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Is Self-Sufficiency in Foodgrains in Northeastern States Real? – An Analysis

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ABSTRACT

Though apparently, states like Arunachal Pradesh, Manipur and Nagaland appear to be self-sufficient in foodgrains, their offtake of large quantity of foodgrains from the central pool, point towards exaggeration in production data claimed by them or towards leakage of foodgrains, mainly rice and wheat. The offtake of foodgrains from central pool by NER during 2010-11 was 2.604 Mt, showing a mismatch between requirement and offtake. The states of Arunachal Pradesh, Manipur, Nagaland and Tripura are surplus in foodgrains as per production data available as these states produced 46.9, 24.6, 58.8 and 7.4% more foodgrains over and above their requirement. However, the states of Arunachal Pradesh, Manipur and Nagaland, though apparently surplus, have lifted 86.81, 84.47 and 149.97 Mt of foodgrains, respectively, from the central pool to meet their requirements during 2010-11. Offtake of foodgrains by NER states was 799.6 thousand tonnes during 2001-02 which increased to 2614.2 thousand tonnes during 2015-16. There was no offtake of foodgrains by Haryana during 2001-02 but Punjab lifted a meagre quantity of 1588 tonnes, however, a quantity of 980.2 and 890.3 thousand tonnes was lifted by these two states during 2015-16, respectively, under National Food Security Act (NFSA). During 2015-16, the procurement of foodgrains from NER was only 0.023 Mt, that too from Assam for local consumption. During the corresponding year, the procurement from Haryana and Punjab was 9.644 and 19.603 Mt, respectively. During 1967-68, the foodgrains deficit was quite large in India. The total procurement of wheat and rice were 4.04 and 8.99 Mt only, but the demand was quite high and offtake of foodgrains was 55.93 and 10.87 Mt, respectively. The government had to meet this requirement by importing of large quantity of wheat and rice from other countries.

1. Introduction

More than 900 million people suffer from hunger and malnutrition in Africa, Asia, Latin America and even in some developed countries. Fast growing population in the world, more so in under-developed and developing countries, has pressurized the food resource base. The important issue is to promote the conservation and sustainable use of natural resources which allow long term

economic growth and enhancement of productive capacity, along with being equitable and environmentally acceptable (El Bassam 1997). Virtually all developing countries, even those with adequate water in the aggregate, suffer from debilitating regional and seasonal shortages (IFPRI 1995). Since food productivity is highly dependent on the spatial and seasonal changes in water availability, the food security cannot be ensured for all times unless suitable measures are undertaken to minimize the effect of this natural apathy. Water and agriculture are intimately linked as fundamental condition for food security and human development.

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The north eastern region of India, with an area of 262 190 km², is endowed with rich natural resources but their indiscriminate use and mismanagement have caused resource degradation to the extent that quality and quantity of available water has been affected (Sharma 1998 2003). The region receives about 525 km³ of water as rainfall, annually. There are two major rivers viz. Brahmaputra and Barak, draining an area of 194.4 and 78.1 thousand km² with an annual runoff of 537.2 and 59.8 km³ of water, respectively. It was estimated that shifting cultivation alone results in the loss of 88.3 million tonnes of soil and 10.05, 0.37 and 6.05 thousand tonnes of available N, P₂O₅ and K₂O, respectively, through runoff (Sharma and Prasad 1995). The total sediment yield from the region is 601 million tonnes of soil and 685, 99, 511, 22, 14, 57 and 43 thousand tonnes of N, P, K, Mn, Zn, Ca and Mg through runoff, respectively (Sharma 2003). The major problems of facing the harmonious development and management of natural resources system in the region are, socio-economic constraints, paucity of reliable data and lack of human and institutional capacity necessary for confronting the complex interactions of the hydrological cycle, land, biodiversity and human population with livelihood security, socio-economic constraints and the environment. Proper policy frameworks for planning, management and development of natural resources under such situations can be devised, taking advantage of the advances in science and technology as well as indigenous knowledge of some tribes in systems management, available in isolated pockets of the region. There are some extremes of socio-economic constraints, unique to the region, which are a hindrance for decision support for managing natural resource systems. These constraints create extreme situations that no decision can be taken as the people are socio-culturally and socio-economically linked. Conducive atmosphere needs to be created to produce food crops sustainably to feed increasing population. Though, apparently, states like Arunachal Pradesh, Manipur and Nagaland appear to be self-sufficient in foodgrains, their offtake of large quantity of foodgrains from the central pool, point towards exaggeration in production data claimed by them. We have tried to make an assessment and analysis of the actual situation and suggested measures to overcome the shortage of foodgrains.

