologies in their agricultural fields in order to increase the production level. Earlier, the farmer practiced traditional method of agriculture, but nowadays, with the advancement of technology and also subsidies from different quarters available to the farmers, the villagers are also practicing different agricultural activities and also have established own private enterprises. Every year a huge junk of revenue comes from the agricultural products in the district and it helps in its economy to a great extent. But the district is scantily industrialised since it has only a few small scale industries. Lately Mokokchung has made a remarkable achievement in the field of horticultural crop production and also floriculture- roses, carnations liliams and orchids mostly being grown in Yisemyong.

Changes in Agricultural Scenario in Mokokchung

The changes in agriculture can be seen in terms of land use pattern, cropping pattern, use of modern-technique, cropping intensity, agricultural productivity- more particularly area and production.

A) Changes in Livelihood

The paradox for shifting cultivators is aggravated by the two concurrent paradigms by researchers and policy makers about the pros and cons of shifting cultivation which often results in the situation where “shifting cultivators fall through the crack between marginalisation and traditionalism” (Malik and Bela, 2003). Such situations create difficulties for consensus building on the issue of choice of interventions necessary to support practicable options strengthening livelihood of shifting cultivators. Today, it is above all, the reality of



market driven economies and the everyday need for cash that is constantly testing shifting cultivators in their strategy for livelihood and food security.

i) Livelihood and food security:

The intimate knowledge of their local environment has for ages enabled traditional farmers to select crops for their food and subsistence. Cultivation was then generally for rice but this is fast changing. Farmers now cultivate crops not just for their consumption but also to sell in markets and generate income. Shifting cultivators in Mokokchung district are going through a series of transitions that affect not just their livelihood and food security strategies but even beyond. The changes have affected traditional land-use patterns, its institutions and even farmer perceptions to farming itself.

ii) Reduction in number of shifting cultivators:

Farmers attribute the reduction in shifting cultivators to numerous factors including increased education levels and changing aspirations of the younger generation; rural-urban migration; poor productivity; low cash income from shifting cultivation; unavailability of both community-based labour sharing and even paid labourers; high cost of living and the need for cash etc. The other reason is that many farmers have diversified their activities and are paying more attention to the other land-use activities, such as home gardens, vegetable farms and horticulture plantations closer to the village.

iii) Conversion of traditional shifting cultivationland:

As the number of shifting cultivators and the overall size of individual shifting cultivation fields across communities reduce, a lot of shifting cultivation land within given blocks remain uncultivated. The reduced number in shifting cultivation in many ways is also attributed to the sudden shift of farmers from food production for domestic consumption to cash crop production for selling in markets. Over the years, such scenarios have led to increase in fallow land that is not put to cultivation. Villages have therefore started converting selected shifting cultivation blocks to permanent land use systems, thus bring about a complete change in the traditional land use patterns.

B) Change in Agricultural land use:

Nagaland is principally an agrarian economy making the single largest contribution to the state economy from agriculture and its allied sectors. Its culture and traditions are all symbolic to agriculture. This clearly indicates the dependency on agriculture sector, rice being the staple crop of the state, covers about 70% of the net cultivated area registering production of 301970 MT during 2019-20 and production of 702090 MT in the other major crops including maize, potato, soya bean, sugarcane, jute, gram, cotton and castor. However, self-sufficiency in food grains is yet to be achieved and the state is still dependent on imports. Land under Mokokchung district is mostly cultivated under Jhum paddy of which Ongpangkong range is the highest cultivator of all the six ranges. The district maintains Jhum cycle of 10-15 yrs but gradually it has been reduced to 8-10 yrs. Besides paddy, other crops such as cereal pulses, oil seeds, and commercial crops are also cultivated. Out of the state total Jhum paddy cultivated area of 90830 hectares, Mokokchung district total cultivated area of Jhum paddy is 9300 hectares (Statistical handbook of Nagaland)

Table 1: Land Use Statistic Report in respect of Mokokchung District during the year 2013-2019. (In Hectare)

