

# Rural Food Security: Unresolved Issues and Emerging Challenges

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## Background

More than 24 million rural Indians still live below the hunger line as defined by the availability of two square meals a day throughout the year (NSS 55th Round, 1999-2000). While chronic food insecurity has been sharply curtailed, seasonal food shortages are common and tend to persist for several months at a time in most parts of the country. For the rural householder, the fear of hunger overshadows his very existence severely limiting effort, enterprise and achievement. Even more severe is the impact of actual food scarcity reflected in the country's dismal nutrition and health indicators. Reports of large numbers of children succumbing to malnutrition or malnutrition related ailments and isolated adult starvation deaths in remote locations surface every year, but little has been done to address them. While not perhaps, as momentous as large scale famine, the eradication of which has been one of our major achievements, these incidents strikingly highlight the fact that food insecurity in rural areas persists and remains a major concern of public policy.

This paper attempts to identify some of the unresolved issues underlying the persistence of rural food insecurity in the country, analyse the ineffectiveness of Government interventions to address these issues and indicate directions for policy change.

## Food Security Status of the Rural Population

The rural population in India has consistently recorded poorer levels of food security in comparison with their urban counterparts. This may be attributable to lower income levels, fewer employment opportunities or even sheer lack of physical access to food in the form of home grown supplies or access to markets or the Public Distribution System. This is a feature common to rural populations in most developing countries, where the producers of food are the very ones unable to access sufficient food to meet their own needs.

Estimates of calorie requirements for rural and urban populations place rural calorie needs at a higher level than those of the urban population. These estimates are based on the premise that the larger amounts of energy expended by the rural population in agriculture and other manual labour based occupations necessitate higher calorie consumption. However, average urban calorie consumption at 2156 Kcalories exceeds rural calorie consumption, which is only 2149 Kcalories (1999-2000).

The official poverty line in India, which is itself, based on the purchasing power to acquire

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<sup>2</sup> An average per capita expenditure of Rs. 328 for rural areas and Rs.454 for urban areas per month corresponding to a total household expenditure sufficient to provide 2400 calories per day in rural areas and 2100 calories per day in urban areas and some basic non-food items.

sufficient calories together with some basic non-food items, firmly places over one-quarter of the country's population among the under-nourished<sup>2</sup>. On the other hand, the National Sample Survey (NSS) which collects basic information on the availability of two square meals a day has reported a quantum improvement in reducing hunger. While in 1983, 19 per cent of the rural population reported lack of access to regular food supply, by 1993, this segment had reduced to only 7 per cent. Currently, 1 per cent of the rural and 0.5 per cent of the urban population report chronic food insecurity (NSS 56th Round 2000-2001). This amounts to about 8.6 million people in the country with lack of access to sufficient food to meet their daily requirements. Of these, 7.2 million live in rural areas. It must, however, be pointed out that these figures are considered vastly underestimated.

While the rural areas of the country are undoubtedly disadvantaged in their access to food, the level of food insecurity is not uniform. The most disadvantaged groups - the marginal farmer and the landless labourer, the scheduled castes and scheduled tribes and the especially vulnerable among these, i.e., the women and women-headed households, the old and infirm and those unable to work are the most under nourished.

While government policies have so far focussed on boosting food production at the national level and have achieved tremendous success by any standard, the focus must now shift to ensuring that no individual remains hungry or malnourished. Table 1 brings out the disparities in calorie consumption within rural areas. Only 33.4 per cent of the rural population consumes a diet with more calories than the minimum requirement of 2400. This segment also belongs to the middle and higher income groups with an average monthly expenditure of more than Rs. 525. Those in the expenditure range of less than Rs. 470, which accounts for two-thirds of the rural population, consume less than 2289 calories or about 95 per cent or less of the norm.

**Table 1: Percentage of Persons in Rural India with Calorie Intake below the Nutrition Norm of 2400 calories (1999-2000)**

MPCE Class (in rupees)	Average Monthly Per Capita Expenditure (in rupees)	Calorie Intake per diem	Percentage of Total Persons
470-675 and below	496.70	2289 and below	66.6
525-615 and below	566.62	2403	10.3
615-775 and above	686.00	2581 and above	23.1

*Source:* NSS Report No. 471, Nutritional Intake in India, 1999-2000.

**MPCE:** Monthly per Capita Expenditure

The data discussed above seems to point to the fact that while a reduction in starvation and absolute hunger has taken place, under-nourishment in terms of actual calorie consumption remains a serious problem. What is even more disquieting is the fact that there appears to be a declining trend in rural calorie consumption from the seventies till date. Table 2 depicts the change in calorie consumption from the early seventies to the end of the nineties in fifteen major states. In the case of four states, i.e., Kerala, Maharashtra, Orissa and West Bengal there has been an increase in per capita calorie consumption by more than 100 calories per day,

**Table 2: Change in Average Calorie Consumption by States (Rural Kcal per capita per day)**

State	1972-73	1983	1993-94	1999-2000
Andhra Pradesh	2103	2204	2052	2021
Assam	2074	2056	1983	1915
Bihar	2225	2189	2115	2121
Gujarat	2142	2113	1994	1986
Haryana	3215	2554	2491	2455
Karnataka	2202	2260	2073	2028
Kerala	1559	1884	1965	1982
Madhya Pradesh	2423	2323	2164	2062
Maharashtra	1895	2144	1939	2012
Orissa	1995	2103	2199	2119
Punjab	3493	2677	2418	2381
Rajasthan	2730	2433	2470	2425
Tamil Nadu	1955	1861	1884	1826
Uttar Pradesh	2575	2399	2307	2327
West Bengal	1921	2027	2211	2095

contrary to the declining trend in the remaining eleven states. In the case of Kerala, the increase is as much as 423 calories per capita per day, which represents a substantial increase. In the remaining three states, the trend has been a fluctuating one as against the steady increase in the case of Kerala.

Table 3 shows the proportion of the population consuming less than 2400 calories per day by state as also the change in size of this under-nourished group over two decades.

**Table 3: Per cent Rural Population with less than 90% Recommended Calorie Intake**

State	1983	1993-94	1999-2000
Andhra Pradesh	39.3	48.4	51
Assam	48.8	53.9	61.5
Bihar	39.6	41.8	45.9
Gujarat	46.7	53.7	53.6
Haryana	27.5	28.4	30.2
Karnataka	42.3	48.6	54
Kerala	61.2	55.1	51.6
Madhya Pradesh	33.7	41	50.7
Maharashtra	44.4	57.4	52.4
Orissa	46.2	35.4	42.1
Punjab	24.1	27.6	31
Rajasthan	28.8	23	24.3
Tamil Nadu	62.9	61.3	65.2
Uttar Pradesh	31	31	32.9
West Bengal	53.6	37.2	47.8

The sharpest decline has taken place in two of the richest agricultural states, Punjab and Haryana by as much as 1112 calories and 760 calories respectively. However, this is the result of a gradual decline over three decades representing perhaps a shift in dietary patterns. Both states are now close to the rural consumption norm of 2400 calories as are Rajasthan and Uttar Pradesh.

