INTERNATIONAL JOURNAL FOR INNOVATIVE RESEARCH IN MULTIDISCIPLINARY FIELD
ISSN(O): 2455-0620 [Impact Factor: 7.581]
Monthly, Peer-Reviewed, Refereed, Indexed Journal with IC Value : 86.87
Volume - 9, Issue - 2, February - 2023 Publication Date: 20/02/2023

DOIs:10.2015/IJIRMF/202302016 --:-- Research Paper / Article / Review

Performance of agriculture with respect to principal crops in Nagaland

Pudezono Tase,
Assistant Professor, Department of Economics, Dimapur Government College, Dimapur-797112
Email - pudezonorose@gmail.com

Abstract: *Agriculture is the backbone of every economy and as such policies are framed for strengthening this sector in order to achieve the desired objectives. Nagaland is basically an agrarian economy but still rely heavily on public distribution system for livelihood of the mass population. This paper focuses on principal crops like cereals, pulses, oilseeds and commercial crops to assess its performance in terms of productivity. The study uses secondary sources data for a period of twelve years to draw conclusions. The study found that the productivity of cereals, pulses, oilseeds and commercial crops were growing at 6.78%, 3.93%, -1.5% and 5.03% CAGR respectively for the study period. It also found that among the principal crops, commercial crops has the highest productivity per hectare with 11.382 followed by cereals at 2.331 for the year 2020-21. The agriculture sector needs improvement for food security and to reduce dependency on other states.*

Key Words: *agriculture, productivity, principal crops, food security.*

1. INTRODUCTION :

There is always a forward and backward relationship among the primary, secondary and tertiary sectors of the economy and to achieve a sustainable growth, all the sectors must grow. Each sector is interdependent and as such cannot overlooked or overrated one sector alone. But every economy has its own advantages and disadvantages with respect to the three sectors.

In India, the contribution of primary sector is 20.19%, secondary sector 25.92% and tertiary sector is 53.89% to the Gross Value Added at current prices (2020-21) as per the Ministry of Statistics and Programme Implementation, 2021. In Nagaland the contribution of primary sector is 31.57%, Secondary sector 11.28% and tertiary sector is 57.15% to the Gross State Value Added at current prices as per the Advanced Estimated for 2020-21.

2. OBJECTIVE :

The main objective of this paper is to examine the performance of principal crops in Nagaland in terms of cultivated area and productivity.

3. DATA AND METHODOLOGY :

For the purpose of this study, only secondary data were used. The crops collected for this study includes cereals, pulses, oilseeds and commercial crops. Annual growth rate and compound annual growth rate were used in drawing conclusion.

4. LITERATURE REVIEW:

Pinstrup-Andersen and Pandya-Lorch, (1998) in their paper entitled “Food Security And Sustainable Use Of Natural Resources: A 2020 Vision” acknowledged that most of the people live in rural areas and depend on agriculture for meeting their daily necessities as well as for their livelihood. From that sense, to boost up the rural economy, mainly through intensifying agricultural production as well as increasing agricultural productivity and resource use efficiency are the principal instruments for reducing poverty, increasing food security and improving rural livelihoods

Desai (2017) in his study put forward that the increasing agricultural productivity will make substantial contributions to the general economic development of the country.

Gollin (2010) noticed that the sheer size of the agricultural sector implies that changes affecting agriculture have large aggregate effect. Thus it seems reasonable that agricultural productivity growth should have significant effects on macro variables, including economic growth.

In most low and middle income countries, the agricultural sector remains the largest contributors providing inputs, food, employment opportunities, raw materials for other industries, provisions of foreign earnings for the

exportation of the surpluses and more importantly the enormous advantage of the value added in the various production process Izuchukwu (2011).

Kumuda (2014) said that the improvement in agricultural productivity creates social and economic ripple effect. With increased income, small farmers can better feed their families, send their children to school, provide for their health and invest in their farm. This makes their community economically stronger and more stable.