Sl no	Particulars	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
1	Reporting Area for LUS	160485	160090	160950	160988	160935	160982
2	Forests	82675	82675	82675	81657	81657	81657
3	Not Available for Cultivation						
	i. Area Under Non Agricultural Uses	10269	10270	10277	10279	10283	12473
	ii. Barren and Unculturable Land	167	167	167	167	167	167

	iii. Total	10436	10437	10444	10446	10450	12640
4	Other Uncultivated Land Excluding Fallow Land						
	i. Permanent Pasture and Other Grazing Land	-			-	-	-
	ii. Land Under Misc. Tree Crops and Groves not Included in Net Area Sown	9722	9748	10557	10534	10628	8476
	iii. Culturable Waste Land	6430	6495	6442	6954	6871	6864
	iv. Total	16152	16243	16999	17488	17499	15340
5	Fallow Land						
	i. Fallow Lands Other Than Current Fallows	9896	9986	10556	11432	11778	12640
	ii. Current Fallow	6107	6596	6564	6241	5827	9245
	iii. Total	16003	16582	17120	17673	17605	21885
6	Net Area Sown	35219	34153	33712	33724	33724	29460
7	Cropped Area	44217	43940	44405	46647	47802	43546
8	Area Sown More Than Once	8998	9787	10693	12923	14078	14086

Source: - Statistical handbook of Nagaland

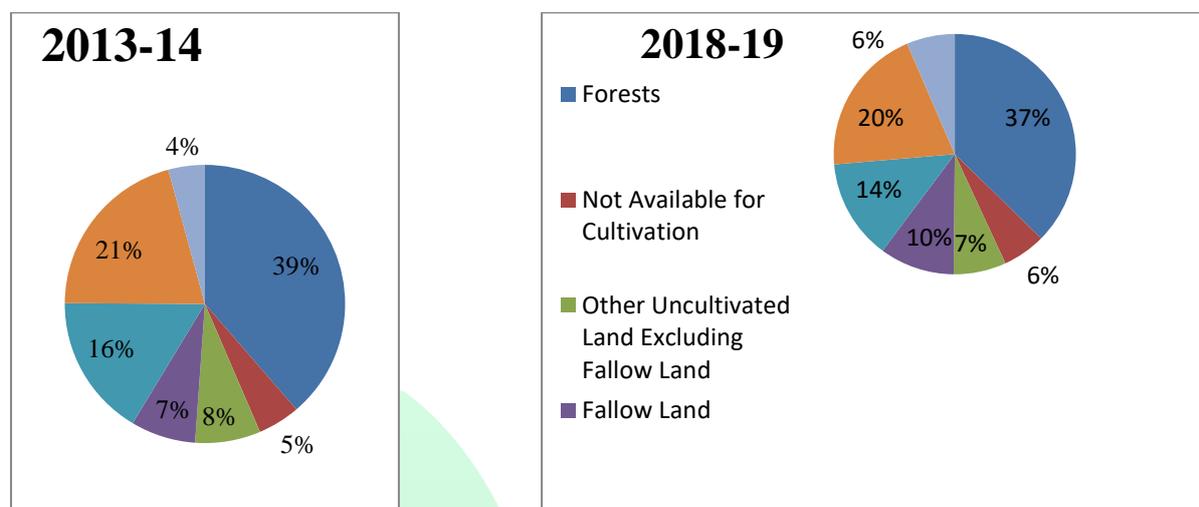


Fig:- Changes in general land use categories – 2013-14 and 2018-19

C) Agricultural Productivity

Area and production in Mokokchung District are shown in fig. 1 & 2 respectively. In 2011-12 cereals covered 11920 hectares which is increased to 22435 ha in 2019-20, pulses increased from 2970 hectare in 2011-12 to 3292 hectare in 2019-20. The area under oil seeds and commercial crops in 2011-12 were 6050 hectare and 3570 hectare which were increased to 6486 hectare and 5137 hectare respectively. The production of cereals and pulses were 38920mt and 3030 in the year 2011-12 which increased to 50844mt and 3775mt in the year 2019-20 respectively. In 2011-12 the production of oil seeds and commercial crops were 5700mt and 4410mt which were increased to 6286mt and 54154mt in the year 2019-20 respectively.

Table 2: area and production of principal crops for the last 10 years (i.e., 2011-2020) in mokokchung district.

(A=area in hectare & P=production in MT.)

S	l	n	o	Are	2011-	2012	2013-	2014-	2015-	2016-	2017-	2018-	2019
				a	12	-13	14	15	16	17	18	19	-20
				&P									
				rod									
				ucti									
				on									
1	Cereals	A			1192	2000	20390	20760	21150	21510	21970	21970	2231

			0	0							9
		P	3892	4073	42290	43920	45630	47440	49030	49860	5046
			0	0							9
2	Pulses	A	2970	2950	3000	3030	3080	3170	3260	3260	3283
		P	3030	3210	3280	3350	3460	3570	3730	3730	3755
3	Oil seeds	A	6050	6120	6140	6170	6220	6250	6310	6320	6348
		P	5700	5820	5910	5920	5950	5980	6030	6040	6060
4	Commercial crops and others	A	3570	3930	3740	4080	4300	4380	4420	5000	5144
		P	4401	4604	47420	48200	49000	49750	50100	51810	5272
			0	0							2

Source: - Statistical handbook of Nagaland

Some of the Key issues affecting agricultural productivity include:

- Decreasing sizes of agricultural land holdings
- Continued dependence on the monsoon
- Inadequate access to irrigation
- Imbalance use of soil nutrients resulting in loss of soil fertility
- Unable to access to modern technology.

