Micro solutions for Macro Crisis

Sustaining Small and Marginal Farmers in Andhra Pradesh

June, 2008

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Centre for Sustainable Agriculture
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Introduction

India lives in villages, being an agrarian society, nearly three-fourths of its population lives in rural areas. Agriculture is the main source of livelihood for two-thirds of the population, and an important source of raw materials for industry. The profound changes in Indian agriculture since the 1960s have had cascading effects on India's agrarian economy and society. These changes may be understood in two broad phases, namely, as the effects of the 'Green Revolution' technologies, and of the industry-market-Multi National Companies-reforms driven agriculture and technologies during the post green revolution period. Related to both were the agrarian reforms, which gradually loosened the existing and emergent farming classes from the traditional safety-nets at the community level and forced them to be under the newly institutionalised bureaucratised farm services away from the gaze of the village locals. The worst effected in the process are the small and marginal farmers who constitute 70 % of the farming community.

Small Holders in Indian Agriculture

As per the data from the Census Division of the Agricultural ministry of the Government of India the operational holdings below 4.0 hectares (ha) constitute 93.6 per cent of the operational holdings in 2000-01 covering 62.96 per cent of the operational area, or about 100.65 million ha in absolute terms (Table-1).

Table-1. Distribution of Operational Holdings in India

(No. in '000s - Area '000 hectares)

***Category of holding**	**Number of Operational holdings**			**Area Operated**			**Average size 2000-01**
	1990-91	**95-96**	**2000-01**	**90-91**	**95-96**	**2000-01**	
1.Marginal (less than 1ha)	63389 (59.4)	71179 (61.6)	76122 (63.0)	24894 (15.0)	28121 (17.2)	30088 (18.82)	0.40 ha
2.Small (1 to 2 ha)	20092 (18.8)	21643 (18.7)	22814 (18.9)	28827 (17.4)	30722 (18.8)	32260 (20.18)	1.41 ha
3.Semi-medium (2 to 4 ha)	13923 (13.1)	14261 (12.3)	14087 (11.7)	38375 (23.2)	38953 (23.8)	38305 (23.96)	2.72 ha
Sub total	**97404 (91.3)**	**107083 (92.6)**	**113023 (93.6)**	**92096 (55.6)**	**97796 (59.8)**	**100653 (62.96)**	
4.Medium	7580	7092	6568	44752	41398	38125	5.80 ha

(4 to 10 ha)	(7.1)	(6.1)	(5.4)	(27.1)	(25.3)	(23.84)	
5.Large (10 ha and above)	1654 (1.6)	1404 (1.2)	1230 (1.02)	28669 (17.3)	24163 (14.8)	21124 (13.21)	17.18 ha
All holdings	**106638**	**115579**	**120822**	**165517**	**163357**	**159903**	**1.32 ha**

Source: Agriculture Census Division; Ministry of Agriculture, Government of India, New Delhi.

Note: Figures in parentheses show percentage of the column total.

* Classification as per the Government of India's criterion

The average of the holding of the marginal farmers (with the holding size below 1 ha) is 0.40 while that of the small farmers (holding size of 1 to 2 ha) is 1.41 ha. In fact, the total area operated in the country, 15,99,03,000 ha, is distributed over 12,08,22,000 holdings. This means the average size of the holding as a whole is 1.32 ha.

It is to be noted here that the farmers with holdings slightly above the small and marginal farmers' category do not qualify for the Government support are not free from distress; many of those who committed suicide in Vidharbha and Andhra Pradesh were holding land in the range of 2 to 4 hectares. This group of farmers is defined by the Government of India (Agricultural Ministry) to be semi-medium farmers. The holdings of the semi medium are 11.7 per cent in terms of numbers and 23.96 per cent when the area of operation is taken into account.

Small holders in Andhra Pradesh

The situation in Andhra Pradesh does not present any marked difference compared to the all India picture. In 2005-06 it is observed that 95.48 of the operational holdings in the State are held by the farmers below 4.0 hectares (Table-2). They operate in the total area of 10.85 million ha. This constitutes 74.90 per cent of the cultivated area. The number of farmers in small and marginal farmers' category is under gradual increase and the average land holding size is reducing.

Table-2. Distribution of operational holdings in Andhra Pradesh, 1995-2006

Category	**No of holdings (in lakhs)**			**Area (lakh ha)**			**Average land holding (ha)**		
	1995-96	**2000-01**	**2005-06**	**1995-96**	**2000-01**	**2005-6**	**1995-96**	**2000-01**	**2005-06**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Marginal (< 1ha)	63 (59.42)	70.23 (60.91)	74.17 (61.59)	29.04 (20.20)	31.04 (21.56)	32.87 (22.69)	0.46	0.44	0.44
Small (1 to 2 ha)	22.62 (21.33)	25.18 (21.84)	26.39 (21.91)	32.29 (22.47)	35.65 (24.75)	37.30 (25.75)	1.43	1.42	1.41
Semi medium (2 to 4 ha)	13.95 (13.16)	14.23 (12.34)	14.44 (11.99)	37.36 (25.99)	37.95 (26.36)	38.35 (26.47)	2.68	2.67	2.66
Subtotal	**99.57 (93.91)**	**109.64 (95.08)**	**115.00 (95.48)**	**98.69 (68.67)**	**104.64 (72.67)**	**108.52 (74.90)**			
Medium (4 to 10 ha)	5.63 (5.31)	5.01 (4.34)	4.87 (4.05)	32.31 (22.48)	28.55 (19.83)	27.59 (19.04)	5.74	5.7	5.66
Large (10 ha and above)	0.83 (0.78)	0.66 (0.57)	0.56 (0.47)	12.73 (8.86)	10.80 (7.5)	8.78 (6.06)	15.34	16.36	15.66
Total	**106.03 (100)**	**115.31 (100)**	**120.44 (100)**	**143.73 (100)**	**143.99 (100)**	**144.89 (100)**	**1.36**	**1.25**	**1.2**

Source: Directorate of Economics and statistics (figures in parentheses are percentage of total)

Smallholders have their own identifiable disadvantages and vulnerabilities in terms of their socio-economic background in the Indian context as well as access to agricultural support systems and services from the State.