The table shows that in eight of the fifteen states, more than half the population is under-nourished. Only in one state, Rajasthan is under-nourishment restricted to one-quarter of the rural population, the other states recording between one-third and half the population as consuming less than 90 per cent of the required calories. Over time, the proportion of the rural population consuming less than the required calories has increased in all but four states, implying growing food insecurity. The four states where food security levels have improved include the three states of Kerala, Orissa and West Bengal, where the overall consumption of calories has also gone up and the state of Rajasthan, where the proportion of under-nourished rural population has decreased, despite an accompanying decrease in overall calorie consumption. This would, perhaps, suggest decreasing disparity in food consumption in this state.

What underlies the persistence of food insecurity and the poor nutritional indicators in most parts of the country? The following sections assess the probable factors underlying the issue and seek to identify pointers for policy formulation.

### **The Gender Factor<sup>3</sup>**

The role of women as producers and providers of food is often overshadowed by their primary role as care-givers. However, in most of the developing world, including India, large numbers of women are engaged in agriculture, primarily the production and processing of food. With male-selective migration from rural areas on the increase, women are often left behind to take care of both family and farm on their own. With women-headed households being more prone to poverty, wages being un-favourable to women in general and access to financial, technical and other support services being denied them, the poor nutritional status of the rural population should not evoke surprise.

According to current statistics (Census of India 2001), 27.5 per cent of cultivators in the rural areas are female, while in the case of agricultural labour, as much as 46.9 per cent are women.

Of the rural female workforce, an overwhelmingly large proportion, i.e., 80 per cent are employed in the agricultural sector. About 36.5 per cent (40.6 million) work as cultivators on their own/family landholdings, while about 43.4 per cent (48.4 million) are engaged as hired agricultural labour. It is, therefore, obvious that women play no small role in food production. This is further corroborated by the fact that agriculture in India is subsistence based and 93.8 per cent of the country's cultivated area is under food crops.

When women workers, in such large numbers, form the core of the food producing workforce, it becomes obvious that "the starting point of food security must be the security of the food producing communities. Women in agriculture have to be among the beneficiaries if the

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<sup>3</sup> This Section draws heavily on Ramachandran, Nira (2005) *Women and Food Security in South Asia: Current Issues and Emerging Concerns*, Paper presented at a Workshop on Food Security, UNU-WIDER Helsinki, 12-15 October 2005.

promise of food for all is to be achieved (Rengem, undated). Unfortunately in India, women farmers face considerable discrimination with regard to agricultural as well as other assets and resources. 'They do not have the rights of ownership of land, draught and milch animals. Men own productive assets such as tube-wells, winnowers, tractors, bullock carts, generators, etc. Except in matrilineal societies, land ownership patterns favour men. Land reform measures have ignored women's interests as co-owners or cultivators of land' (WFP-MSSRF, 2001). Consequently, women also face discrimination with regard to availability of loans and access to technology and training.

In many parts of the country, where male selective migration is a dominant feature, it is the women who are left behind to maintain the family land and perform all agricultural tasks independently. This holds true in such diverse regions as the mountain villages of the Himalayas, on the one hand and the tribal villages of Chattisgarh, on the other (Ramachandran, 2000, Barme and Ramachandran, 2002). In Uttaranchal, men restrict their farming activities to ploughing the fields alone, with all other tasks being left to women. Yet access to credit, training and other facilities remains out of reach for them.

'Given women's role in food production and provision, any set of strategies for sustainable food security must address their limited access to productive resources. Women's limited access to resources and their insufficient purchasing power are products of a series of inter-related social, economic and cultural factors that force them into a subordinate role to the detriment of their own development and that of society as a whole' (FAO 1996).

A serious constraint for women farmers is their lack of access to security of tenure or ownership of land. As Agarwal (2002) notes 'In largely agrarian economies, arable land is the most valued form of property and productive resource. It is a wealth creating and livelihood-sustaining asset. For a significant majority of rural households, it is the single most important source of security against poverty'. Traditionally, women have been denied equal inheritance rights to property both under the Hindu and the Islamic systems of law. With the recent Amendment of the Hindu Succession Act (August 2005), women have been given equal rights of inheritance in all property including joint family property, agricultural land and tenancy rights throughout the country. However, the law regarding the inheritance rights of Muslim women remains unchanged. Also, where agricultural land is concerned, agriculture being a state subject, the law will come into effect only if the concerned state takes necessary action. The positive impact of this amendment thus remains to be seen.

Till recently, under the Hindu system, for example, a woman could inherit property only in the absence of four generations of men in the male line of descent. Even then, her rights were limited to a lifetime interest with no right to mortgage or dispose of the property, except in exceptional circumstances. The Hindu Succession Act of 1956 sought to resolve this issue by giving equal shares to sons, daughters and widows in a man's own property and the same in his share of joint family property. However, agricultural land was exempted from the purview of the Act. Women's inheritance in agricultural tenancy land depends on state-level tenurial laws, which strongly favour succession in the male line.

Under Muslim law, daughters are allowed only half the share of sons in the property bequeathed by their father. The Muslim Personal Law Shariat (Application) Act of 1937 also sought to enhance the property rights of Muslim women, but excluded all agricultural land,

both tenanted and owned from its purview, except in some of the states of South India.

Regional variations in women's right to land are, in part, due to pockets of matrilineal systems prevailing in some states such as the Southern state of Kerala and the North-Eastern state of Meghalaya where land is inherited in the female line and in part due to the underlying social constructs in these regions. Social norms in the Southern part of India permit marriage within kinship and in the same village, whereas in the Northern part of India, marriage within the family is strictly prohibited with intra-village marriage relationships being frowned upon. The impact of these social strictures can be clearly seen in the strictly patrilineal inheritance patterns in the North as compared to the more flexible rules in the South. In fact, in the Southern states of Andhra Pradesh, Tamil Nadu and Karnataka, as well as in Maharashtra in Central India, the Hindu Succession Act has been amended to make daughters coparceners in joint family property, while in the Southern state of Kerala, the concept of joint family property has been abolished altogether.