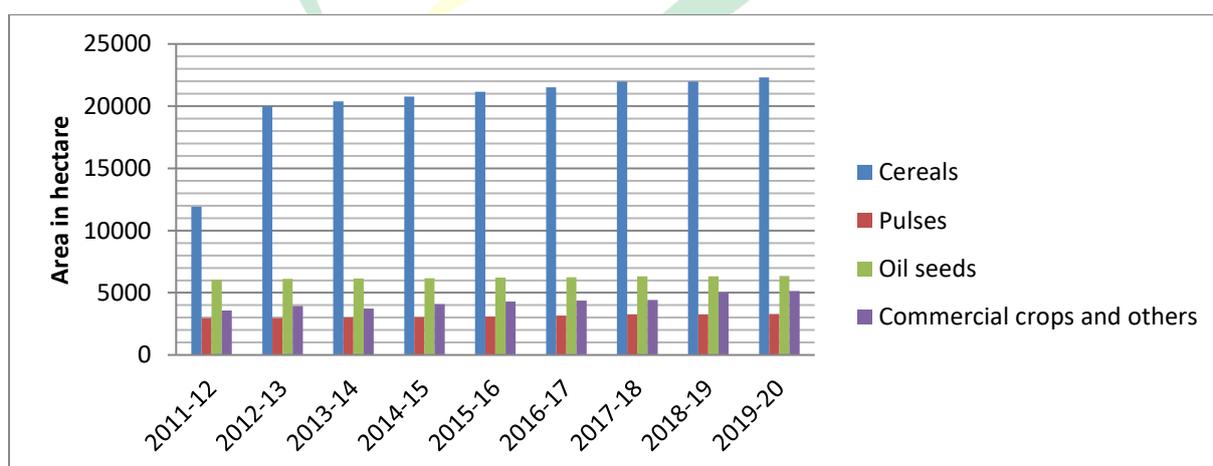


Fig1: Area under principle crops in Mokokchung (2011-20)

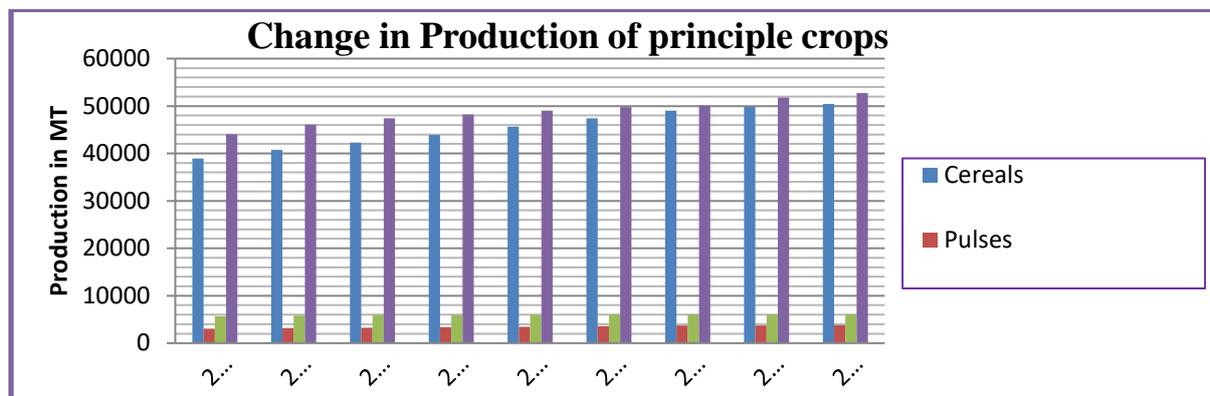


Fig 2: Production of principle crops in Mokokchung (2011-20)

On Going Extension and Development Activities in The District

Various governmental agencies are implementing a number of schemes to promote agriculture and allied sectors in the district. Some of the schemes which were implemented in the District in the recent years are as follows;

- i. National Food Security Mission (NFSM)
 1. NFSM-Rice through SRI, direct sowing and line transplanting
 2. NFSM- Pulses like kholar, arhar, moongdal and pea
 3. NFSM-Coarse cereals like maize, millets and jobstears

Objectives: To increase production of rice, pulses and cereals through area expansion and productivity enhancement in a sustainable manner.