There is also a disadvantage they face from dominant discourse which portrays smallholder farming as inefficient, unviable and unproductive. Policy discourse has predominantly favoured "land consolidation" (understood both as re-arranging all small holdings in different locations of one farmer into one larger contiguous plot, in negotiation with other farmers as well as removing small and marginal holdings in an operational/legal context and working with larger holdings) as an answer to productivity problems and has advocated free(r) play of market forces which could favour larger holdings and thereby allowing smallholders to exit farming. These market forces could be related to agricultural credit, agricultural technologies and specific inputs used as well as to marketing of produce.

In the current agrarian crisis which is reflected in slowed down agricultural growth rates at the macro-level, lowered contribution of agriculture to the national and state GDPs, decreasing productivity in several regions and crops, large scale farmers' suicides, deepening indebtedness, decreasing factor productivity, displacement and exodus from farming, negative net returns from farming, environmental health crisis in some locations and unfavourable markets for many producers/products, questionable national food security situation and

increasing agricultural imports into the country, there is a need to analyse and understand the extra burdens faced by smallholders who constitute a majority of Indian farmers, in this situation.

At another level, Sustainable Agriculture approaches are now acknowledged for the wide set of benefits that accrue to the practitioners and their farm ecology as well as consumers of agricultural products. However, the promotion of sustainable agriculture on a large scale is often confronted with some fundamental questions that skeptics would like to ask about its potential as well as its practical limitations. Practitioners have sound responses for these questions. Sustainable agriculture is probably being practised in almost all districts of Andhra Pradesh in one form or the other, with at least some of the components being addressed in these efforts (could be sustainable soil nutrient management, or could be pest management; sometimes, it could be water management while at other times, it could be certified organic farming; while majority of the efforts focus on production technologies, there could be experiences on alternative credit or marketing approaches in an ecological farming context…), in addition to pockets of agriculture which have never stepped out of their traditional, eco-friendly practices. While larger goal of all these initiatives is to make farming profitable, they differ vastly in their focus and approaches. Some of these initiatives have remained restricted to small pockets while some could be scaled to a larger scale. Today, in the context of the serious agrarian crisis, there is a need to look at the experiences well documented and undocumented and synthesize the learning to develop a perspective towards sustaining small farmer farming.

It is in this context, keeping the situation of smallholders in Andhra Pradesh in mind (their profile, their disadvantages and shortcomings as documented by earlier studies) and analyzing the additional burdens and vulnerabilities that they face in the current agrarian distress, the current study was initiated to analyse the possibilities that ecological farming offers to small holders and the viability of their farming and improvement in their livelihoods.

Study objectives

1. To document and analyse the variety of experiences in Andhra Pradesh related to sustainable/ecological farming and the possibilities offered by such experiences towards sustaining smallholder farming and smallholder livelihoods.

2. To do so particularly vis-à-vis the general situation of smallholders in AP today along specific parameters.

Methodology

The following specific themes were studied by different experts, related to smallholder farming in AP

1. Macro analysis of Agrarian situation especially with reference to small farmer agriculture
   Dr Purendra Prasad and Dr Vamsi Vakulabaranam, Department of Economics, University of Hyderabad.
2. Agricultural credit, insurance, extension and social security coverage as public support systems with reference to smallholder farmers
   Dr P S M Rao, Expert on Agriculture Credit and Rural Banking
3. Agricultural marketing issues with specific reference to smallholders
   Mr G. V. Krishna Gopal, Access Livelihoods consultants
4. Sustainable agricultural initiatives and impacts on small farmers
   Ms. Salomi, consultant and Afsar Jahan, Centre for Sustainable Agriculture

The study is based on

- literature review and analysis based on the same, for each theme above to cover the general situation as well as the possibilities being presented by ecological farming
- field visits and primary data collection, wherever needed, especially to document lessons from successful ecological farming experiences

The report presents an analysis of the current agrarian crisis and emerging alternative experiences in sustaining small holder livelihoods.

Chapter 2

The Macro Crisis

Andhra Pradesh has dubious distinction of being the home of 'Farmers' Suicides'. Among the 32 districts identified by Planning Commission under serious agrarian distress 16 are in Andhra Pradesh. The first reports of farmers suicides in country appeared in 1987-98 from Prakasham and Guntur districts where more than 100 farmers died after the cotton crop failed due to heavy incidence of pests, especially whitefly. Later, many farmers from these districts have migrated to Telangana region where lands were available at lower prices for purchase and lease. The high input cotton cultivation and the industry followed. The crisis mounted and during 1997-98, hundreds of cases of suicides were reported from the Warangal and other cotton growing regions (Ramanjaneyulu *et.al* 1998). During 2004-05, the year when the elections were fought and new govt. came to power more than 2000 farmers ended their lives in despair. This time the incidents were not limited to cotton crop or dry land regions but spread across districts and farmers growing all kinds of crops.

