

Government intercession and its impact on rice availability in Meghalaya: An introspective study

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Abstract

Objectives: The study aims to understand the rice availability in Meghalaya through its own production and the Government intervention for sustaining rice availability in the state. The growth in area and production of rice over the years in Meghalaya during 2011-12 to 2016-17 and 2008-09 to 2016-17, respectively, envisage the gap and drawn out the positive intervention by the Government towards building that gap.

Methods/Findings: The compound annual growth rate (CAGR) was computed and the deficit in rice over the years has been calculated based on the the average requirement intake of rice (585 g/day/person) as per the recommendations of the Indian Council of Medical Research (ICMR). Then, to understand the gap in availability, the overall state's production has been subtracted from the overall demand during the respective years. The annual growth rate in area and production of rice was found to be significantly increased over the years during 2011-12 to 2016-17 and 2008-09 to 2016-17 by 0.39 % and 7.22 %, respectively. It was found that, the state has a deficit in rice by 431.17 thousand tonnes which was 62.79 % from its own production. The PDS system through National food security act (NFSA), 2013 has bridge for about 44.71 % in terms of availability of rice after which also, a margin or more of 17.80 % rice is still deficit in the state.

Application: Consequently, the central government incentives and initiatives through NFSA, 2013 has been the greatest attainment for rice availability which is the staple food for the maximum population of people in the state. Hence, it will be of great augmentation if the needy benefitted through these types of Government schemes.

Keywords: Food security, NFSA, PDS, intercession, impact.

1. Introduction

The North-Eastern Hill Region (NEHR) of India contributed only 1.5 % to the country's food grain production and the net importer of food grains even for its own consumption [1]. In terms of rice, the region accounted only 7.8 % of the country's total rice area. In brief, Assam had 73 % of the rice area in the region with 2495.29 thousand hectare followed by Tripura (8%) with an area of 254 thousand ha area [2]. In [3-2] terms of productivity Manipur and Tripura produced more than 2 t/ha. States like Assam, Manipur and Tripura can produce surplus rice and other states had to experience the deficit drill [4]. Literally, by definition, "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food inclinations for an active and healthy life"[5,6]. Hence, availability served as a corner stone towards the overall realm towards being food secured. In this context, rice has been regarded the cheapest and the most effective food item available to induce food sufficiency, security and eradicates acute under-nutrition [7]. The maximum of the people regarded rice as the major item in their daily food consumption schedule [8]. It was considered as essential to the food security [9]. It provided up to 50 % of the dietary caloric supply for millions living in poverty in Asia [10, 11] also descript that the contribution of cereal group to energy intake was 75-82 %, protein 8-16 % and fat 9-14 %. As a matter of fact, household food and nutritional security will always be the key issue for both the rural and urban consumers.

Thus, the ultimate objective would be towards improved production potential, productivity and self sufficiency with suitable interventions and proper accessibility through markets. According to the 68th National Sample Survey (NSS) conducted in 2011-12, rural Indians ate more rice than urban Indians i.e., by 6.00 and 4.52 Kg/capita/month, respectively. Meghalaya in particular, it was reported that the per capita consumption was 10.23 Kg/capita/month and 8.98 Kg/capita/month at rural and urban areas, respectively [12]. As for Meghalaya scenario, what else to substitute rice? It would be the toughest question to answer, since the item has been considered as the staple food [13, 14]. Thus, this paper is an overview of the growth in area and production of rice over the years in Meghalaya, envisage the gap and drawn out the positive intervention by the Government towards building that gap.

2. Methodology and Data

Meghalaya one among the eight states of the NEHR has a total geographical area of 22429 sq.km. Inhabited mostly by the tribal communities viz., *Khasi*, *Jaintia* and *Garo* or *Achiks*. The *Khasi* and *Jaintia* constituted more than half of the total population of the state (56.4%) and 34.6 % were occupied by the Garo community. Of the total geographical area, the total cropping area was only 3436.01 sq.km. i.e., 15.32 % [15]. About 81 % of the state's population depends on Agriculture, employment and income generation directly or indirectly [16]. Among the food grains, rice was regarded a staple crop and food for the people in the state grown in an area of 110.89 thousand hectares during 2015-16 comprised of about 32.15 % of the total cropped area with an average yield of 301.08 thousand tonnes during 2016-17 [15].