The Global perspective

Borlaug and Dowsell (1997) reported that global food production of all types stood at 4.74 billion tonnes (including foodgrains, fruits, vegetables and animal products) with 2.45 billion tonnes of edible dry matter.

About 99% of this was produced on the land and 1% from oceans and inland waters. About 30 crops species provide most of the World's calories and proteins including 8 species of cereals, accounting for about 66% of the world's food supply. The key issue is to feed the ever increasing population of the world under environmentally and economically sustainable conditions. The main impediment to equitable food distribution is poverty and lack of purchasing power. With constant additions to the population, this aspect is becoming more severe. In real terms, the food **SECURITY** could be detailed as; **S**-sufficiently available, **E**-equitable distribution, **C**-complete diet, **U**-universal or involving all the nutrients, **R**-reachable or everybody having access to it, **I**-ideally priced so that poor can also buy it, **T**-taboo free i.e. acceptable to various communities and religions of the world and **Y**-yummy or appealing and acceptable. The demand for cereals will grow to about 3.8 billion tonnes by 2025 as the population of the World is expected to reach 8.3 billion mark by then.

Food policy

Foodgrains management system in India is shown in Figure 1. (Ganesh-Kumar et al. 2007). The overall objective of the foodgrains management policies in India since the mid-1960s have been to (i) ensure a reasonable support price which will induce farmers to adopt improved methods of cultivation for increasing production; (ii) ensure that consumer prices do not rise unduly; (iii) avoid excessive price fluctuations and reduce the disparity of prices between States; and (iv) build up sizeable buffer stocks of wheat and rice from imports and internal procurement (GOI 1965). The basic instrument to achieve these objectives has been through public procurement by the Food Corporation of India (FCI) and other state agencies, at procurement/support prices set by the Agricultural Price Commission (APC). The APC was set up in January 1965 for undertaking scientific and continuing examination of the level of agricultural prices specifically of foodgrains. It recommends the minimum support price (MSP) and the procurement price for foodgrains, with a view to (i) provide incentive to the producer for adopting improved technology to the widest possible extent and for maximizing production; (ii) encourage optimum utilization of land; (iii) achieve as near a balance as possible between the expected supply and demand conditions of different crops, taking into account the import and export possibilities as well as the likely effect of the price policy on the rest of the economy, particularly on the cost of living, level of wages, industrial cost structure, etc. The APC was renamed as the Commission for Agricultural Costs and Prices (CACAP) in 1985. The objectives and instruments of price policy, procurement and distribution are shown in Figure 1 (Ganesh-Kumar et al. 2007).