Farmers' Suicides in Andhra Pradesh district/year wise

	District	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
1	Adilabad	17	31	31	36	25	37	101	95	119	35	527
2	Ananthapur	1	9	21	35	61	72	80	48	59	7	393
3	Chittor	0	1	2	3	1	4	39	20	22	1	93
4	East Godavari	0	1	0	0	1	0	4	2	3	1	12
5	Guntur	5	11	1	4	5	1	73	24	21	15	160
6	Kadapa	0	0	0	0	1	5	21	18	9	11	65
7	Karimnagar	12	15	15	36	37	36	105	58	11	0	325
8	Khammam	1	7	0	9	4	7	39	23	22	2	114
9	Krishna	1	0	2	0	1	0	24	13	2	0	43
10	Kurnool	13	6	3	6	11	7	75	62	60	18	259
11	Mahaboobnagar	4	15	20	9	22	17	115	51	23	0	276
12	Medak	2	1	5	3	11	25	108	35	13	9	212
13	Nalgonda	10	9	8	15	19	11	90	60	35	0	257
14	Nellore	0	0	0	1	0	2	13	6	1	0	23
15	Nizamabad	1	3	6	8	25	9	71	25	9	1	158
16	Prakasham	0	4	4	1	1	0	44	9	8	2	73
17	Rangareddy	0	4	3	1	6	4	66	42	13	1	134
18	Srikakulam	0	0	0	1	0	0	4	1	0	0	6

19	Vishakapatnam	0	0	0	1	0	2	25	5	2	0	35
20	Vizianagaram	0	0	0	0	0	0	1	0	0	0	1
21	West Godavari	0	0	0	0	0	0	36	8	10	2	56
22	Warangal	46	78	76	96	98	76	127	27	1	11	636
	Total	**113**	**195**	**197**	**265**	**329**	**315**	**1261**	**632**	**443**	**116**	**3858**

Source: Revenue Department, Government of AP., and News paper reports, August, 2007.

Understanding Crisis

Agriculture is a state subject, as per the constitution. But major decisions are taken by the Union Government. Similarly, State specific data is not available on some specific issues. In such situations central policies and reports/studies from other regions of the country are used. However, where ever possible secondary data/studies and primary data are collected for the state of Andhra Pradesh and presented.

Several studies have pointed out that Indian agriculture has witnessed retrogression since 1990s, especially after 1994-95 (e.g. Dev, 2004; Reddy, D.N., 2006; Vaidyanathan, 2006). This claim is made along two axes. First, overall growth rate in agriculture after 1990 has declined relative to 1980s (Economic Survey of India, 2007-08). Second, small cultivators have witnessed either a slowdown in their welfare enhancement or have faced significant decline in the support provided governments. In some regions of the country such as Andhra Pradesh, Karnataka, Maharashtra, Kerala, and Punjab, there has even been an unprecedented increase in the farmer suicide rate, indicating, among other things, heightened agrarian (economic) distress for the poorer groups.[1] The crisis can be explained based on two important causal structures. First, the **Ecological Crisis** due to green revolution (and lagged effects of it) – the high input intensive model of agriculture which resulted in soil degradation, groundwater exploitation, pollution , increasing costs of cultivation and bringing in diminishing returns over time. Second, the **Economic Crisis** from 1990s, the introduction of the economic reforms package in India has tended to decrease agricultural growth while worsening the distributional shares of the poorer farming groups.

I. Ecological Crisis

[1] On the issue of farmer suicides, see the special issue of Economic and Political Weekly, EPW (2006). Misra (2006) in this issue, presents suicide mortality rates for various states.

Impacts of Green Revolution model

Green revolution was presented in the 1960s as a solution to the pressing problem of food shortages and near-droughts. It allowed policymakers to depart from earlier imperatives to institute large-scale redistributive land reforms and cooperative structures in rural areas. It led to the achievement of national food-security (as defined by the policy makers) by the late 1970s, while also unleashing a set of broad changes. It led to a gradual diffusion of green revolution technologies across the country ('lagged' green revolution), especially into the semi-arid regions that comprise more than 40% of the total land cultivated in the country (Harriss-White and Janakarajan, 2004). These technologies spread into non-food cultivation too, and into the production practices of small and marginal farmers, having a broader impact than was initially envisaged (Vakulabharanam, 2004). By the 1990s, most of the farming households had been brought into the orbit of markets (for output produce and input use). The growing integration of agriculture into the market economy also means growing vulnerability of agriculture sector. Consequently, a paradoxical situation developed where India has achieved self-sufficiency of food (FCI godowns having 60 million or six crore tonnes) while millions remained with hunger and malnutrition. It is also observed that there is a gradual slowdown in the land productivity of green revolution over the last four decades

Green Revolution Paradigm

- Nation's self sufficiency as goal
- Public Sector playing major role in research, extension and input supply
- State Seed Corporations and
- Irrigation playing major role
- Technology transfer public to private
- Free sharing of technology
- Input intensive-chemicals and high yielding varieties
- Controlled markets-Quantitative Restrictions and high import duties
- Minimum Support Prices, Procurement
- Public Distribution System

Regional variations on impacts: Green Revolution had a different impact on different parts of the country. Several studies indicated that present day agrarian distress is a result of the green revolution itself and increase in agricultural productivity has actually become a source of disenchantment. A large number of suicides are reported virtually from all the Green Revolution pockets of India viz., Karnataka, Andhra Pradesh, Maharashtra and even Punjab and Haryana from the year 1997 onwards. From 1990s onwards, Green revolution contributed towards increased commercialization in terms of the use of extensive external inputs and practices in agriculture. Those with larger holdings of land and with access to market and capital are now able to practice

forms of agriculture, stipulated by agricultural extension agents or more increasingly by agri-business and credit agents. The fact that the new knowledge gleaned from market agencies is either not suitable to the local conditions or the new knowledge has been inadequately understood which has often led to disastrous consequences. A general breakdown of the earlier ecological balance, disintegration of the `community' and kinship support system in most parts of rural India and rise of some kind of individualistic orientation have also been identified as crucial factors leading to agrarian crisis (Iyer and Manick, 2000; Ahalwat, 2003; Vasavi, 1999).

The major crisis reflected in terms of farmers suicides (Table) is located in areas growing commercial crops like cotton, chillies and practice high external input agriculture (Warangal, Adilabad, Karimnagar, Kunrool, Guntur, Nizamabad and Khammam) and areas predominantly rainfed and resource poor (Ananthpur, Mahaboobnagar, Nalgonda and Medak districts).