Mohan and Reddy (2017) wrote that agricultural transformation refers to the change taking place from the existing agricultural situation in the operational as well as socio economic strategies of a farmer or farm household owing to certain push and pull factors. The transformation can be broadly analyzed emphasising the following concepts-

i. Subsistence- Commercial (Income concept)
ii. High labour intensity- Low labour intensity cropping system (Employment concept)
iii. Traditional- Capital intensive and technology driven agriculture (Investment concept).

Robert E Evenson et al. (1999) found that today's India agricultural research is considered as one of the largest research works in the world. It has now achieved the progressive scale of agricultural growth due to modern technology and innovation.

Robertson, G. Philip & Swinton, Scott M. (2005) put forward the contention that agriculture meets human need and both affects and depends on all other life support system. Agricultural main challenge will be to produce sufficient food and fibre for a growing global population at an acceptable environmental cost.

Mathur, Das & Sircar (2007) raise some issues in agriculture while studying 'A Status of Agriculture: Trends and Prospects'. They found that agriculture is a core sector of economy and 60 percent population is dependent on it for livelihood. And also agriculture is not strong to meet the demand of the economy.

Mazumdar (2011) concluded that agricultural production and productivity growth in agriculture depend on a mixture of factors like agricultural, ecological, micro-economic policies, macro-economic policies and trade at the international level etc., which are also important along with other factors such as land, labour and capital.

5. RESULTS AND DISCUSSION :

i. Area and Productivity

Being an agricultural economy, Nagaland needs to improve its productivity to reduce dependence from other states. Of the three sectors, the contribution of agriculture to the gross state value added is declining year by year while the services sector's contribution is improving every year. But for a balanced economic development and to survive the shock of unforeseen uncertainty of economic fluctuations, all the sectors must be resilient.

Table 1: Area and Productivity of principal crops in Nagaland

Crops	Cereals		Pulses		Oilseeds		Commercial crops	
Year	A	P	A	P	A	P	A	P
2009-10	252310	322440	24610	29680	104210	86020	39560	277700
2010-11	264400	531860	34430	36460	65840	67530	29400	392170
2012-12	264730	533270	34940	37170	66280	67580	31240	385800
2012-13	267050	558510	36200	40450	66820	68900	34900	443750
2013-14	273300	583680	36750	41600	67100	69300	32930	404350
2014-15	279200	608870	37000	42400	67300	69500	36930	443630
2015-16	285340	633790	37490	43110	67870	70020	37450	448400
2016-17	291290	661230	38650	44510	68089	70390	38120	457230
2017-18	296800	681050	39730	46060	68400	70730	38480	461690
2018-19	299380	691860	40030	46400	68690	71000	42980	481680
2019-20	301970	702090	40310	46780	68950	71300	43755.7	486673.5
2020-21	303890	708450	40440	47140	69030	71720	43985	500623

Source: Statistical handbooks of Nagaland

A= area in hectare & P=production in metric tonne

As given in table 1, in 2009-2010, among the four principal crops cereals has the highest area covers with 60% followed by oilseeds and in 2010-2011, the share of area covers increases for cereals and pulses but there was decline for oilseeds and commercial crops. As can be found from the table, the area coverage of cereals and oilseeds keeps on falling till 2019-2020 while there is a variation for pulses and commercial crops. During 2020-2021, the percentage distribution of area shows that cereals is 66%, pulses 9%, oilseeds 15% and 10% for commercial crops.

ii. Productivity per hectare

It is important for any sector to increase its productivity per investment in order to have a positive impact on the economy. Agriculture productivity as such will be imperative to bring sustainable food security. Increased productivity of crops will also increase farm income which in turn will enable the farmers to equip with modern technologies leading to increased output.