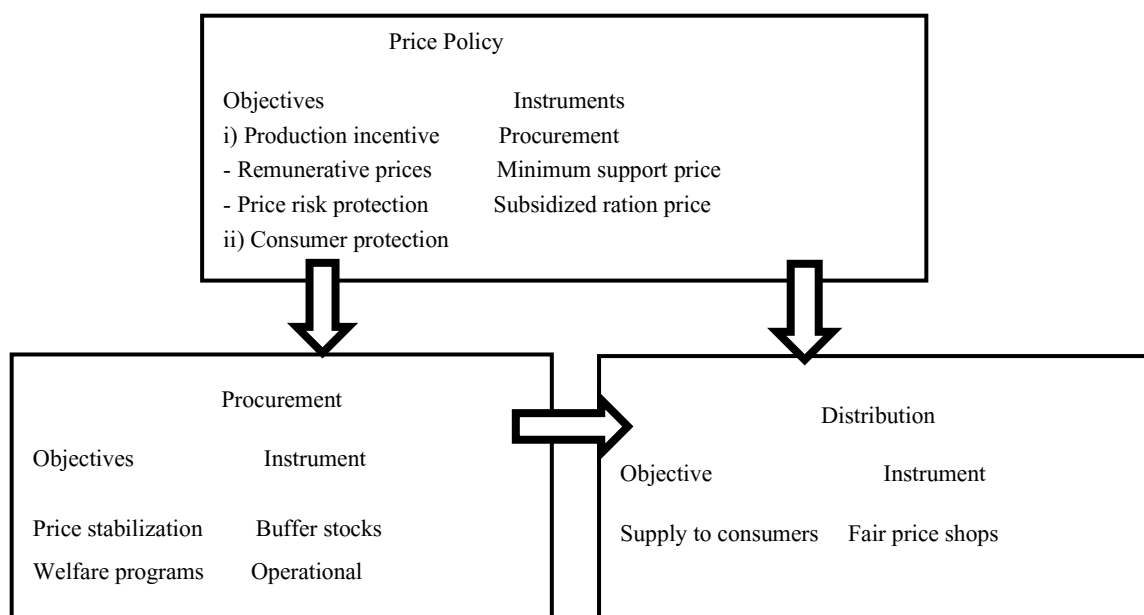


Figure 1. Foodgrains management system in India

Public Distribution System (PDS) of India is the largest distribution network of its kind in the world. Before the 1960s, distribution through PDS was generally dependent on imports of food grains from other countries. It was expanded in the 1960s as a response to the food shortages of the time; subsequently, the government set up the Agriculture Prices Commission and the Food Corporation of India to improve domestic procurement and storage of food grains for the system (Balani 2013). In the 1990s, the scheme was modified to improve access of food grains to people in hilly and inaccessible areas, and to target the poor. In 1997, the government launched the Targeted Public Distribution System (TPDS), keeping in mind the poor people. It aims to provide subsidized food to the poor through a network of ration shops. In September 2013, Parliament enacted the National Food Security Act, 2013. The Act relies largely on the existing TPDS to deliver food grains as legal entitlements to poor households. This marks a shift by making the right to food a justiciable right.

The food bill

The Food Security Bill, which aims at provide subsidized food grains to around 67 percent of India's 1.3 billion people, is a landmark legislation. As per the provisions of the bill, the people would get rice, wheat and coarse grains at subsidized rates. Every pregnant woman and lactating mother would get free meal during pregnancy till six months after child birth. Children up to 14 years of age would get free meals. In case of non-supply of food grains, states would have to pay a food security allowance to the beneficiaries.

The work of identification of eligible households has been left to the states. It remains to be seen that how this goal can be achieved under the conditions that NER presents.

Problems of Agriculture in NER

Briefly, the constraints in achieving higher productivity in NER are; prevalence of shifting cultivation, low adoption of crop HYVs, land tenure system, small size of holding, accessibility, free range grazing, high vulnerability to natural calamities and disasters, degradation of prime agricultural land, dependence on rains, poor controlled irrigation facilities, low use of fertilizers, poor agro-processing and post-harvest management, poor credit delivery system, incidence of pests and diseases due to high humidity, urbanization, low absorption of technology, social taboos, lack of finance, poor infrastructure to deal with natural resource systems management judiciously, rapid population growth and negative attitude of the people towards a change because of attachment to the traditional methods and poor monitoring and accountability.

Population Growth

The population in the region has increased from 10.5 million in 1951 to 45.3 million in 2011, that is, it has grown more than four folds in 60 years, with an annual compound growth rate (ACGR) of 2.46%, thereby putting tremendous pressure on land and water resources (Figure 2). The likely ACGR between 2001 and 2021 is expected to be 2.10 % in the region. The decrease in population growth during the period will be due to general awareness and Government efforts.

The increase in population density means to manage more people per unit of natural resources. The pressure on fresh water and land resources continues to grow for domestic use, agriculture, industry, energy and disposal of effluents, not only due to increase in population but change in life style of the people also. The present annual demand for fresh water stands at 27.4 km³ and will grow by 35% in the next 20 years. Since food productivity is highly dependent on spatial and seasonal changes in water availability, the future needs for water will have to be met from the resources similar to those existing at present in the region. Fast increase in population of NER has rendered land-man ratio highly adverse. The region has fertile land, abundant water resources, dense forests, high and dependable rainfall, mega biodiversity and agriculture-friendly climate, yet it has failed to convert its strengths optimally into growth opportunities for the well-being of the people (Barah 2006). The proportion of households living below the poverty line is 35%, which is higher than the national average. High growth of population with a large proportion of small and marginal farm households, traditional and low-input agricultural practices has affected the agricultural economies adversely in the region.

Contribution of area and productivity towards foodgrains production

The area under foodgrain crops has remained almost same in the country between 1991-92 and 2011-12 and, so, whatever agricultural production in India has increased is due to increase in the yield of various foodgrain crops. However, in NER, there has been increase in area during the period and per cent increase in production was 24.9% due to area and 75.1% due to increase in the yield (Fig 3). Concerted efforts are still required in some states of NER to augment productivity.

Crop productivity indicators

The major crop productivity indicators (Table 1) show that there are immense chances of increasing crop productivity in the NER. The fertilizer use is very low in NER compared to all India use per hectare. In NER, the combined use of N + P₂O₅ + K₂O was 11.4 kg/ha during 1991-92 which increased to 50.5 kg/ha in 2011-12. The corresponding figures for the country are 70.2 and 139.7 kg/ha, respectively. Adequate plant nutrition is necessary for enhancing crop yields. Some states of NER like Assam, Manipur and Tripura, have relatively more use of fertilizers compared to other states of the region. Since organics are not available in sufficient quantity, there is need for applying adequate quantity of fertilizers for increasing yield. Besides fertilizer use, the per cent area under irrigation in NER is much less than the country as a whole (Table 1).