Gender equality in inheritance, Agarwal (ibid) writes, must be promoted as most agricultural land is privately held. In India, for example, 86 per cent of the arable land is in private hands. While gender disaggregated records are not maintained, sample surveys have brought to light the sharply skewed pattern of inheritance in rural areas of India. Chen's 1991 (Chen 2000) survey of seven states in India, quoted in Agarwal, found that of 470 women with land owning fathers, only 13 per cent inherited land as daughters. This ranged from 18 per cent in South India to only 8 per cent in the North, indicating that 87 per cent of women did not receive their due as daughters. Of the 280 widows surveyed, only 51 per cent received land and most often their shares were not recorded in official land records. Other studies reveal that even when women's land rights are recorded, it is usually in joint ownership with their sons.

Land reform programmes and resettlement schemes are also overtly male biased. Under 'Operation Barga', a scheme implemented by the West Bengal State Government to secure the rights of tenants by registration in the late seventies and early eighties, few women received land. A study conducted in a village in Midnapur district (Gupta, 1993 quoted in Agarwal ibid) showed that 98 per cent of the 107 holdings distributed, went to men and in 9 out of 10 female-headed households, it went to the sons. Married women did not even receive joint titles. Under the Eighth Five Year Plan (1992-97), State Governments were directed to allot 40 per cent of ceiling surplus land to women alone and the rest as joint titles to spouses. However, ceiling surplus land accounted for just about one-half per cent of India's arable land in the early nineties and today is reduced to merely 0.2 per cent. Also, the implementation of the scheme rests with State Governments, which may or may not follow through.

Why is ownership of land so essential for women farmers? The rapid feminisation of agriculture in the region has thrown into prominence the issue of land rights for women. Increasing migration by males from rural to urban areas in search of livelihoods has followed the fragmentation of land holdings, lack of wage opportunities in rural areas and deepening poverty. What is often overlooked in policy formulation is the increasing number of de facto woman heads of households struggling to eke out a livelihood and ensure the food security of their families, without access to credit, technology or extension services. Denied security of tenure, they lack the collateral required for credit or the social status to deal with extension workers on an equal basis. Their needs tend to be ignored, even in agricultural research and

technological innovations. FAO statistics show that worldwide, only 5 per cent of extension services have been addressed to rural women (FAO, 1996).

In order for women farmers to use land more efficiently and thereby make a greater contribution to food security, they need access to land, management control of land based resources and the economic incentives that security of tenure provides (FAO *ibid*). "Land rights can serve multiple functions in rural women's lives, which are not easy to replicate through other means". Apart from the direct benefits in terms of crop output, trees, fodder, fuel and garden produce and indirect advantages in terms of collateral for credit or an asset, which can be sold or mortgaged when needed, title to land also enhances the probability of finding supplementary wage employment and serves as an asset base for rural non-farm enterprises. Chadha (1992) in a study of the rural non-farm sector, found that those with land generated much higher rural non-farm earnings from self employment, than the totally landless. Agarwal concludes that, women's access to even a small plot can be a critical element in a diversified livelihood system and can significantly improve women's and the family's welfare, even if the plot is not large enough to provide full family subsistence.

Denied ownership and tenancy rights to land, the women farmer's lot is further exacerbated by the gender disparity in wages, both on and off-farm. Micro studies undertaken in various states of India reveal various levels of wage disparity. Surveys undertaken in West Bengal (cited in IDRC *ibid*) show that gender wage disparities have begun to decline along with the general rise in wages. Female wages in the state rose from 75 per cent of male wages to about 86 per cent between the mid sixties and the early seventies. The study states that on an average, across India, rural women's wages rose from 52 per cent of their male counterparts in 1972 to as much as 69 per cent by 1983. The gap between male and female wages was highest and fluctuated most in the least agriculturally developed areas. However, a more recent micro-study of 54 casual labour households in the Karimnagar district of Andhra Pradesh (Lingamurthy 2002) found that while both male and female wages have increased over time, the relative wage differentials by gender have not reduced. Females are paid less than half the wages given to men across all agricultural and non-agricultural operations. At best, women receive one-half of the male wages for the same operation.

In the context of food security, the need for gender parity in wages assumes greater significance. Households, wherein women have access to their own incomes and can exercise decision-making powers, tend to have an expenditure pattern different to the one existing in male dominated households. Research in several developing countries of Asia, Africa and Latin America has found that improvements in household food security and nutrition are associated with women's access to income and their role in household decisions on expenditure. This is because women tend to spend a significantly higher proportion of their income than men on food for the family (IDRC 2004). Dyer and Bruce cited in Agarwal (2002a) in a 1988 study found that women in poor households of India and other parts of the world, spend most of the earnings under their control on basic household needs, while men tend to spend a significant part of theirs on personal good such as alcohol, tobacco, etc.

Studies undertaken in India and neighbouring countries reveal that women invest larger amounts of money in nutrition and health. Among marginal farmer households in the Indian state of Kerala, the mother's cultivation of a home garden (the output of which she controlled)

was found to have a consistently high positive effect on child nutrition (Kumar 1978).

Women's access to adequate food security, both for themselves and their families is dependent, not only on their economic status, but on their own health, education and social status within the family and in society. Women with low status tend to have weaker control over household resources, tighter time constraints, less access to information and health services, poorer mental health and lower self esteem. These factors are, thought to be, closely tied to woman's own nutritional status and the quality of care they receive and in turn to children's birth weights and the quality of care they receive (Smith, Lisa, et al 2003). Smith concludes that 'making a decision at the policy level to improve women's own nutritional status produces significant benefits. Not only does a woman's nutritional status improve, but so does the nutritional status of her young children. Raising women's status today is a powerful force for improving the health, longevity, mental and physical capacity and productivity of the next generation of adults'.

### **Seasonal Food Insecurity**

Seasonality is now accepted as a central concern in the poverty and under development problems in low income developing countries (LDCs). There have been various attempts to analyse and explain the relationship between seasonality and employment, under-nutrition, poverty, health, working capacity, stress and gender bias. But little effort has been made to translate these explanations and conclusions into tangible counter seasonal development strategies (Chambers et al 1981, Chambers 1995, Longhurst 1986). The all-pervasive influence of seasonality on food security, income and all other facets of life in rural areas and the need for interventions to smooth the pattern of income and consumption emerges strongly from research in the area. Jodha even explains an increase in wellbeing in rural areas as a function of decline in the seasonality of existence. The overwhelming influence of the seasons in rural areas extends beyond farmers and agricultural labourers or those directly dependent on the land. It also affects not only food security and livelihoods, but much broader areas of rural life. As Spitz writes "The whole social fabric is adjusted to this qualitatively predictable seasonal pattern of food availability and employment, indebtedness and migration with its likelihood of year to year fluctuations aggravating or partly alleviating food insecurity" (Spitz 2002).