Table 2: Productivity per hectare of principal crops (in MT) in Nagaland

Year	Cereals	Pulses	Oilseeds	Commercial crops
2009-10	1.278	1.206	0.825	7.020
2010-11	2.012	1.059	1.026	13.339
2012-12	2.014	1.064	1.020	12.350
2012-13	2.091	1.117	1.031	12.715
2013-14	2.136	1.132	1.033	12.280
2014-15	2.181	1.146	1.033	12.013
2015-16	2.221	1.150	1.032	11.973
2016-17	2.270	1.152	1.034	11.994
2017-18	2.295	1.159	1.034	11.998
2018-19	2.311	1.159	1.034	11.207
2019-20	2.325	1.161	1.034	11.123
2020-21	2.331	1.166	1.039	11.382

Source: from table 1

Table 2 represents the per hectare productivity of principal crops in Nagaland, in metric tonne. In 2009-10, for cereals the productivity was 1.278 MT per hectare which increases to 2.012 MT per hectare in 2010-11 and slowly and gradually the productivity per hectare increases to 2.270 MT in 2016-17 and during 2020-21, it stood at 2.331 MT per hectare. With regard to pulses, the productivity per hectare was 1.206 MT in 2009-10 which declines to 1.059 MT in 2010-11 and gradually increases to 1.152 MT in 2016-17 and further to 1.166 MT in 2020-21. Similarly, oilseeds per hectare productivity show that in 2009-10, it was 0.825 MT which increases to 1.026 MT in 2010-11 and further to 1.034 MT during 2016-17 and remains stagnant till 2019-20 at 1.034 MT but increases to 1.039 MT during 2020-21. With regard to commercial crops, in 2009-10, per hectare productivity was 7.020 MT which increases to 13.339 MT in 2010-11. In 2016-17, it further declines to 11.994 MT and further to 11.123 MT in 2019-20 but there was a slight improvement in 2020-21 at 11.382 MT per hectare. Among the four principal crops, the highest productivity per hectare is the commercial crops and is followed by cereals.

iii. Annual Growth rate of principal crops in Nagaland

Growth rate is used to express the annual change in a variable as a percentage. A positive growth rate indicates a variable is increasing over time; a negative growth rate indicates that it is decreasing. Growth rate is helpful in assessing performance and in predicting future performance.

Table 3: Annual Growth Rate (AGR) of principal crops in Nagaland

Crops	Cereals		Pulses		Oilseeds		Commercial crops	
Year	**A**	**P**	**A**	**P**	**A**	**P**	**A**	**P**
2009-10	-	-	-	-	-	-	-	-
2010-11	4.791	64.949	39.902	22.844	-36.82	-21.495	-25.683	41.221
2012-12	0.125	0.265	1.481	1.947	0.668	0.074	6.259	-1.624

2012-13	0.876	4.733	3.606	8.824	0.815	1.953	11.716	15.021
2013-14	2.340	4.507	1.519	2.843	0.419	0.581	-5.645	-8.879
2014-15	2.159	4.316	0.680	1.923	0.298	0.289	12.147	9.714
2015-16	2.199	4.093	1.324	1.675	0.847	0.748	1.408	1.075
2016-17	2.085	4.330	3.094	3.248	0.323	0.528	1.789	1.969
2017-18	1.892	2.997	2.794	3.482	0.457	0.483	0.944	0.975
2018-19	0.869	1.587	0.755	0.738	0.424	0.382	11.694	4.330
2019-20	0.865	1.479	0.699	0.819	0.379	0.423	1.805	1.037
2020-21	0.636	0.906	0.323	0.770	0.116	0.589	0.524	2.866

Source: from table 1

Table 3 shows the annual growth rate of area and productivity for the principal crops in Nagaland for the period from 2009-10 to 2020-21. For the period from 2009-10 to 2010-11, the AGR for cereals' area and productivity was 4.791 and 64.949 respectively. But the AGR for the year 2010-11 to 2011-12, it falls down to 1.125 and 0.265 for area and productivity respectively. In 2013-14, the AGR for area under cereal cultivation increases to 2.340 but for productivity, it slightly declines to 4.507 from the previous year of 4.733. After which the AGR for area and productivity of cereals declines to 0.636 and 0.906 respectively for the year 2020-21. The land use and productivity for pulses as shown in the table reflects that there is variations in the AGR throughout the assessment period and in 2020-21, it stood at 0.323 for area and 0.770 for productivity of pulses. Similarly, for oilseeds, in 2013-14 the AGR which was 0.668 and 0.074 for area and productivity respectively in 2012-13 increases to 0.815 and 1.953. But for two consecutive years there was as fall in area and productivity and after a pick-up in the year 2015-16, there was a fall in terms of AGR for area which stood at 0.116 in 2020-21 while for productivity there was an improvement from the previous years and stood at 0.589 in 2020-21. Likewise for commercial crops, in 2012-13, the AGR for area and productivity was 11.716 and 15.021 respectively but there was a negative growth rate in 2013-14 in area as well as productivity. There was a positive AGR in 2014-15, but keeps on falling over the years and remains at 0.524 and 2.866 for area and productivity respectively. As can be seen from the table there was a fluctuation in between the years.