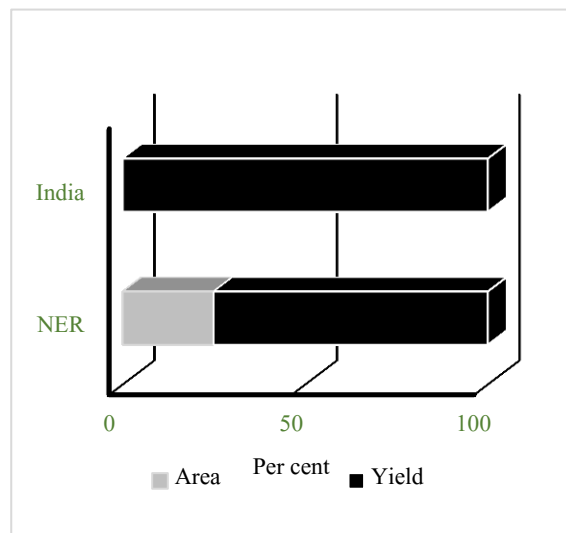


Figure 3. Contribution of area and productivity in foodgrain production

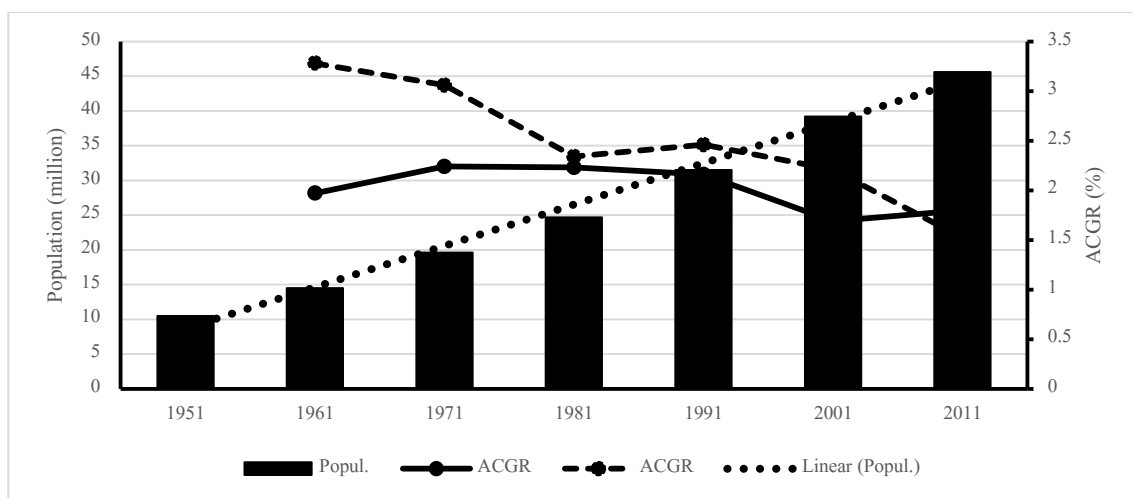


Figure 2. Population of NER and ACGR of India and NER

Being predominantly hilly, the development of irrigation facilities may be difficult but, there are good chances of development of minor irrigation projects suitable under the local terrain and location. There is low adoption of high yielding varieties in NER as compared to the country. The data given in the table show that NER has an edge in terms of road connectivity, though some states like Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Sikkim have less connectivity than the national average. The data on crop productivity indicators show that immense chances of enhancing crop production exist in the region provided suitable mix of the inputs is used with a control on associated production constraints.

Percent share of NER in crop production

Percent share of the crop production of a region should normally be comparable to national average when plotted against the population. Unfortunately, against a population share of 3.76% and geographical area share of 7.8%, the NER share is only 3.02, 0.89 and 0.92% in foodgrains, pulses and oilseeds, respectively (Table 2). Further, we are skeptical about the foodgrains production figures of some NER states, otherwise the offtake of foodgrains by these

states from central pool for consumption should not have been so high. Even procurement of foodgrains has been nil from NER states except Assam from where a meagre quantity of 23000 tonnes of rice was procured during 2015-16. In comparison, the foodgrains procured from Haryana and Punjab were, 9.644 and 19.604 Mt, respectively.

Food grains production and requirement in NER

Many workers have reported about the foodgrains scenario in NER and policy issues (Barah 2006; Ganesh-Kumar et al. 2007; Munda et al. 2007; NEC 2015; Roy et al. 2015; Sharma 2003). As per our calculations, foodgrains requirement for the region stood at 9.60 million tonnes during 2011, calculated at 200 kg/person per year (Figure 4). This covers the losses of foodgrains during storage and transportation, and considering that 12.5% persons are below the age requiring almost negligible quantity of foodgrains. The production during the year was 7.39 million tonnes. The deficit gap was 2.21 million tonnes of foodgrains in the region. The deficit gap is widening year after year. A similar situation was observed by Sharma (1999). However, the deficit gap in foodgrain has been reported to be 1.179 million tonnes during 2010-11 (Table 3).