Impact on small farmers: In its initial conception, the green revolution technology was considered to be scale-neutral. It was felt that as the technology was highly divisible, it could be used by all farmers irrespective of the size of their landholdings. Thus a small farmer could derive as much benefit from the technology as a large farmer. However, scholars such as John Harriss (1986) have argued that the technology may have been considered scale-neutral, it was certainly not `resource-neutral' i.e., the benefits that a farmer could derive from the green revolution depended upon the resources one had at his/her disposal. It also entailed a greater risk for the small farmers. The farmers who had greater access to resources were in a better position to cope with this risk. The resources that he speaks of are not only cash but also others, for example fertile soils, access to the state bureaucracy etc. The small and marginal farmers and the poor in the rural areas are the worst affected by the environmental degradation.

a. **Ecological problems:** There have been several other consequences of Green Revolution technology that have been pointed out particularly its role in depleting the ground water and creating environmental crisis. For example, HVVs greatly reduced soil fertility, to the point where it would become very difficult to replenish the nutrient content of the soil. This was a problem that resulted from the long-term use of HYVs. Another problem arose from the HYVs themselves was that they had a very low resistance to pests and disease. The time taken, on an average, for a strain to succumb to the above was approximately 5 to 7 years; 10 years was about the maximum lifespan of any new strain (Shiva Vandana, 1989).

Several studies have elaborated this point saying that the successful green revolution belts are now experiencing problems of salination, low productivity, and loss of crop heterogeneity. As a programme and a package, green revolution has reinforced the caste-based allocation of resources, which led to the loss of biodiversity, and to the dependency of agriculturists on external inputs such as that of fertilizers, pesticides, technology and capital. More specifically, the green revolution has privileged productivity for individual income growth over that of sustenance of resources. (Vasavi, 2005).

b. **Pests, Pesticides and the distress:** The problems of pests and pesticides in farming are well documented. Among the production inputs in agriculture chemicals especially pesticides occupy major share of costs in crops like cotton, chillies, paddy etc. The pest resistance and resurgence due to abuse of pesticides propelled mainly by a lack of awareness, regulation of pesticide marketing extended on credit with high interests by "all-in-one dealers" (money lenders cum dealers of seeds/fertilizers/pesticides) and lack of market support ended up pushing hapless farmers into a vicious debt trap from which suicides were sought as a way out. The same pesticides which were promoted to solve the farmers' problems were consumed by these farmers to kill themselves.

   Pesticide poisoning is a significant problem in India. Pesticide poisoning to human beings through exposure to the toxic fumes while spraying is a lesser known and lesser acknowledged aspect of pesticide abuse in places like Warangal in Andhra Pradesh (Kavitha, 2005 and Francesca, 2005), Tanjavur in Tamil Nadu (Chitra *et.al.,* 2006) or Batinda in Punjab (Mathur, 2005). There is no systematic documentation of such cases during hospitalization, often they are combined with the ingestion cases. The numbers of deaths that happen prior to hospitalization and not reported are substantially high. The socio economic and environmental conditions in which the agriculture workers and small and marginal farmers work do not permit them to adopt the so called 'Safe use practices' often promoted by industry or agriculture scientists (Kavitha 2005).

   There are also several reports on the chronic effects of the chemical pesticides on the farmers (Mathur e*t. al* 2005), growth and development of children (Kavitha, 2005, Kropp 2005) and women's reproductive health.

c. **Decline of "coarse cereals"**: These are grown primarily in rain-fed areas of the south and central parts of the country. Apart from decline in area under cultivation of these cereals which are nutritionally rich, their production and yield have not only stagnated but have also declined due to lack of support. The increasing stress on farm incomes for meeting non-food expenditure has partly arisen because of increased expenditure on health, education and other needs, with the reduced access to the already poor quality of public services in these sectors making it necessary for people to seek private sources (Krishnaraj M, 2006). The shifts in cropping patterns towards water guzzling crops paddy and sweet orange plantations in rainfed areas are one of the major consequences of decline in 'coarse cereals'. The populist schemes like 'Two rupees a kg rice' by the earlier Telugu Desam government and the present Congress government have resulted in changes in food habits and decline in areas under coarse cereals.

d. **Soil salination:** The recent Environment Atlas (http://www.soeatlas.org/) made by the Union Ministry of Environment and Forests paints a bleak ecological picture of Andhra Pradesh. The state has around 203 lakh ha of land which is saline or alkaline, and therefore unfit for cultivation. This is three times the total land under agriculture in the State. The extent of saline and alkaline tracts in irrigated areas is about 5,30,000 hectares. Land which is saline or alkaline is unfit for growing plants and greenery can thrive only in neutral soil. In soils with extreme levels of salinity or alkalinity, even grass does not grow. According to the atlas, laterisation and inundation have also been noticed in the state. Of the 18.52 million hectares in 14 districts surveyed, 19.6 percent suffers from soil degradation of one type or the other. The atlas blames the increasing salinity and alkalinity on the indiscriminate use of chemical pesticides and fertilisers. "Constant and unabashed use of chemical fertilisers has left the soil in a totally bad shape," says the report. "Soil degradation continues as natural way of soil enrichment has been pushed aside." While agriculture has grown slowly both spatially and by way of yield per hectare, per hectare consumption of chemical fertilisers (mainly N-P-K) has gone up for major crops by 100 per cent.
The area under Nagarjunasagar right bank canal is the worst hit with around 6.92 lakh hectares affected by salinity and 1.45 lakh hectares hit by alkalinity. Next is the NS left bank canal with 2.65 lakh hectares of soils being declared saline and 8,000 alkaline. Under Tungabhadra dam 1.47 lakh hectares were found to be saline. Saline soils have also been found in

large areas in the coastal districts and saline-alkaline soils have been noticed in Anantapur and Kurnool districts of Rayalaseema and many parts of Telangana districts. Over 1,14,000 hectares of land is affected by waterlogging and salinity in Guntur and Prakasam districts. More than 60,000 hectares are alkaline in Anantapur, Kurnool, Medak, Nalgonda and Mahbubnagar.

