

Assessing Food Security in Nagaland (N.E.-India)

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Introduction

Little is known about the sustainability of the landuse systems and people's food security in Nagaland (N.-E. India) where a population growth of 6.3% leads to an apparent shortening of the fallow period and concomitant decline in soil productivity. A survey revealed that fallow periods have been reduced to five years and additional land for cultivation is hardly available. This study was carried out to quantify the gap between local farmers' food demand in cereals and amounts harvested on the so-called Jhum fields as dependent on population density.



Figure 1 and 2. Study area in N.-E. India



Materials and Methods

- Two study sites: the village Hongphoy, in proximity of the district capital Mon; and the village Minyakshu within steep terrain of the remote upper Konyak area (Fig. 2).
- In each village the sizes of 60 newly slashed Jhum fields of randomly chosen families were measured in 2004.
- These 60 households per village were interviewed in 2004 and in 2005, in Minyakshu 184 additional interviews were conducted.
- Interviews given compiled information about family size, amounts of harvested rice, maize and millet, sufficiency of harvest, amounts of purchased cereals and of cash income.

Results

Table 1. Per caput area, population density and yields in two villages of Nagaland, N-India (2004).

Criterion	Hongphoy	Minyakshu
Length of the Jhum cycle [years]	9	7
Average size of new Jhum field per household [m ²]	7,600 ± 2,800	4,189 ± 2,224
Size of new Jhum field per caput [m ²], n=439/458	1,040	550
Total cultivated area per caput per annum [m ²]	1810	1210
Theoretic population density [people*km ⁻²]	63	118
Harvested rice per hectare [kg*ha ⁻¹]	940 ± 130	270 ± 100
Harvested millet per hectare [kg*ha ⁻¹]	nil	530 ± 190
Harvested maize per hectare [kg*ha ⁻¹]	160 ± 50	570 ± 130

Table 2. Village size, sufficiency of harvest, quantities of purchased rice and energy intake in two villages of Nagaland, N.-E. India (2004 and 2005).

Criterion	Hongphoy		Minyakshu	
	2004	2005	2004	2005
Total population	1240	1260	4870	5250
Harvested rice, wet rice, millet and maize per caput and year [kg]	162	111	136	116
Sufficiency of harvest per household acc. to interviews [months]	11	8	9	7
Purchased Assam rice per caput and year [kg]	38	50	31	61
Annual income per caput and year [US\$]	55	49	34	-
Daily cereal consumption per grown up [kg]	0.570 ± 0.05	0.560 ± 0.03	0.430 ± 0.07	0.580 ± 0.08
Daily intake of energy derived from cereals per caput [Joule]	8580	8370	6520	8680

Sources of consumed cereals per caput and year

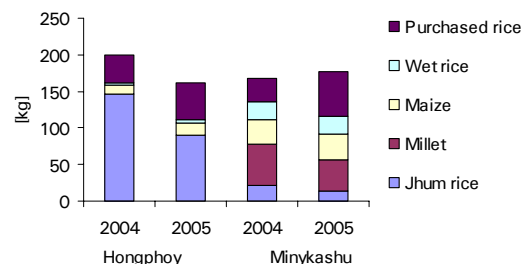


Figure 3. Sources of consumed cereals per caput and year in two villages of Nagaland, N.-E. India (2004 and 2005), [kg].

Discussion and Conclusions

- Fallow periods have been shortened from formerly 30 to 7 years in Hongphoy and to 5 years in Minyakshu (see Tab. 1).
- People depending on shifting cultivation need at least 2000m² cultivated area per annum and caput for subsistence, but villagers in Minyakshu have only 1210 m² at their disposal.
- In Hongphoy the main crop is upland rice, in Minyakshu these are pearl millet (*Pennisetum glaucum*) and maize (*Zea mays*).
- Harvested cereals are not sufficient for the whole year (Tab. 2), in 2005 harvested quantities of rice were exceptionally low in both villages due to low rainfalls (see Fig. 3).
- Hence in 2005 nearly one third of the needed cereals in both villages had to be bought, villagers had to spend more than 15 US\$ on rice in the same year.
- Energetic intake derived from rice, millet, maize and purchased rice was about 8500 Joule per caput in both villages, summing up to 85% of the daily Joule demand for adults in N.-E. India.
- Further 1500 Joule had to be derived from foodstuffs other than cereals. The remaining food gap is mainly covered by vegetables from the forest, tuber crops from the fields or starch extracted from Palms (*Carriota sp.*).
- On the whole, food security is better in Hongphoy: rice is not substituted by millet and maize, cultivated area per caput is larger and additional cash income is higher.