Table 1. Crop productivity indicators in NE states

State	N + P ₂ O ₅	+ K ₂ O	ACGR (%)	% area irrigated	Area under HYV (%)	Road length/ 1000 km ²
	1991-92	2011-12			2010-11	1991-92
Arunachal.	2.0	2.6	1.12	20.1	16.2	178.8
Assam	9.5	66.3	10.20	14.9	32.3	3623.5
Manipur	47.9	23.0	-3.60	21.0	51.1	863.2
Meghalaya	13.9	14.1	0.07	21.9	23.0	539.5
Mizoram	11.0	8.9	-1.05	9.0	37.8	535.7
Nagaland	3.6	3.2	-0.59	20.4	19.5	2122.3
Sikkim	0.0	0.0	0.0	13.2	-	790.9
Tripura	25.1	53.3	3.83	34.9	48.1	2788.1
NER	11.4	50.5	7.72	15.2	32.6	1571.2
All India	70.2	139.7	3.50	44.9	72.6	1206.3

Table 2. Percent share of NER states in crop production vis-à-vis India

State	Population	Food grains	Pulses	Oilseeds
Arunachal	0.11	0.15	0.06	0.10
Assam	2.57	1.91	0.38	0.46
Manipur	0.23	0.27	0.15	0.09
Meghalaya	0.24	0.10	0.02	0.02
Mizoram	0.09	0.03	0.03	0.01
Nagaland	0.17	0.23	0.19	0.20
Sikkim	0.05	0.04	0.03	0.03
Tripura	0.30	0.29	0.03	0.01
NER	3.76	3.02	0.89	0.92
India	100.0	100.0	100.0	100.0

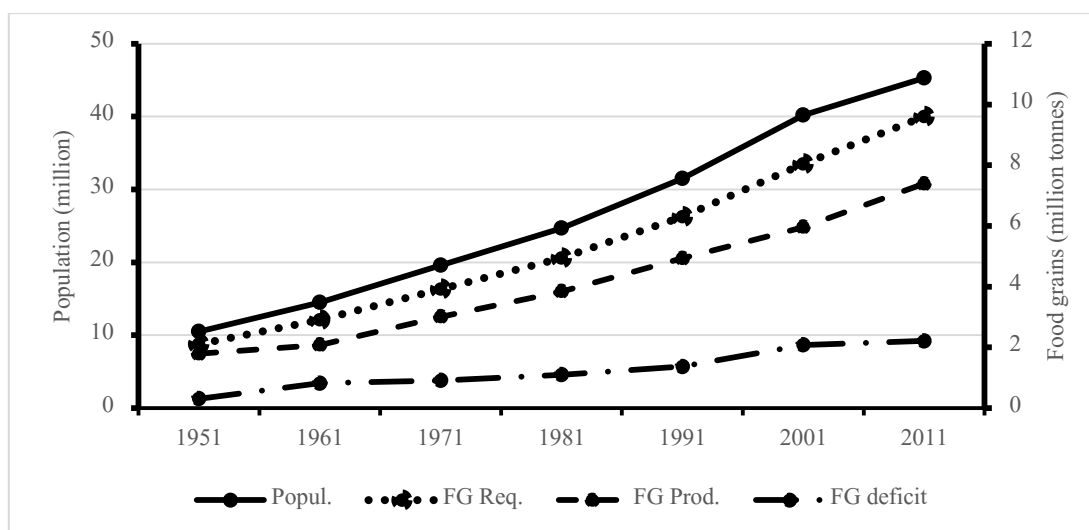


Figure 4. Population and foodgrains production and requirement in the northeastern region.

Table 3. Food grains requirement, production, surplus/deficit and offtake by NE states (2010-11)

State	Population ('000)	Food grains required ('000 t)	Food grains produced ('000 t)	Surplus/Deficit ('000 t)	Offtake of Food grains ('000 t)
Arunachal	1382.6	276.5	362.5	+86.0	86.81
Assam	31169.3	6233.8	4663.3	-1570.5	1754.09
Manipur	2721.7	544.5	669.1	+124.6	84.47
Meghalaya	2964.0	592.8	249.1	-343.7	161.36
Mizoram	1091.0	218.2	68.0	-150.2	67.40
Nagaland	1980.6	396.1	566.5	+170.4	149.59
Sikkim	607.7	121.5	103.2	-18.3	44.71
Tripura	3671.0	734.2	712.4	-18.2	256.47
Total	45587.9	9117.6	7394.1	-1719.9	2604.90