e. **Seed Crisis:** Andhra Pradesh has the distinction of being the "Seed Capital" of India (supplying 60 to 97 % of seed) when it comes to many crops, especially when it comes to hybrid seeds of cotton, sorghum, maize, peral millet, sunflower, rice and forage sorghum. In addition, seeds of varieties of rice, pulses, oilseeds etc., are also produced in the state. AP's seed production consists largely of seed produced by private companies, to be supplied to all parts of the country in addition to markets in Andhra Pradesh. The government sees 'Seed Replacement' as one of the important criteria of modernisation of agriculture and AP has one of the highest seed replacement ratios. Farmers always got habituated to depend on the markets for seed. Public sector role (State Seed Corporation and Agricultural University) in supplying seed is gradually diminishing. In crops like cotton public sector share is almost zero. The state government supplies seed of crops like groundnut, maize etc on subsidy to farmers. Every year the seed distribution witness stampedes, police firing and even deaths in Ananthpur district which has large area under Groundnut.

   The number of cases of spurious and sub-standard seeds being sold by unscrupulous elements is increasing year by year and there are no adequate mechanisms to either compensate the farmers who have incurred losses, or to punish the culprits or prevent them from re-grouping and cheating farmers again, in the form of another crop or variety (Kavitha, 2005). Earlier government tried to initiate a system of Memorandum of Understanding with each seed company to be accountable on the quality of the seed. This was repealed by the present government which initiated a new Seed bill. But the bill was not approved by the centre.

   The seed situation further worsened with the introduction of Genetically Modified Bt cotton. The seed prices went up to Rs. 1800/packet of 450 g (regular hybrids costs around Rs. 450/packet of 450 g) with a royalty of Rs. 1200/- on gene technology. AP Government moved a petition in the Monopoly and Restrictive Trade Practices Commission (MRTP) request to cancel the agreement between the seed companies and the Monsanto Mahyco Biotech (MMB) which owns the gene technology. AP government restricted the seed price to Rs. 750/packet of 450 g using powers it had in giving trade license under the Seeds Control Order, 1983, under the Essential Commodities Act, 1955. However, the centre amended the Essential Commodities Act, 1955 later and removed cotton seed from the list of essential commodities taking away the right of the state government to regulate the cotton seed market.

f. **Water:** The most important factor in green revolution was the constraint arising from the availability of water and investible resources. Both these constraints are interlinked. Assured water means irrigation facilities, implying investible resources, which are available only to a small section of rich farmers. As the green revolution technology was designed for use in irrigated areas, not all regions could actually make use of it. This has created large inter-regional disparities, which confined the benefits largely to the rich farmer category (Rudra Ashok, 1982). Depletion of groundwater and failure of tubewells are major reasons behind the farmers suicides in drylands belts like Ananthpur, Nalgonda districts etc. Depletion of groundwater affects the availability of drinking water for people and livestock. Coupled with lack of fodder had led to decline in livestock population. The groundwater and surface water is also contaminated with chemical pollutants like pesticides, fertilizers and industrial wastes increasing the health risks. The water from deeper tube wells is showing increased quantities of heavy metals

g. **Common Property Resources:** Similarly, a few scholars pointed out the issues related to common property resources (CPRs) in rural India and how their depletion has been affecting the rural poor. The Poor in rural India derived part of their livelihood from CPRs. However, with the Green Revolution and other changes in rural economy, these resources had been shrinking making life more difficult for the poor and the marginal groups (Jodha, 1995; Beck, 1994; 2000).

h. Increasing Costs of Cultivation: Another major problem with the high external input based agriculture is the increasing costs of cultivation. The seed prices, fertilizer prices and pesticide prices have increased by more than 400 % in the last ten years while the prices of the agricultural commodities remained almost stagnant or reduced due to cheaper imports. This led to decreased net returns to the farmers.

Post Green Revolution Agriculture: In the first green revolution, the production and distribution of high yielding seed varieties was carried essentially through public sector institutions where as in the second green revolution phase, it is the private sector which is playing a larger role. The second phase of green revolution witnessed a policy effort to increase the production of various other food and non-food crops such as oilseeds, pulses, cotton, chillies, vegetables etc. Technological advances in agricultural biotechnology have thus far remained

largely under the purview of the private sector giving rise to the questions related to the role of `state' and the space for public sector in agricultural R& D. The failure to expand public sector to meet the growing demand for seeds of high-value and low-volume commercial crops created incentives for private sector to supply seeds. The new structure of seed market has evolved with multinationals and Indian subsidiaries at the top and medium and smaller companies in the middle and the bottom.

The second green revolution agricultural production scenario seems to pose much more severe challenges in terms of food security than during the first phase of green revolution. The new seed regime marks a new phase of commercialization of Indian agriculture. Though the seed markets provided price competitiveness, the quality failures have featured prominently on the flip side. The spuriousness and inferior quality in seeds hit the farmers, incidentally in the difficult times of larger agrarian crisis that is characterized by rising costs of production, declining yields and irrigations sources and falling terms of trade. The quality failures in seeds in several instances have added to looming crisis in agriculture. It even became the cause for suicides that took place continuously in states like Andhra Pradesh (Revathi 2005). Also new seed regime has created more control over the seed sector and thereby over the food and agricultural security of the nation.

The increasing integration of Indian agriculture into global market economy through green revolution has far reaching implications for the farming communities and the rural social life. Further the small farmers have been largely drawn into commercial agriculture which induces high risk at every stage of farm production which has lot more serious consequences in future.