Existing policies for temporary employment creation often fail to take into account the seasonality factor in rural life. Seasonality coupled with low mean incomes and high seasonal variance in incomes, is one of the primary causes of distress in rural livelihoods. Seasonality of rural livelihoods is not confined to the economics of income. Seasonal changes also aggravate the gamut of existing economic, social, political and cultural handicaps that directly or indirectly influence the well-being of the rural population. Seasonality is, and will continue to be, a major stumbling block in rural development in every LDC where agriculture and rural livelihoods depend on seasonal fluctuations in access to food, employment, income and seasonal changes in status of health/morbidity (Raina, 2000).

NSS statistics show that the proportion of the population suffering from chronic food insecurity has considerably declined and currently stands at a mere one per cent of the rural population (2000-2001). However, there is still a considerably large segment which does not

have access to adequate food seasonally. While the NSS classification is limited to estimates of population facing food insecurity seasonally, the actual duration of this lean period is best assessed from micro studies. A participatory study of twelve tribal villages in four states, i.e., Rajasthan, Madhya Pradesh, Chhattisgarh and Orissa (Barme and Ramachandran 2002) revealed that the hunger period extended from a minimum of two months to as much as eight months of the year. The level of food insecurity varied from shortage to actual starvation. Similar results have been obtained from more detailed surveys carried out in the rural areas of Jharkhand (Ramachandran and Karan 2000).

Seasonality also has a significant impact on women's nutritional status. The seasonal dimension reflects in fluctuations of workloads during the agricultural cycle as well as varying availability of food. The period of greatest nutritional stress for rural women is the 'lean months' of the pre-harvest period when household stocks and energy intake are low, but the energy demands of agricultural work tend to be highest. Heavy work during pregnancy can lead to premature labour and without increased calorific intake, to low birth weight babies, perpetuating the vicious cycle of weak infants, malnourished children, adults both physically and mentally deprived and the inability to break out of the vicious cycle of poverty and ill-health. The participatory study referred to above reiterates these findings and concludes that the impact of several months of reduced food intake on the health and nutritional status of women, particularly pregnant and lactating mothers and on their new born infants is reflected in the persistently high levels of low birth weight infants, malnourished and anaemic mothers and maternal mortality in the country (Ramachandran Nira 2003).

While seasonal food insecurity affects almost all the rural population, the intensity of impact varies with economic and social factors. Usually, only the large land holders escape

**Table 4: Seasonal Food Calendar (Jharkhand)**

Village	Availability	Shortage	Starvation
Andhradih	Nov-Feb (4)	Sep-Oct, Mar-Apr (4)	May-Aug (4)
Baradih	Dec-Mar (4)	Sep-Nov, Apr-May (5)	Jun-Aug (3)
Sarapmunda	Oct- May (8)	Aug-Sep (2)	Jun- Jul (2)
Gujharia	Nov-Feb (4)	Mar-Jun (4)	Jul - Oct (4)
Udaipura	Dec-May (6)	Sep-Nov (3)	Jun- Aug (3)
Ghutwa	Apr-Jul & Dec-Jan (6)	Feb-Mar, Nov (3)	Aug-Oct (3)
Baherakalan	Nov-Mar (5)	Oct, Apr-May (3)	Jun-Sept (4)
Karma	Dec-Mar (4)	Apr-May, Sep-Nov (5)	Jun-Aug (3)
Rampur	Dec-May (6)	Jun, Oct-Nov (3)	Jul-Sep (3)
Maheshpur	Dec-Apr (5)	May-Jun, Nov (3)	Jul-Oct (4)
Karmatand	Nov-Feb & May- Jul (7)	Mar-Apr (2)	Aug-Oct (3)
Indravani	Dec-Mar (4)	Apr-Jun, Oct-Nov (5)	Jul-Sep (3)

Figures in brackets indicate number of months

Source: Ramachandran, Nira and Anup Karan (2001)

seasonal hunger. Caste-wise and occupation-based differences also exist. An in-depth survey of twelve villages in Jharkhand (Ramachandran and Karan 2002) reveals the food security scenario in relation to class and caste factors.

The threat of food insecurity overshadows the tribal villages of Jharkhand, particularly in the case of the landless, engaged as casual labour in agricultural or non-agricultural occupations. Seasonal food shortages affect almost every household cutting across caste and class barriers, with the sole exception of large land-holders. As food insecurity is an intrinsic part of rural life, traditional coping mechanisms have evolved which include the collection of edible forest products as well as gleanings from fields and other commons. The level of food distress varies from a few months of food shortages when harvest supplies run out, to near starvation levels for small landholders and the landless during the monsoons, when both food and employment are in short supply. A large proportion of the households face food shortages for at least part of the year. As land holdings are small and irrigation facilities inadequate, the area is single-cropped, and productivity is low. Food production even in a good agricultural year meets food requirements for barely six months. For the rest of the year, food intake

**Table 5: Food Sufficiency by Caste, Occupation of HH, Land Size and Districts (Jharkhand)**

		Percent Households with Sufficient Food throughout the Year	
Caste group	Upper caste	92.3	
	OBC I	80.0	
	OBC II	76.9	
	SC	52.2	
	ST	69.1	
	ST (Ch)	63.2	
	PTG	76.5	
	Muslims	69.0	
	Occupation of HH	Self employed in agriculture	71.2
		Agricultural labour	41.2
Non agriculture Labour		66.2	
Salaried worker		88.9	
Petty job		72.7	
Petty business		70.0	
Other occupation <sup>4</sup>		93.3	
non-worker		69.2	
Land Size (in acres)	Landless	51.7	
	Upto 1	62.4	
	1 to 2.5	78.0	
	2.5 to 5	80.0	
	5 to 10	84.6	
	10 and more	100.0	
District	Gumla	76.7	
	Palamau	78.0	
	Dumka	59.5	
All		70.3	

<sup>4</sup> Other occupations includes the gathering of firewood, cow dung for fuel, animal grazing, jajmani system, etc. The jajmani system is a traditional form of employment in villages, where a professional household provides its services to the villagers in return for foodgrain, a piece of land or other payment. The range of services provided is varied including the services of priests, carpenters, masons, barbers, etc.

is reduced to minimal levels, and in extreme situations, the diet consists of berries, leaves and other forest gleanings.