The offtake of foodgrains from central pool by NER during 2010-11 was 2.604 Mt, showing a mismatch between requirement and offtake. It is also evident from Table 3, that the states of Arunachal Pradesh, Manipur and Nagaland are surplus in foodgrains as per production data (NEC, 2015) and as per our calculation of requirement according to the population during the period. Roy et al. (2015) have also reported a surplus in foodgrains for Arunachal Pradesh, Manipur, Nagaland and Tripura, and that, these states produced 46.9, 24.6, 58.8 and 7.4% more foodgrains over and above their requirement. The states of Arunachal Pradesh, Manipur and Nagaland, though apparently surplus, have lifted 86.81, 84.47 and 149.97 Mt of foodgrains, respectively, from the central pool to meet their requirements during 2010-11. The data on reported quantity of foodgrains production appears to be not in order.

Offtake of foodgrains (rice and wheat) from central pool

The total offtake of foodgrains by NER states from the central pool under various schemes during 2010-11 has been given in Table 4, and allocation and offtake in Table 5. The schemes operating were; allocation for people below poverty line (BPL), above poverty line (APL), Antodaya Anna Yojna (AAY), other welfare schemes (OWS), festivals, drought/flood affected people and mid-day meals. Total offtake of foodgrains under BPL, AAY, APL, OWS, festival, drought/flood and mid-day meal was; 694.7, 434.6, 1269.7, 5.76, 0.15, 118.6 and 81.3 thousand tonnes, respectively, totalling 2.604 Mt. During the year 2010-11, total allocation of foodgrains from central pool was 2.860 Mt while offtake was 2.604 Mt. Maximum allocation of foodgrains was 62.3% for Assam and the state lifted 67.3% of the total offtake by NER states or 98.4% of the total allocation (Table 5). Manipur lifted only 50.0% of its allocation from the central pool. Besides, there have been allocations of foodgrains under NFSA and tide-over some adverse situations.

Table 4. Offtake of food grains from central pool by different NE state during 2010-11 ('000 t)

State	Schemes								Grand Total
	BPL	AAY	APL	Total	OWS	Festivals	Drought/ floods	Mid-day meal	
Arunachal	22.02	13.26	49.74	85.02	0.0	0.0	0.0	1.79	86.81
Assam	467.05	292.27	832.31	1591.63	0.0	0.0	106.28	56.18	1754.09
Manipur	25.68	17.90	27.63	71.21	0.14	0.0	9.64	3.48	84.47
Meghalaya	45.89	29.02	81.69	156.60	0.0	0.15	0.0	4.61	161.36
Mizoram	16.44	9.94	38.12	64.50	1.21	0.0	0.0	1.69	67.40
Nagaland	34.87	20.83	82.42	138.12	4.06	0.0	2.67	4.74	149.59
Sikkim	10.49	6.45	26.06	43.00	0.35	0.0	0.0	1.36	44.71
Tripura	72.26	45.01	131.75	249.02	0.0	0.0	0.0	7.45	256.47
Total	694.70	434.68	1269.72	2399.10	5.76	0.15	118.59	81.30	2604.90

Offtake and procurement of foodgrains from NER vs Haryana and Punjab

Offtake of foodgrains by NER states was 799.6 thousand tonnes during 2001-02 which increased to 2614.2 thousand tonnes during 2015-16. There was no offtake of foodgrains by Haryana during 2001-02 but Punjab lifted a meagre quantity of 1588 tonnes, however, a quantity of 980.2 and 890.3 thousand tonnes was lifted by these two states during 2015-16, respectively, under National Food Security Act (NFSA). These states did not lift any ration under APL, BPL, AAY or any other scheme except NFSA. During 2015-16, the procurement of foodgrains from NER was only 0.023 Mt, that too from Assam for local consumption (Figure 5). During the corresponding year, the procurement from Haryana and Punjab was 9.644 and 19.603 Mt, respectively. The procurement from NER was 0.23 and 0.11% of that of Haryana and Punjab, respectively, whereas, the NER has 5.20 times more area than Punjab and 5.93 times more area than Haryana. During 1967-68, the foodgrains deficit was quite large in India. The total procurement of wheat and rice were 4.04 and 8.99 Mt only, but the demand was quite high and offtake of foodgrains

Was 55.93 and 10.87 Mt, respectively (Figure 6). The government had to meet the requirement by importing of large quantity of wheat and rice from other countries. With the introduction of high yielding varieties the situation improved in the subsequent years and procurement of foodgrains, more or less, matched with the offtake.