6. RECOMMENDATIONS :

Increase in agricultural productivity can facilitate in reducing poverty by increasing the income of the poor farmers. Therefore, need to emphasize on improving cultivation by using modern technologies, keeping in mind fragmentation of holdings; improvement of water supply is required because shortages of water is also responsible for low productivity in the region; increase the volume of agri-link road to facilitate easy access to the farm which will add productivity and reduce cost of transportations; and market facilities for the produce to provide a platform for the produce to avoid distress sale of goods.

7. CONCLUSION :

The study found that the productivity of cereals, pulses, oilseeds and commercial crops were growing at 6.78%, 3.93%, -1.5% and 5.03% CAGR respectively for the study period. The annual growth rate for all the crops in terms of area and productivity were not consistent which is worrisome because for realizing a definite growth the annual growth rate must be increasing over the years. Thus the government needs to address this issue with sincerity as depending on other states for supply of essential goods will remain dearly for the state. Since agricultural production and productivity depend on factors like climatic and geographical conditions, micro-economic policies, macro-economic policies and trade at all levels, policies should come up in resilience with the state for increasing the productivity.

REFERENCES :

1. Pinstrup-Andersen, P. and R. Pandya-Lorch, (1998). "Food Security And Sustainable Use Of Natural Resources: A 2020 Vision". *Ecological Economics 26*: 1-10.
2. Ministry of Statistics and Programme Implementation, 2021 Report. https://www.mospi.gov.in/
3. Izuchukwu, O. (2011). Analysis of the contribution of agricultural sector on the Nigerian economic development. *World review of business research*, Vol.1(1), pp. 191-200.
4. Douglas Gollin (2010). Chapter 73 Agricultural Productivity and Economic Growth, *Handbook of Agricultural Economics*, Volume 4, 2010, pp. 3825-3866.

5. Desai, R.G. (2017). Agricultural Economics (Models, Problems and Policy Issues) (first edition). Mumbai, Maharashtra, India: Himalaya Publishing House Pvt. Ltd.
6. Kumuda, D. (2014). Agricultural Development in India - An Overview. Research Paper | Economics | India | Volume 3 Issue 8. https://www.ijsr.net/get_abstract.php?paper_id=2015256.
7. Mohan, Gayatri and Reddy, B.V. Chinnappa (2017). Influence of Allied and Non-farm activities on the Agricultural Transformation in Karnataka State: An Economic analysis. *Economic Affairs*, vol. 62(3).
8. Evenson, Robert E., Pray, Carl E. and Rosegrant, Mark W. (2017). Agricultural Research and Productivity Growth in India, IFPRI Research Report No.109. Washington, D.C. 20006-1002 U.S.A.
9. Robertson, G. Philip and Swinton, Scott M. (2005). Reconciling agricultural productivity and environmental integrity: a grand challenge for agriculture, Frontiersin ecology and the environment. Vol 3(1), pp. 38-46.
10. Mathur S., Archana Das Surjit, and Sircar Subhalakshmi **(**2007). A Status of Agriculture: Trends and Prospects, Economic and Political Weekly, vol. 41, pp 5327-5336.
11. Mazumdar, L. (2011). Agricultural productivity and food security in the developing world. *Bangladesh J. Agric. Econs.* XXXV, 1&2(2012) 53-69.
12. Statistical Handbooks of Nagaland.