Sl no	Particulars (Under Mokokchung Sadar)	Units (2019-20)
1	No. of beneficiaries under NFSM Rice	312 beneficiaries@7500/- per Ha
2	No. of beneficiaries under NFSM Pulses	335 beneficiaries@7500/- per Ha
3	No. of beneficiaries under NFSM Coarse Cereals	950 beneficiaries @ 3500/- per Ha
4	No. of beneficiaries under NFSM Nutri Cereals	23 beneficiaries@ 7500/-per Ha
5	No. of beneficiaries under NFSM Oilseeds	253 beneficiaries@ 7500/-per Ha

Source : ATMA Mokokchung

- ii. Rashtriya Krishi Vikas Yojna (RKVY)

1. RKVY Cluster Programme Power tiller path
2. RKVY Fallow Land Management - Jhum intensification through alder plantation
3. RKVY INM & IPM
4. RKVY Marketing Shed
5. RKVY-Sugarcane Development
6. RKVY-Agri clinic & business.

Objectives: It aims at achieving 4% annual growth in the agriculture sector by ensuring a holistic development of agriculture and allied sector

- iii. National Mission on Oilseeds and oil Palm (NMOOP)
 1. NMOOP MM-I (oil seeds) - Mustard, Soyabean . and Groundnut
 2. NMOOP MM- II (oil palm) Oil palm plantation at Tuli and Mangkolemba
- iv. National Mission for Sustainable Agriculture (NMSA)
 1. NSMA-Rainfed Area
 2. Development NMSA-Soil Health Card
 3. NMSA- PKVY-PGS Organic
 4. NMSA- MOVCDNNER

Objectives:

- a. To make agriculture more productive, sustainable and remunerative and climate resilient by promoting location specific integrated or composite farming systems.
- b. To adopt comprehensive soil health management practices based on soil fertility maps and soil tests.
- c. To promote organic cultivation and increase its value and Organize famers to form FPOD to help in producing marketing channels.

A New Cultivation of Medicinal Plant in Mokokchung District:

Cultivation of Stevia Crop in Mokokchung district: Grace Biotech in is the one of the recent company which has been set up for growing stevia crop in Mokokchung District.

- Stevia (*Stevia rebaudiana Bertoni*) is a perennial herb belonging to the Asteraceae family.
- The plant is widely known for the presence of **sweet-tasting and low-calorie diterpene steviol glycosides (SGs)** present in its leaves.

- **Medicinal value of stevia are:** Hypertension treatment, Blood pressure control, Source of antioxidants, Anti-tooth decay, Anti-obesity and weight loss programs, safe for diabetics



Fig. Stevia Plant

Stevia is being cultivated in various villages such as Longkhum, Mangmetong, and Satsü villages in Mokochung district in the recent years. A total of 30 farmers in Mangmetong village and 28 farmers in Longkhum village are involved in cultivation of the stevia plant in the district. The mother plant is being procured in satsü village and it is being distributed to the villages for the cultivation. In the year 2020, after harvesting, the plants were dried in the stevia leaf drying machine and the company produced the first product called ‘Grace Stevia’. The company has the aim of expanding the cultivation to various villages as well as to different districts in the coming days.



**Fig: Stevia Cultivation in Mangmetong Village
Longkhum village**



Fig: Stevia cultivation in



Fig: Stevia products of Grace Biotech

Conclusion:

Nagaland being the state with diversity of agro climatic conditions there is quite a high scope for developing various agricultural practices in the state. There are not much tremendous changes which have occurred in the state as compared to the other states of India but still it has changed to some level in the past 10years. Even though various new farming techniques as well as new schemes for development of agriculture has been implemented in the state, but it is still in its initial stage of development so proper funds from the Govt should be implemented in the state as well as various trainings should be given to the progressive farmers. The way forward for development of the agriculture sector is:

- ✓ The mindset of the present educated youth has to be changed so that they take up the profession of cultivation scientifically specially due to shortage of organised job in the state and for development of agriculture.
- ✓ The main focus should be to move away from subsistence farming in cultivating with better mix of basic commercial cash crops, specialised value added vegetables and horticulture produce, floriculture, spices, medicinal and aromatic plants.
- ✓ The fact that farmers are continuing to practice traditional agriculture and also adapting to modern agriculture indicates its hidden strengths and innovations. It is necessary to search and document these innovations for replications.

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