In order to understand the increasing or decreasing trend in terms of area and production, the compound annual growth rate (CAGR) was computed using the procedure adopted by [17] using time as an independent variable with area and production as dependent variables. The data for area were used for the years 2011- 12 to 2016-17 and for production it was during the years 2008-09 to 2016-17. The formula used was given as

$$\text{Log } Y = a + bt$$

Where, Y = dependent variable (e.g. Area, production and productivity) t= time; a = intercept; b = slope coefficient and,

$$\text{CAGR} = \{ \text{Exp } (b) - 1 \} \times 100$$

The deficit in rice has been calculated based on the the average requirement intake of rice (585 g/day) as per the recommendations of the Indian Council of Medical Research (ICMR) [18] taking into account the projected population by the Department of Statistics, Government of Meghalaya [3] which has been computed from the 2011 census. The per capita human demand of rice was multiplied with the projected population for the respective period/ year to understand the overall demand of rice. To understand the gap in availability for consumption, the overall state's production has been subtracted from the overall demand during the respective years.

3. Results and Discussion

Rice as mentioned was a staple food of the people in the state and of greater importance in the daily food basket. The main rice variety grown in the state were *Ranjit*, *Bahadur*, *Pankaj* at low land, *RCPL 1-87-8*, *RCPL 1-3*, *RCPL 3-3* at mid altitudes, *RCPL 1-29*, *RCPL 1-28*, *IET 13783*, *IET 13459* at upland mid altitudes and *Megh Rice-1* and *Megh Rice-2* at high altitude [16]. Using area and production as the dependent variable, the annual growth rate in area and production of rice was found to be significantly increased over the years during 2011-12 to 2016-17 and 2008-09 to 2016-17 by 0.39 % and 7.22 %, respectively (Table 1). The introduction of better methods in rice cultivation like improved seeds, irrigation etc., and the introduction of National Food Security Mission in the state during 2012-13 were the major causes of its growth [16].

Table 1. Trends in area and production of food grains

Year	Area (ha)	Year	Production (tonnes)
2010-11	108285	2008-09	203862
2011-12	108875	2009-10	204129
2012-13	109751	2010-11	207021
2013-14	110083	2011-12	222731
2014-15	110323	2012-13	265653
2015-16	110613	2013-14	280546
2016-17	110891	2014-15	297939
		2015-16	301076
R ²	0.94		0.95
Coefficient	0.004***		0.069***
CAGR	0.39		7.22

*** indicates significance at 1% [3]

According to the 2011 census, 39.40 % of the inhabitants were semi-medium land holders with 2.79 ha. About 16.40 % of the farmers were medium and 16.08 were marginal land holding farmers. On an average, it was reported that maximum of the farmers were small farmers with 1.37 ha (Table 2). The small size of land holdings remains the main bottlenecks in agricultural development. It leads to low crop diversification, unorganised value chains, market volatility, risk, vulnerability and low adaptation to climate change [19]. In a nutshell, small farmers always faced problems in enhancing production through technology interventions in their farms.

Table 2. Land holding pattern and size of holding in Meghalaya [20]

Class size	% of holding area	Average holding size (ha)
Marginal (0.05-1 ha)	16.08	0.45
Small (1-2 ha)	6.75	1.33
Semi-medium (2-4 ha)	39.40	2.79
Medium (4-10 ha)	16.40	5.67
Large (above 10 ha)	1.37	16.88
Total/average	100	1.37

It was found during the study period that the average availability of rice produced in the state was 258.52 thousand tonnes. However, according to ICMR, the requirement in terms of rice was 585g per day per person. With that necessitate, the average requirement during the study period was found to be 689.69 thousand tonnes. Thus, the state has a deficit amounting of 431.17 thousand tonnes which was 62.79 % (Table 3).

Table 3. Deficit in rice requirements in Meghalaya during the year 2009-17 [3,18]

Year	Projected population	Average requirement (Kg/Year/individual)	Supply from own State	Total Requirement	Gap in the Supply	Deficit (%)
			in '000 tonnes			
2009	2966889	210.60	203.86	624.83	420.97	67.37
2010	3039568		204.13	640.13	436.00	68.11
2011	3114030		207.02	655.81	448.79	68.43
2012	3190317		222.73	671.88	449.15	66.85
2013	3268472		265.65	688.34	422.69	61.41
2014	3348544		280.55	705.20	424.66	60.22
2015	3430578		297.94	722.48	424.54	58.76
2016	3514623		301.08	740.18	425.80	57.53
2017	3600727		330.39	758.31	427.92	56.43
Average			258.52	689.69	431.17	62.79

In [4] also reported that the state has a deficit of 49.19 % during 2014 in terms of rice which was due to the less area or area effect. Thus, it can be concluded that even though the production and area for rice has been increased in the state over the years, yet, the state was not self sufficient and has to depend on other sources or has to import from other states.