Post Green Revolution Agriculture Paradigm

- Proprietary technologies
  - GM intensive
  - Monoculture-monopoly
  - Decreasing role of public research and extension
  - Agri-clinics
- Realignment of links in the trade
- Centralization of procurement-Squeezing of supplier lists
- Free markets: Shift from spot markets to specialized wholesalers to guarantee quality and quantity leading to new intermediaries and logistics
- Contract farming-Preference for limited transactions
- Rise of private standards-Quality, safety not common for internal trade
- Long distance trade
- Retail chains

Genetic Engineering and Small farmer agriculture: Biotechnology is a technology that has been shaped by a narrow range of private interests – interests that are incompatible with the demands of an ecologically sound and socially just agriculture (Chaturvedi S,

2002:). Grave risks for human health in the use of genetically modified (GM) products have been pointed out as major problems, for instance, recent studies indicated adverse impact of Bt cotton on human health from Madhya Pradesh and on livestock from Andhra Pradesh (Kuruganti K 2006; Ramanjaneyulu and Kuruganti, 2006). By patenting transferred genes and the associated technology, the biotechnology companies can exert control over crops at every stage of production and sale. It is argued that this whole process will reduce the farmers more like that of subcontracted agents in agriculture (Bhargava, 2003). Another apprehension within the new patent regime is that it may foreclose the entry of public sector in this domain. The private participation in seed companies is justified on the ground that it acts as a remedy for the `government failure' in public sector production in terms of its inability to supply the volume as well as quality, for the crops of the current demand. However, spurious and dangerous seeds, manufactured and distributed by the private seed companies has not been as uncommon.

In the analysis of change that took place due to green revolution, it has been argued that greatest beneficiaries of these changes were the rich farmers, who were able to consolidate their economic and political position in rural India. Middle peasants must have participated, to a degree in any advancement, but poor peasants, landless labourers, and village artisans & craftsmen gained very little either from the first or second green revolution. It has also been pointed out that green revolution in fact lead to increased differentiation among the peasantry, heightened disparities between the irrigated and unirrigated regions, marginalization of the small farmers, loss of crop heterogeneity, gender disparities, class and caste conflicts etc, resulting in the triple crisis - economic, ecological and social crisis.

Deleted:

II. The Economic Crisis

The economic crisis largely due to agriculture becoming unremunerative due to a combination of factors like increased costs of cultivation, stagnant prices, yield plateaus, cheaper imports etc. The with drawl of state from providing various support systems like extension and subsidies in agriculture, safety nets in terms of health and education, and various other policy changes initiated in the name of economic liberalization had increased the crisis.

- **Feminisation of small farmer agriculture:** Several scholars have pointed to the fact that the process of change in labour relations has an interesting gender dimension. While men were leaving attached labour or in some cases

even agricultural employment, women were forced to step in to fulfill the space vacated by them. In other words, the employer-farmers allowed male tied labourers to leave more easily if they substituted their female kin, usually their wives, to work on land (Kapadia, 1997, 1999). This mobility of male labourer to casual or non-farm employment has not only led to what has been described as `feminization of agriculture labour process' but also to some kind of `neo-bondage' of women labour (Kapadia and Lerche, 1999; da Corta and Venkateshwarlu, 1999). In another study of Andhra Pradesh, Priti Ramamurthy observed that though availability of employment for women had gone up after the introduction of canal irrigation and new seeds, the women she interviewed did not think that their overall economic or social situation had improved significantly. While the women had to work for longer hours and more days of the year, there was no change in the overall value of work they did. It was still defined as `light work' by their men (Ramamurthy, 1994). In Anantapur district of Andhra Pradesh, 45 per cent of farm suicides in 2001-02 were women farmers. Many of the households in Anantapur rural areas are women-headed since the men have migrated (Sainath, 2007).

- **Increasing Tenancy:** the inadequate implementation of the land reforms and changes in the rural economy has led to a situation where there is an increasing no. of tenant farmers. The Bankers' committee estimations show that there are more than 25 lakh tenant farmers. All these tenancy are based on oral agreements. Government of AP has brought in a AP Tenancy (Andhra area) Act in 1956 which was amended in 1974 and came into force from 1980. As per the act,

    - The government has to register all the tenant farmers. Till now this is not implemented. As a result the tenant farmers are not elgible for any government support in the form of credit, subsidies, insurance or crop compensations in case of failure.
    - the government should appoint a special officer who settles the disputes with respect to tenancy
    - The lease should be 33 % in case of irrigated and 24 % in case of rainfed of the total output. The tenant farmer has to bear the costs of cultivation and land lord should bear the taxes. The agreement can be in the form of cash or kind. But in practice the tenancy costs are very high. In West Godavari district where paddy is predominantly grown, the least amounts to 29-34 bags per acre per season. In Krishna district it ranges from 16-25 bags/acre. In rainfed conditions it ranges from 10-14 thousand and for

Beetle nut and sugarcane it ranges from 20-25 thousand rupees (Mallareddy, 2008)

- There is an increasing tenancy farmers and more in green revolution belts (Table).

Table: Tenant farming in various districts of Andhra Pradesh

District	Mandal	Village	Total area (acres)	Land under tenancy (acres)	% age
West Godavari	G. Undi	mahadevapatnam	900	630	70
	Endi	Chilkur	1800	1400	78
East Godavari		Katheram	2500	1750	70
		Torredu	5200	3640	70
Karimnagar	Jagityal	Gullapet	1450	310	21
	Savangpur		1800	150	8
Krishna		kankipadu	1770	800	45
Kurnool	Hospod bandi	yalloor	370	130	35
	atmakur	kakanoor	1000	350	35
Nizamabad	Varmi	rudroor	1000	300	30

Source: Compiled from newspaper reports

- **Increasing migrations:** There is an increased migration from the state. Migration is not only to other districts and states but to other countries specially to middle east, Malaysia, Maldives etc. in 2006 about 6.77 people migrated from AP(Mallareddy, 2008). The migration of agriculture labor is creating problems for the farmers. The migration of younger, income earning persons leaving behind older members of the family is also causing serious problem leading to hunger deaths.
- **Failure of Safety nets:** The analysis of farmers' indebtedness in Andhra Pradesh revealed that substantial proportion of their debts included expenses towards agricultural input cost, health, education and other social cost. Instead of recognizing the way state withdrawal in terms of public health and government schooling system which added to the woes of the peasantry in rural areas, the bureaucracy and political class have been engaged in categorizing the expenses as productive and unproductive and hence blaming them as irrational peasantry (Prasad, 2003).