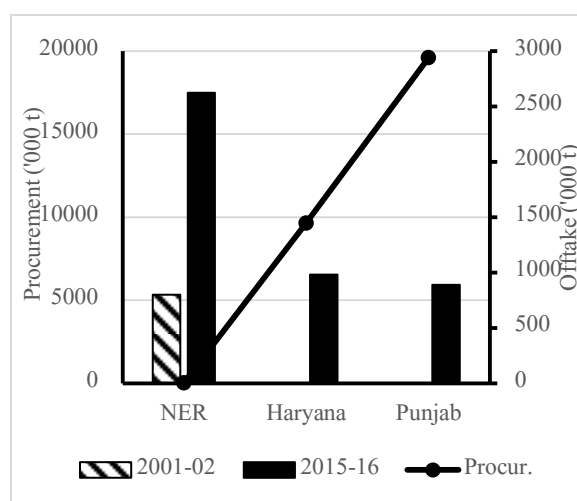


Figure 5. Offtake and procurement of foodgrains from NER vis-à-vis surplus states

Table 5. Allocation and offtake of foodgrains with percent offtake from central pool

State	Allocation ('000 t)	Offtake ('000 t)	Percent offtake
Arunachal	106.38	86.81	81.6
Assam	1783.12	1754.09	98.4
Manipur	168.74	84.47	50.0
Meghalaya	195.32	161.36	82.6
Mizoram	77.41	67.40	87.0
Nagaland	152.80	149.59	97.9
Sikkim	47.40	44.71	94.3
Tripura	329.67	256.47	77.8
Total	2860.84	2604.90	91.0

Foodgrains allotted and lifted

With improved situation of food grains, the government was able to build sufficient stocks in the central pool and the allotment of food grains to different states of NER was very liberal. Figure 7 shows that the allotment was much more than actually lifted by different states of the region during 2001-02 and 2005-06. During 2001-02, 2005-06 and 2010-11, the percentage of food grains lifted was 48.6, 69.4 and 91.1, respectively.