A seasonal food calendar prepared on the basis of participatory techniques carried out in twelve sample villages of Jharkhand (Table 4), reveals that food distress is an integral part of village life. While there are variations based on location, essentially, an assured food supply exists for only about three to four months of the year, i.e., in winter following the harvest in late October-early November. Food supplies tend to run short by the end of winter, and the starvation period begins by mid-summer (June) and in many cases, continues till the end of October.

During periods of starvation, people consume small amounts of coarse grains and home-grown vegetables and turn to the forest for supplies of berries, herbs, edible leaves and wild vegetables. As Mukerjee (2000) states 'the commons provide a safety net for the poor villagers to tide over the hunger period'. Even among the sample districts, there are variations in the level of food distress. While in Gumla, people turn to coarse cereals like maize during periods of food shortages, Dumka and Palamau do not have even maize stocks available. The villagers in these districts thus resort to consuming inferior cereals such as goda, gondli and mahua. The response to food shortages is in the form of cutting down amount of intake and number of meals, as well as turning to forest gleanings.

Table 5 brings out the level of food insecurity among the sample households. Only 70 per cent of the households felt that they had access to sufficient food throughout the year. Inter district variations are evident with Dumka being worst off with almost 41 per cent of the sample households claiming to be food insecure for at least some part of the year. Across the caste groups, not even the upper caste households are totally food secure. Almost 8 per cent felt that food supplies were not sufficient throughout the year. Among the other groups, the scheduled caste households were the worst off with 48 per cent being food insecure, followed by the Christian Scheduled Tribes, the Muslims and the Scheduled Tribes (37, 31 and 31 per cent respectively). Across occupational groups, the proportion of food insecure households ranged from 7 per cent (Other Occupations) to as much as 59 per cent of the households engaged in agricultural labour. Based on land ownership, the landless, as expected were the worst off with 48 per cent being food insecure. The proportion reduced progressively with the increasing size of land owned till households owning 10 acres and above recorded no food insecurity.

While 30 percent of all households reported some degree of food insecurity, the extent to which the households are food insecure is depicted in Table 6. The table reveals that two-thirds of the households experience at least two months of food distress every year, while about 8 per cent of the overall households report as much as four months of food scarcity. This seems to corroborate the findings from the food calendar, where seasonal food shortages with starvation periods from mid-summer to autumn have emerged in the exercises conducted in all twelve villages. Similar experiences have been recorded in other areas of the country. In the hill districts of Uttaranchal, the monsoon months are the critical period with not only food stocks running out, but also the drying up of the main source of income from agriculture or construction work which also stops during this period (Ramachandran 2000).

**Table 6. Extent of Seasonal Food Insecurity in Jharkhand**

Cient	Percent Households by Number of food defi- months in a year			
	1	2	3	4
Caste Group				
Upper Caste	0	100.0	0	0
OBC I	0	75.0	25.0	0
OBC II	0	50.0	16.7	33.3
SC	0	63.6	27.3	9.1
ST	10.9	67.4	17.4	4.3
ST(Ch)	0	57.1	28.6	14.3
PTG	0	50.0	25.0	25.0
Muslims	22.2	77.8	0	0
Occupation of HH				
Self employed in agriculture	6.3	75.0	12.5	6.3
Agricultural Labour	20.0	60.0	20.0	0
Non-agricultural Labour	12.5	58.3	16.7	12.5
Salaried Worker	0	50.0	50.0	0
Petty job	0	66.7	0	33.3
Petty business	0	75.0	25.0	0
Other occupation	0	.0	0	100.0
Non-workers	0	50.0	50.0	0
	0	71.4	21.4	7.1
	7.9	55.3	21.1	15.8
	11.1	72.2	16.7	0
	9.1	72.7	18.2	0
	0	100.0	0	0
Land Size (in acres)				
Landless				
Upto 1	0	70.0	20.0	10.0
1 to 2.5	6.9	69.0	13.8	10.3
2.5 to 5	10.2	63.3	20.4	6.1
5 to 10				
	8.0	65.9	18.2	8.0
District				
Gumla				
Palamau				
Dumka				
All				

## Common Property Resources as a Natural Food ‘Safety Net’

Common Property Resources (CPRs) often play a significant, though unacknowledged role in ensuring the food security of households living on the verge of hunger. This is particularly so in the case of remote villages which lack access to markets and Government safety net provisions. Tribal populations with their traditional dependence on forest-based resources and access to knowledge of food and medicinal plants and herbs handed down through the generations have a particularly close link with CPRs.

CPRs may be defined as ‘private property for a group’ with organisational rules circumscribing the nature of rights and responsibilities existing within the group with respect to them. Multiple uses and inter-related rights are common in the rural areas with sets of resources being characterised by complementarity of use. For example, grazing rights on private land are often given to nomadic communities after the harvesting of the monsoon crop in recognition of the contribution of animal herds to the rejuvenation of soil fertility (Chopra and Gulati 2001). Agricultural labour is likewise free to access the gleanings from fields after harvest in a mutually beneficial relationship.

A useful classification of land use categories and their inclusion in common property resources as well as the type of access permitted to them has been developed by Chopra and Gulati (Table 7)

**Table 7: Identification of Common Property Resources**

Classification	Included in CPR	Source of Sanction for Land Access
Net Sown Area	No	On uncultivated owned land: limited user rights
Current Fallow	No	On uncultivated owned land: limited user rights
Other Fallow	Yes	User rights by convention
Cultivable Waste	Yes, partial	User rights by convention
Pastures and Other Grazing Land	Yes	User rights by law
Barren and Uncultivable Land	May be included	No access
Area put to Non-Agricultural Use	No	No access
Forest Area		
1. Reserved	No	No access
2. Protected	Partial	Partial user rights
3. Unclassed	Yes	User rights by law

*Source:* Chopra and Gulati (2001)

The extent of common property resources available by state is tabulated below (Table 8). Total CPR land in 16 states is about 70 million hectares. Of this 64 per cent is non-forest land. If estimates of CPR land in the North Eastern states, for which land records are not reliable, is included, the total availability of CPR land would go up to about 75 million hectares. The distribution pattern clearly indicates that the proportion of CPR land is least in the agriculturally developed states like Punjab and Haryana and highest in the hill state of Himachal

**Table 8: State wise Extent of CPRs and Wasteland**

State	Total CPR (000 HA)	Non-Forest CPR (000 HA)	Total Wasteland (000 HA)
Andhra Pradesh	5989	624	5932
Bihar	5267	2850	2474
Gujarat	3269	2707	4189
Haryana	190	44	357
Himachal Pradesh	5188	1619	1069
Jammu & Kashmir	278	278	3714
Karnataka	3207	2203	2680
Kerala	331	207	163
Madhya Pradesh	13890	6446	8872
Maharashtra	8039	5926	6209
Orissa	4882	1537	2045
Punjab	359	73	370
Rajasthan	11977	11697	9605
Tamil Nadu	2773	2387	2272
Uttar Pradesh	3756	2221	5007
West Bengal	647	164	435
Total (16 States)	70042	44983	57438

*Source:* Chopra and Gulati (2001)

Pradesh. In the other states, CPR land ranges between 10 and 34 per cent of the total land area (Chopra and Gulati *ibid*). Proper management of these resources in conjunction with the community could contribute significantly to improving livelihoods and food security.