Support Systems

- **Agriculture Subsidies:** Green revolution was premised on sustained support from the state in various ways. The state had offered various input subsidies, especially in the provision of chemical fertilizers, electricity and credit. It had provided infrastructural support (primarily in irrigation and electricity generation) and extension services to cultivators. It had also provided minimum support prices and procurement for agricultural output. In the realm of consumption, the state had supported the poor through an extensive network of its Public Distribution System (PDS). Resting government support in purchased inputs (fertilizers, seeds etc) and outputs sold (Minimum Support Prices, procurement etc) had serious implications on the livelihoods of the small and marginal farmers. The input support is received only if they have access and use the external inputs.

Table . Agriculture Input Subsidies in India During 1995-96 to 2004-05

(Rs. Crore)

Item	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
1	**4**	**5**	**6**	**7**	**7**	**9**	**10**	**11**	**12**	**13**
1. Fertilizer (Total)	6735	7578	9918	11596	13244	13800	12595	11015	11847	16127
2. Electricity**	1977	8356	4937	3819	4276	6056	9342	7354	@	@
3. Irrigation ##	7931	9221	10318	11827	11193	13465	13164	15012	11142	12990
4. Other subsidies given to marginal farmers and Farmers' Cooperative societies in the form of seeds, development of oil seeds, pulses etc.,	1034	895	983	1182	3085	2686	3041	3133	4018	NA
Total	17677	26050	26156	28424	31798	36007	38142	36514	27007	29117

Note

1. Fertilizsers and other subsidies given to marginal farmers Expenditure Budget 2006-07, Central Government.
2. Electricity & Irrigation: Central Statistical Organisation.

@' - Separate estimates of subsidies on Electricity exclusively provided to agricultural sector are not available.

** Includes all subsidies to Electricity Boards and Corporations. Separate estimates of Electricity subsidy accountable exclusively to agricultural sector are not available

##: The rates for supply of water to farmers are kept low as a matter of policy, resulting in losses to the Government irrigation system. The excess of operating costs over the gross revenue is treated as imputed irrigation subsidy.
Source : Central Statistical Organisation, New Delhi.

Fertiliser subsidy forms the major chunk of the agriculture input subsidies in India. The fertilizer subsidy is linked to the fuel prices. From Rs. 18,299 crore in 2005-06, the fertilizer subsidy has touched has touched all time high of Rs. Rs 1,19,772 crores during 2008-09 (Table).

Table Fertilizer subsidies in agriculture 2004-05 to 2008-09

(in Rs. Crore)

Years	**2005-06**	**2006-07**	**2007-08**	**2008-09**
Fertiliser Subsidy	18299	25952	40338	119772* (estimated)

What is more interesting is the use efficiency of the chemical fertilizers. Taking the data from 2005-06, the subsidy per kg of nitrogen is Rs.9.63 per kg N. Assuming 49% of the N used by the plants rest of the nitrogen leached into the soil would be of the order of 7957 tons annually. Interestingly Rs.5637 crores (of the total 11,054 crores total subsidy on N) of annual subsidies to N, mostly in the form of urea is lost and contributes to nitrate pollution in ground water; an amount more than the total annual investments on the entire watershed program in the country! One can estimate how much 'subsidy' goes into drains at this year's provisional estimates (Ravindra, 2007).

Table . Loss of nutrients applied through chemical inputs

	Units	**Quantity**	**Usage***	**Wastage**
			49%*	51%
Total N consumption	Thousand tons	15603	7645	7957
Total N Subsidy	Rs. In crore	11054	5416	5637
Subsidy on per kg N (approx)	Rs. / kg N	8.5 to 9.5		
Subsidy on per kg N+P+K	Rs. Per kg	8.42		

Data source: Economic Survey, 2005-06,
values for the year 2005-06 (budget estimate up to Nov 2005)
*Reference: Ghosh S.K.(1994)[2],
24% of the total N is used by the plant and the rest contributes to nitrate pollution

a. **Institutional Credit:** Despite rapid spread in bank network after the nationalization of the banks in 1969 and the subsequent policy initiatives, a large section of the people are not able to access formal credit(Rangarajan,C;2008).

While the emphasis is on the strengthening of the credit through formal system, the existing arrangement, though evolved through decades of policy initiatives and efforts with pain, is not effective both in terms of quality of delivery and quantity required by the farmers. The X Plan put the farm credit need at Rs.73,65,70,00,00,000 (say, Rs.7.37 lakh crore). While the need is to strengthen and augment the rural credit delivery system, the ground scenario unmistakably shows the reducing level of access to the institutional credit to the rural population in general and to the small and marginal farmers in particular.

The institutional credit in Indian comprises three segments- Commercial Banks, Regional Rural Banks (although RRBs too are scheduled commercial banks, they merit a separate classification because of the special purpose with which they have been organized) and the cooperatives.

A. Commercial Banks: In all, there are 179 Commercial Banks in India; 175 of them are scheduled and 4 are non scheduled Commercial Bank (Table-5). The Regional Rural Banks (RRBs), numbering 95, account for 54.28 per cent of the total Scheduled Commercial Banks (SCBs). In fact, the total number of the RRBs, before their inter se amalgamations, was 196, when their percentage stood at 71.01 (196 RRBs out of Total 276 SCBs).