4. Government intercession

1. Food aids

National Food Security Act, 2013 (NFSA) was a unique step taken by the Government of India to eradicate hunger and the protection of right to food for the people. It has been a promising effort for food security in the country [21]. In the form of PDS, Meghalaya has been benefitting by commodities like rice, wheat, sugar and superior kerosene oil (S.K. oil) at subsidised rate. According to the scheme, beneficiaries were grouped as non-NFSA and NFSA beneficiaries, respectively. The beneficiaries under Non-NFSA were entitled with 8 Kg of rice at ₹10 to ₹12 per Kg. However, the foodgrain (rice) allocation used to be taken from the tide-over allotment received from the Govt. of India. Hence, there may be a change in allotment beneficiaries from time to time. The NFSA beneficiaries on the other hand were subdivided into Antyodaya Anna Yojana (AAY) and Priority Households (PHH) where, beneficiaries attained subsidised food grains of 35 Kg per month per households and 5 Kg per month per individual, respectively at ₹ 3 per kg. In [22] reported that despite the declining trend in direct consumption of food grains yet, total demand projected to increase at 2 % per annum especially in the country like India. In Meghalaya, a total of 774.94 thousands beneficiaries belongs to Non-NFSA, and 2151.45 thousands beneficiaries belongs to the NFSA where in AAY and PHH there were 291.36 and 1860.09 thousands number of beneficiaries respectively. Thus, by understanding the number of beneficiaries and the distribution of food grains to the households, the availability of rice to the beneficiaries under various categories of Non-NFSA, AAY and PHH were 61.99, 101.97, and 93 thousand tonnes respectively (Table 3).

Table 4. Number of Rice beneficiaries and availability per month through NFSA, 2013 in 000's

Districts	Non-NFSA Beneficiaries	NFSA AAY+PHH		NON-NFSA_availability @8kg/month	AAY_availability @35 Kg per month Kg)	PHH _availability @5 Kg/month
		AAY Beneficiaries [15]	PHH Beneficiaries [15]			
		in thousands		(in Kg)		
East Garo Hills	35.36	15.00	94.94	282856	525035	474695
East Jaintia Hills	12.40	10.33	85.01	99232	361655	425030
East Khasi Hills	261.45	97.73	447.47	2091568	3420480	2237325
North Garo Hills	48.58	16.92	108.53	388632	592235	542630
Ribhoi	63.62	11.64	184.46	508968	407470	922275
South Garo Hills	33.33	14.58	92.73	266632	510300	463635
South West Garo Hills	33.51	36.10	92.66	268056	1263640	463275
South West Khasi Hills	19.87	7.97	70.62	158928	278775	353115
West Garo Hills	116.36	50.45	301.10	930856	1765575	1505500
West Jaintia Hills	72.78	19.73	183.76	582272	690410	918785
West Khasi Hills	77.69	10.92	198.83	621528	382060	994160
Total	774.94	291.36	1860.09	6199528	10197635	9300425

**availability has been calculated by the author [15]*

2. Overall rice availability

As stated, Meghalaya has been achieved an increasing trend in terms of area and production of rice during the study period. The average availability of rice from owns state production was calculated to be 258.51 thousand tonnes during the study period. The Government of India through Public Distribution systems (PDS) has reached an average of 308.37 thousand tonnes rice during the study period [15].

But according to the requirement per day and the projected population, the average requirement was supposed to be 689.69 thousand tonnes making an overall average deficit of 122.81 thousand tonnes in rice availability in the state. On the other hand, the state could sustain only 37.48 % of the total grains production and PDS has bridge for almost 44.71 % in terms of availability. Overall, the state has been projected to have 17.80 % more in terms of deficit (Table 5).

Table 5. Overall rice availability from own production and food aid schemes during 2017

Overall availability in '000 tonnes		Amount Required in '000 tonnes	Total deficit in '000 tonnes	Overall % of deficit/gap
Own state supply	PDS or NFSA, 2013			
258.52	308.37	689.69	122.81	17.80

5. Conclusion

The study reflected that although 81 % of the inhabitants in the state depend on agriculture for their livelihood yet, the majority of the farmers are small and marginal farmers resulting in the shortage and insufficiency in sustaining the important staple food i.e., rice. The advancement in science and technology, the share provided by improved technologies and schemes has improved impact in the increase in area and ultimately the production over the years. Hitherto due to the number of population added up over the years the burden in terms of rice availability continued. Thus, the paper concluded that, the Central Government incentives and initiatives through NFSA, towards the state has been the greatest attainment to food security and especially in terms of rice availability. Hence, it will be of great augmentation if the needy people benefitted through these types of Government schemes.

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