Lack of access to forests and shrinking CPRs have particularly impacted on tribal people. Tribal societies are defined by their close relationship with nature. The very existence of remote tribal groups depends on the sustenance they derive from forests and other common property resources, whether directly in terms of food or indirectly as a livelihood option. Even today, while there is much greater interaction between tribal and non-tribal populations, which have become a part of the monetised economy, the strong links of the former with the forest remain. A recent survey, undertaken by the FAO-WFP (November 2001) in tribal villages of the states of Chattisgarh, Madhya Pradesh, Orissa and Rajasthan revealed the extent of tribal dependence on the forest as a source of food. The survey found that in tribal villages located in the vicinity of forests, food supplies may run short because of lack of access to the PDS or markets, or lack of purchasing power as off-farm employment opportunities are not readily available, but actual starvation periods are much shorter than in other tribal villages which do not have access to forest resources. Also, the food basket in these villages is

<sup>5</sup> Barne, Catherine and Nira Ramachandran, *Report of the PRA on Food Security conducted in selected states for the FAO-WFP Grain Banks Project, January 2002.*

much more varied and balanced than in those dependent on markets<sup>5</sup>

The commons have always provided a natural food safety net for the most vulnerable among the rural poor, i.e., those without land of their own as well as those with landholdings too small to support themselves. The poor have traditionally held the right to gleanings from both common and privately owned land. Mukherjee (2000) writes that degradation of surrounding forests, trees and CPRs and rigid forest laws have adversely affected food accessibility, livelihood options and quality of life of local communities. Such degradation has often caused periodic phases of hunger and malnutrition in the absence of supportive means of livelihood for acquiring the basic needs of life.

Two developments have resulted in the large scale destruction of this additional source of food. One, the introduction of intensive chemical fertilizer-based high yielding varieties, have boosted yields for the large farmer, but destroyed the diverse eco-system flourishing in traditional multi-cropping systems, which provided food in the form of weeds, ants, termites, mudfish, crabs, shrimps, frogs. Two, the conversion of grazing lands to short-cycle firewood plantations with state support under the social forestry programme created vast stretches planted with eucalyptus and Australian *Accacia*. Many forests were also converted to mono-species plantations by private corporations and the Forest Department. While this has undoubtedly help restore forest cover, the impact on the food security of the poor has been negative<sup>6</sup>. Mukerjee et al cite the case of 15 villages in West Midnapur district of West Bengal, where not only direct food security, but also livelihoods dependent on a variety of NTFPs, varying over the seasons, have sharply declined with the introduction of mono-forestry. More than 80 per cent of the population of these tribal villages was directly dependent on the forest for both food and livelihoods.

While dwindling common property resources have had sharply negative impacts on rural food security, equally dramatic improvement in the situation can result from promoting a revival of these resources. A success story from Birbhum district of West Bengal resulted from the handing over of 3-5 m wide strips of public land along canals to groups of landless people on a 25-30 user rights basis by the Panchayats. Within 5-6 years, a variety of fodder, fuelwood and food trees and crops were cultivated improving food supply as well as the output of animal products. Members of the community were provided with skills training and guidance on the choice of species for cultivation<sup>7</sup>.

On a larger scale, the Bhartiya Agro Industries Development Corporation (BAIF) set out to rejuvenate pasture land in the village of Kavlas in Bhilwara district of Rajasthan in 1979 (Infochange News and Features 2003a). Grazing lands have always been an important lifeline for Rajasthan's livestock-based farmers. In the Princely States, these were well maintained by Thikandedars, but handing over of management to the gram panchayats resulted in sharp deterioration. Shortage of fodder and fuel, drinking water scarcity and falling water tables were impacting negatively on the livelihoods and food security of the area. After initial hesitation, the villagers were persuaded to help develop pasture on 180 ha of temple land, with the initiative of allowing free grazing in a limited area. Grasses and trees suited to the area

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<sup>6</sup> This section is based on a communication from Chatterjee, Ardhendu S., DRCSC, West Bengal on the Food Solution Exchange

<sup>7</sup> *ibid*

were introduced and within two rainy seasons, the pasture was established and began yielding profits. The villagers were allowed to cut grass, provided they deposited 50 per cent with the community, which was later sold to other villagers. After a fifteen year period, the average income from the pastures rose to 2500-4000 per ha. In addition, the members were allowed to forage for fodder and fuel on payment of a small fee. Proper pasture management techniques resulted in improved soil and water levels and the once arid, single cropped area began yielding two crops a year. The project was later extended to cover 320 ha across 9 villages in the district. The Government has also decided to develop pastures on the same pattern on 2500 ha of land under the Swarnajayanti Gram Rozgar Yojana (SGRY).

A study of the tribal belt of the southern Aravalis in Rajasthan (Vyas,1995) reveals how the deterioration of the natural resource base in the region has led to a change in the livelihood patterns of the tribal population accompanied by impoverishment and increasing inequities. With the introduction of modern legislation in the area, the common property resources of forests were converted into state property. The rise in economic value of timber and forest products led to large scale felling of trees and a major change in the conservationist role of the forest department to a revenue earning one. The tribal population had to resort to either of two options: to migrate to the nearby plains or to extend cultivation on fragile lands. Those who resorted to the former found low-paying menial jobs in farms, factories and mines, while the latter group brought progressively larger areas of infertile and marginal lands under the plough with disastrous consequences. This was compounded by the growing dependence on livestock to supplement the meagre income from agriculture. While the numbers of livestock have remained steady, the grazing area has significantly declined, thus over burdening the carrying capacity. Thus both groups of tribal population have faced a considerable drop in living standards.