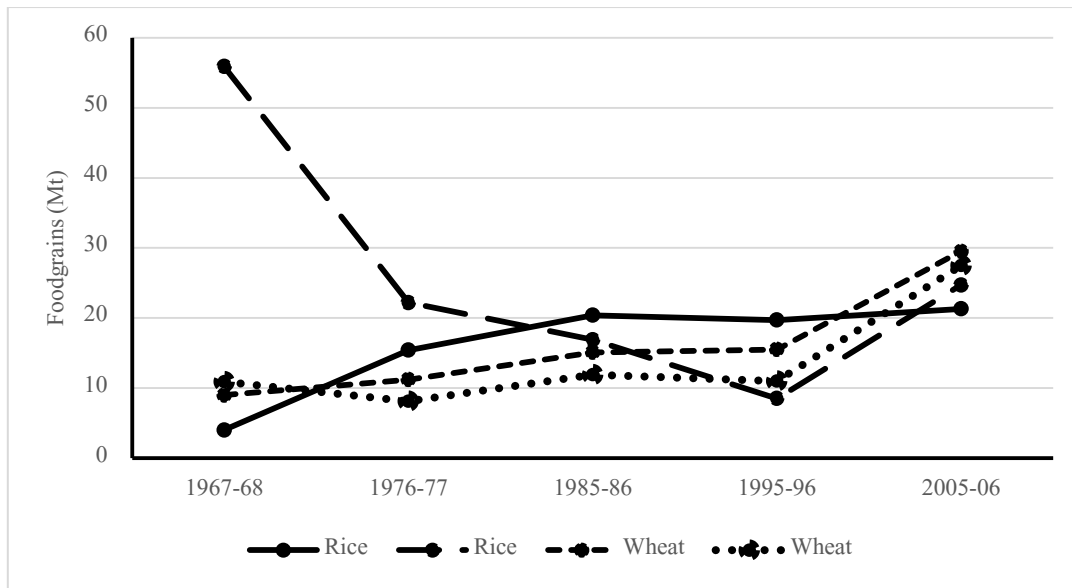


Figure 6. Procurement and offtake of wheat and rice by NER

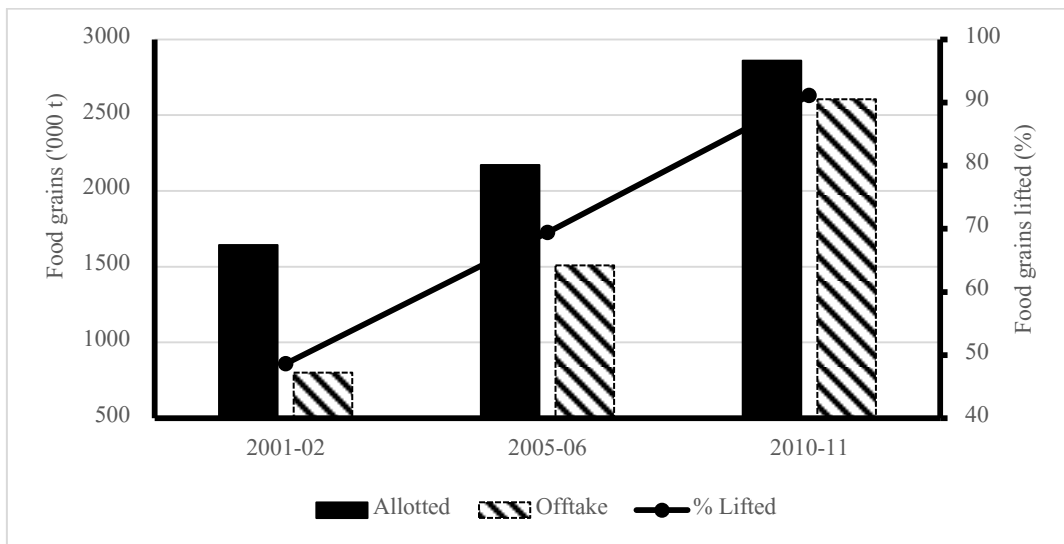


Figure 7. Foodgrains allotted and offtake over time by NER states

Future approach

Agriculture in NER is characterized by geo-physical conditions, limiting horizontal expansion of cultivable land. Rice is mostly cultivated in the region which is vulnerable to risk and low level of productivity. Prevalence of traditional agricultural practices like shifting cultivation in the present form, is responsible for low productivity. Many questions still remains to be answered as to how can we achieve sufficiency in food production for enduring food security in the region? Despite research and extension programmes, innumerable incentives, discussions and efforts over the years, our goal of becoming self-reliant northeast appears to be a distant dream. When the dependency of the region on other states of the country will end. The simple answer would be to grow more food. More not only be self-reliant but would add to central pool as a foodgrains producing

production of foodgrains will not only make the region self-reliant but also improve the economy and life of the people. The challenge is much more complex, tricky and full of uncertainty, and goes beyond the human right to food. We must match the rapidly increasing demand in ways that are environmentally and socially sustainable. This requires changes in the way food is produced, stored, processed, distributed, and accessed. The best solutions will require a system where increases in production will play an important part, but will be constrained as never before by the finite resources provided by land, water, and biodiversity. In NER a strong will of the government and stakeholders is desired for becoming self-reliant in food and other needs to lead a dignified life. Simply working on the premise that adequate quantity of foodgrains is available from the central pool will nothold goodfora long time. It was thought that NER will result of second green revolution in non-traditional

areas of the country. The idea was to grow more in non-traditional areas where the fruits of green revolution are still to be harvested. The subsidy on finished product, that is, foodgrains in this case has, in fact, made the stakeholders contented and take everything lightly in agricultural production because of cheaper and easy access to foodgrains. For a strong economy, the NER has to become strong in at least one sphere, such as, agriculture, industry, automobiles, manufacturing or any other field which can fetch handsome returns to cover the cost of requirements from outside the region. These farmers need to achieve sustainable increases in productivity but are hindered by lack of infrastructure, access to markets, and modern technologies. Investments in agricultural and rural development hold the greatest potential to reduce poverty rapidly (World Bank 2008). The good news is the knowledge, technologies, skills, and financial resources to build a sustainable future exist. More food can be produced, more sustainably, and can get to those who need it most. Importantly, this system must be inclusive and recognize the rural economies are the keystone of food security. Risk management in agriculture is particularly important for the farmers, who are vulnerable to poverty and lack the resources. Production risks include inclement weather, pests and diseases due to high humidity, soil erosion, land and environmental degradation, labour constraints *etc.* These risks have a direct impact on local agricultural production and it is important to understand that their effects are transmitted from the farm all along the supply chain. It is necessary to provide better market avenues and control over agricultural prices. There is need to give subsidy on inputs like fertilizers, pesticide, seed *etc.* which help in higher production rather than finished product, that is, foodgrains. This will ensure in achieving higher productivity of crops. It would be better to create a conducive environment for higher agricultural production in the region. A suitable research and extension support is necessary to institutionalize the whole gamut of production. The government efforts like crop insurance are praiseworthy, in this regard. Simple, affordable and environment-friendly technologies will be better and widely accepted under the north eastern situation. Up-scaling of eco-technologies could help address the issues associated with shifting cultivation, which are gradually becoming untenable under demographic pressure and change in lifestyle.

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