## **Maintaining Biodiversity for Food Security**

Biodiversity is not simply a tool to measure sustainable development; it also affects communities in the poorest regions of the world whose well-being relies on the diversity of nature – plants animals, forests, water. Poor people are extremely dependent on these diverse resources, and are increasingly vulnerable to the loss of biodiversity (FAO 2003). Examples abound from different agro-climatic regions of the country, where the loss of crop diversity in agriculture has led to food insecurity, nutritional loss, loss of livelihoods and enforced migration.

It is a well-known fact that the narrow focus on wheat and rice during the green revolution has virtually eliminated local varieties of foodgrains. The emphasis on chemical fertilizers, irrigation and high yielding varieties, while boosting the overall production of foodgrain in the country, has impacted adversely on the small and marginal farmer, who no longer has access to traditional varieties of seeds and cannot afford the cost of the high priced inputs required to obtain good results from the new ones. The resulting monoculture, has, not only reduced the rich diversity of locally adapted species, but has also adversely affected the nutritive content of local diets. The higher nutritive value of coarse grains has been forsaken in the quest for fine varieties of grain sponsored by the Public Distribution System.

A case in point is the change in cropping pattern in the mountains of the Hindu-Kush Himalayas. Traditional agriculture focussed on mixed cropping, a large variety of crops

being grown and consumed. All this changed when the government introduced its 'Grow More Food' campaign and the public distribution system which limited the number of crops to three or four which could be sold through the PDS. Government help came only if the farmer grew high yielding varieties that required intensive cultivation. Mixed cropping decreased, fertility reduced and the farmers became dependent upon chemical fertilizers supplied by the government. The impact on diet and nutrition have been equally dramatic. Food varieties that contributed to the biological diversity of the region have completely disappeared. The farmer grows only what he can sell or what he gets external support to grow. As a result, households that used to consume over twenty varieties of food items, now consume only five. The food items which have disappeared are those which were environment friendly, resilient, grown to increase soil fertility or grown at a time when the soil was being rested (Nagpal, 1999).

However, growing awareness of the negative impacts of monoculture on the food security and nutritional levels of the rural population have led to attempts at restoring traditional agriculture. Success stories from different parts of the country raise the possibility of improving rural food security through this option. The Beej Bachao Andolan (BBA) began in Jardhargaon Village of Tehri Garhwal in Uttaranchal in an attempt to reverse the problems created by monoculture (Infochange News and Features 2003b). Varieties of seeds were sought for in untouched remote locations, where the old methods of agriculture were still practiced. These practices included 'Baranaja' or twelve grains, an intercropping method where as many as twelve different varieties of cereals and legumes are planted on the same plot of land. The method uses only natural pesticides and the wide range of crops replenishes nitrogen and maintains soil fertility. With a growing collection of traditional seeds (as much as 150 varieties of paddy, for example), the method was reintroduced in the area with visible impacts. Not only is there now, year round supply of food, the risk of crop failure is reduced with the large variety of crops being cultivated, livestock health has improved with the elimination of chemical use and the human population is reaping the benefits of a varied and balanced diet.

### **Self Help Initiatives for Rural Food Security**

While poverty and seasonal constraints serve to keep a large proportion of the rural population in a perpetual state of hunger, even those families who manage to climb out of the hunger trap remain vulnerable to natural hazards and disasters. For families teetering on the edge of survival, the loss of a single harvest or other assets in terms of home or livestock can serve to push them back below the hunger line. The regular occurrence of floods, drought, cyclonic storms and other calamities in one part of the country or another needs immediate redressal, if rural food security is to be ensured. While Government relief measures exist and are put into action at the earliest, the time lapse between need and supply is often inordinately long, and many times, too late. This is particularly so in remote or relatively inaccessible areas or those rendered inaccessible by the monsoons or flood waters, etc. In such cases, the revival of the community grain gola or grain bank could protect against immediate food shortages and long term lapse into penury and persistent hunger.

NGO attempts at reviving grain banks in the hunger-prone district of Rayagada in Orissa have met with great success and enthusiastic community participation (Infochange News and Features 2003c). The NGO Agramee observed that certain villages in the district never

suffered starvation deaths, despite persistent droughts. On enquiry, it was found that these villages had community grain banks, which insured them against hunger. Agramee persuaded a group of 40 families in the small hunger prone village of Ranjaguda to contribute 9 kilos of ragi to set up a grain bank. A remote village surrounded by forested hills, the villagers were illiterate except for three and lived off a single crop grown during the monsoons. For the remainder of the year, they survived on forest produce, the hunger season leading to distress migration or survival on mango kernels and tamarind seeds. With the setting up of the grainbank and the first collection of 6 quintals of grain, the villagers gained confidence and turned to other activities including the construction of a weir which has helped to irrigate 20 acres and allowed double cropping for the first time. The bank has grown from strength to strength and now has a cash savings of Rs. 5000. There is work available for longer periods of the year and no one dies from lack of food. Several such successful grain banks exist in Madhya Pradesh and Orissa.

### **Summing Up**

The foregoing discussion has highlighted four issues, which are often overlooked in policy formulation, yet may impact considerably on the rural food security status – gender, seasonality, common property resources, bio-diversity and self-help initiatives.

That women's empowerment and equality of status is essential for economic development is conceded, yet the fact that the key to family and individual food and nutrition security lies in the woman's hand is yet to be acknowledged. Enabling women through ownership rights, equal wages and education is as essential as providing nutrition supplements and healthcare in the effort to achieve universal food security.

The issue of seasonal scarcities, which in most semi-arid regions of the country extends for the greater part of the year, could more aptly be termed the issue of perpetual food scarcity. It also serves to prevent expectant and nursing mothers and their infants from accessing adequate nutrition when most needed thus perpetuating the vicious cycle of low birth weights, stunting and inadequate mental and physical capacities as adults.

Common property resources, which served as insurance against seasonal hunger for the rural poor are dwindling and with them is also dwindling the already meagre amounts of animal protein, greens vegetables and fresh fruit in the diet of the poor. Government-sponsored food safety nets may replace the loss of foodgrain from traditional structures, but cannot replenish the diversity of the food basket. Exacerbating this loss of diversity is the reducing crop diversification in agriculture with the practice of high-yielding monocultures firmly entrenched. The time has now come to question the necessity of imposing fertilizer and irrigation based crops in regions unsuited to these practices and on small and marginal farmers, who get caught in the debt trap dealing with small outputs versus mounting water, electricity and seed input costs. The subsistence farmer may have more to gain from the limited, but diverse outputs of multiple crops, than from high yielding varieties.

In the final analysis, food security can only become sustainable if it is built on local self-help initiatives, as can be seen from the case studies cited above. It is also evident that once the process has been initiated, it does not stop short at ensuring food security alone, but expands in many directions ultimately changing the entire quality of life in the area. Policy focus on

initiating and nurturing such initiatives with the ultimate objective of making them self sustaining could provide a long term solution to this persistent problem and make for a food secure India.

## References

Agarwal, Bina (2002) Are We Not Peasants Too? Land Rights and Women's Claims in India, Seeds No. 21, 29. [www.popcouncil.org/publications/seeds/seds21.pdf](http://www.popcouncil.org/publications/seeds/seds21.pdf)

Barne, Catherine and Nira Ramachandran (January 2002) Food Grain Bank Project: Report of the PRA conducted in Selected States and Final Recommendations, submitted to the WFP-FAO.

Chadha, G.K. (1992) Non-Farm Sector in India's Rural Economy: Policy, Performance and Growth Prospects, mimeo, CRD, JNU, Delhi.

Chambers, Robert (1995), Poverty and Livelihoods: Whose Reality Counts! IDS Discussion Paper, Institute of Development Studies, University of Sussex, Sussex.

Chambers, Robert, Richard Longhurst and Arnold Pacey (eds.) (1981) Seasonal Dimensions to Rural Poverty, Frances Pinter, London.

Chen, Martha (2000) Perpetual Mourning: Widowhood in Rural India, University of Pennsylvania Press, Philadelphia.

Chopra, Kanchan and S.C. Gulati (2001) Migration, Common Property Resources and Environmental Degradation: Interlinkages in India's Arid and Semi-arid Regions, Sage Publications, New Delhi.

Dyer, David J. and J. Bruce (Ed.) (1998) A Home Divided: Women and Income in the Third World, Stanford University Press, Stanford.

FAO (1996) Focus: Women and Food Security, Women and Population Division. [www.fao.org](http://www.fao.org).

Gupta (1993) Land, Dowry, Labour: Women in the Changing Economy of Midnapur, Social Scientist 21 (9-11):74-90.

IDRC (2004), Gender Inequality and Poverty Eradication: Promoting Household Livelihoods, [http://web.idrc.ca/fr/er-42966-201-1-DO\\_topic.html](http://web.idrc.ca/fr/er-42966-201-1-DO_topic.html)

Infochange News & Features, (July 2003 a), BAIF ropes in farmers to regenerate community pastureland <<http://infochangeindia.org/Agriculture>> .

Infochange News & Features, (July 2003 b), SOS: Save our seeds! <<http://infochangeindia.org/Agriculture>> .

Infochange News & Features, (July 2003 c), No starvation deaths in villages with grain banks <<http://infochangeindia.org/Agriculture>> .

Kumar, S.K. (1978) Role of the Household Economy in Child Nutrition at Low Income, Occasional Paper No. 95, Department of Agricultural Economics, Cornell University.

Lingamurthy, Sita V.N. (2002) Gender Inequalities in the Wages of Agricultural Labourers - A Micro Study, The Asian Economic Review, Vol. 444, No. 2, August.

Mukerjee, A. (2000) Perspectives of Rural Women on Food Security from a Tribal Village (in West Bengal) 1993 to 1998 (A longitudinal study through PRA), in S. Mahendra Dev, K.P. Kannan and Nira Ramachandran, Towards a Food Secure India, Institute for Human Development, Centre for Economic and Social Studies.

Mukerjee, Neela, Meera Jayaswal, Sumita Roy and Madhumita Parihari, Forest as Safety Net: Listening to the Voices of the Poor from 15 Forest Villages of India, <<http://www.eldis.org/fulltext/ForestryAsSafety%20NetDevelopment%20Tracks.pdf>>

Nagpal, S. (1999) Food Security in the Hindukush Himalayas, *Economic and Political Weekly*, Sept. 18-24, pp.2717-2720.

Raina, R.S. (2000) Countering Seasonal Rural Problems: Integrated Participatory Information System, *Economic and Political Weekly*, Sept. 9, pp.3335-3342.

Ramachandran, Nira (2005) Women and Food Security in South Asia: Current Issues and Emerging Concerns, Paper presented at the Project Meeting on Food Security: New Challenges and New Opportunities, UNU-WIDER, Helsinki, 12-15 October 2005.

Ramachandran Nira (2004) Seasonal Hunger: Implications for Food and Nutritional Security in Swaminathan, M.S. and Pedro Medrano (ed) *Towards Hunger Free India: From Vision to Action*, East West Books (Madras) Pvt. Ltd.

Ramachandran, Nira (2003 a) Learning from Micro Level Experiences in Food Security: The Case of Mountain Villages in Uttaranchal in S. Mahendra Dev, K.P. Kannan and Nira Ramachandran, *Towards a Food Secure India*, Institute for Human Development, Centre for Economic and Social Studies.

Ramachandran, Nira (2003 b) The Paradox of Gender Food Security, Paper presented at the Gender Poverty Summit, Women's Political Watch and National Council for Applied Economic Research, New Delhi, 9-11 Nov.

Ramachandran Nira (2003 c) Why Women Must Be a Central Concern in Food and Nutrition Policy, *Indian Social Science Review* (submitted for publication).

Ramachandran Nira (2002) Hunger, Illiteracy and Child Deprivation in a Tribal Region: A Study of Jharkhand in Ramachandran, Nira and Lionel Massun (ed.) *Coming to Grips with Rural Child Work: A Food Security Approach*, Institute of Human Development, New Dehi.

Ramachandran, N. (2000) Review and Field - Testing of Guidelines for Formulating and Implementing National Plans of Action for Nutrition, Prepared for the Nutrition Planning Assessment and Evaluation Service, Food and Nutrition Division, FAO, Rome.

Rengem, Sarojini (undated) Asia Pacific Division of the Pesticide Action Network.

Smith Lisa, C. et al (2003) The Importance of Women's Status for Child Nutrition in Developing Countries, IFPRI Research Report 13.

Spitz, Pierre (2002) Bringing Rural Child Workers to School: Seasonal and Cultural Constraints in Ramachandran, Nira and Lionel Massun (ed.), *Coming to Grips with Rural Child Work: A Food Security Approach*, Institute of Human Development, New Dehi.

Vyas, V.S. (1995) Agrarian Structure and Sustainable Livelihoods of Tribal People in Indian Forestry in Ahmed, I. and J.A. Doeleman (1995) *Beyond Rio: the environmental Crisis and Sustainable Livelihoods in the Third World*, ILO Study Series, ILO.

WFP-MSSRF, 2001, *Food Insecurity Atlas of Rural India*, World Food Programme and M.S. Swaminathan Research Foundation.