The Banks in India have achieved phenomenal growth in branch expansion and business levels after their nationalization. They have established a wide net work of branches. All the Banks put together have 73,836 branches. These Banks have a whopping deposit base of Rs.26.08 lac crore as of March 31,2007, which account for 68.81% of the Gross Domestic Product. This strong deposit base and its

[2] Ghosh S.K (1994), 'Impact of land and water resource degradation on agriculture production' in Deb DL (Ed), Natural resources management for sustainable agriculture and environment, Angor Publishers, New Delhi

growth 24.7 per cent during 2006-07 over the previous year suggest the preference of the people to park their savings in Banks over the other investment avenues. Similarly, the aggregate Bank credit as of March 31,07 was Rs.19.28 lakh crores of which Rs.46,521 crore was food credit.

Table-5 Commercial Banks in India

(Number of branches, deposits, credit etc as of March 31,,2007)

(Amount in Rs. Crore)

1.Number of Commercial Banks of which: (a) Scheduled Commercial Banks (Including 95 RRBs) (b) Non Scheduled Banks	179 175 4
2. Total Number of branches	73,836
3. Aggregate Deposits	26,08,309
4. (a)Aggregate Credit (b) Net of Food Credit of 46521	19,28,913 18,82,392
5. Growth rate(%) over previous year (a) Deposits (b) Credit	 24.7 22.3

Source:RBI data on Banks in India

i) **Branch expansion:** The branch expansion of the banks between 1969 (the year of nationalization) and 1990 (at the beginning of the economic reforms) and after 1993(the initial period after the launch of the financial sector reforms), the position at the beginning of this decade and the trends in recent two years, 2006 and 2007, are given in the table- 6 below. A more than seven fold increase, to be exact, 728.88 per cent increase, is seen in the overall network of branches of the commercial banks between 1969 and 1991. The growth in rural branches during this period was the fastest, 1920.67 per cent, during this period. As a proportion to the total branches the rural share stood at 58.46 per cent against 22.18 per cent in the year of nationalization. A clear fall in the share of other categories of branches is discernible during the period; the shares of semi urban, urban and metropolitan have fallen from 40.45 to 18.33; 19.17 to 13.36 and from 18.19 to 9.33 respectively. But the relative growth in share of these categories did not remain similar after the economic reforms; more particularly after the financial sector reforms have a taken a deep root in 1993.

ii) **Urban preference:** A clear shift in urban preference over the rural areas is seen during this period. The share of rural branches has decreased from 58.42 in 1993 to 41.38 in 2007. In fact, there is a fall even in absolute terms; the number of rural branches fell by 4,829 from 35,389 in 1993 to 30,560 in 2007. That means there has been closure of rural branches which could be through the route of relocation to urban centre or merger with the nearby branches or the outright closure on the plea of their being not viable. Also some rural areas were classified as semi urban, following the census every ten years. But on the whole, rural people are distanced from the banking institutions with the removal of branch licensing policy. The licensing policy, it may be recalled here, put a precondition on the banks to open four rural branches before seeking license for an urban branch, the rule was known as 4:1.

As a result of the policy changes and the banking sector reforms which were more concerned with the financial viability of the institutions than with the social obligation of the banks, as many as 4,829 branches were closed, between 1993-2007, in rural areas. Simultaneously, 17,496 new branches were opened in other areas (5,019 in semi urban areas; 5,278 in urban areas and 7,129 in metropolitan areas), during the same period.

Table-6. Progress of Commercial Banks in India-Growth in number of Branches

Location	Year					
	June 1969	**March 1991**	**March 1993**	**March 2000**	**March 2006**	**March 2007**
Rural	1,833 (22.18)	35,206 (58.46)	35,389 (58.42)	32,734 (50.04)	30,436 (42.45)	30,560 (41.38)
Semi Urban	3,342 (40.45)	11,344 (18.83)	11,465 (18.92)	14,407 (22.02)	15,811 (22.05)	16,484 (22.32)
Urban	1,584 (19.17)	8,046 (13.36)	8,562 (14.13)	10,052 (15.36)	13,034 (18.18)	13,840 (18.74)
Metro-politan	1,503 (18.19)	5,624 (9.33)	5,753 (9.49)	8,219 (12.56)	12,404 (17.30)	12,952 (17.54)
Total	**8,262**	**60,220**	**60,570**	**65,412**	**71,685**	**73,836**

Source: Reserve Bank of India, Statistical tables of various years.
Note: Figures in parentheses show the percentage total.

iii) Share of Agriculture in Scheduled Commercial Banks' Credit: Not only have the Scheduled Commercial Banks been distancing themselves from the rural areas, in terms of shifting or closing their rural branches, but they have been failing in their obligation, the norm set by the Reserve Bank of India, of earmarking 18 per cent in their total credit to agriculture (table-7). Despite the Governments claims of increasing institutional farm credit in its successive budgets, the banks credit during the last three years was found to be much below the 18 per cent stipulation. It was 11.8 per cent in 2005; 12.04 in 2006 and 12.49 in 2007.

Another important thing to be noted here is that figures shown under the head agriculture is not for the entire purpose of agricultural operations. It includes credit to the allied activities like animal husbandry, fisheries, hi-tech agriculture and other activities like storage, market yards, forestry and RIDF etc. It is observed in 2005, for instance, the animal husbandry received Rs.3,097 crore credit; fisheries, Rs.1,301 crore; hi-tech agriculture, Rs. 6,648 crore and other items Rs.26,900 crore. Credit to all these activities was Rs.37,946 crore which was clubbed under agriculture and allied activities and constituted 30.5 per cent of the credit under the head.

Table-7. Share of Agriculture in Gross Bank Credit in India (2005-07)

(Amount in Rs. Crore)

Outstanding up to	Agriculture and Allied Activities	Percentage in total	Total Bank Credit
March 18,2005	1,24,269	11.88	10,45,954
March 31,2006	1,73,875	12.04	14,43,920
March 30,2007	2,30,180	12.49	18,41,878

Source: RBI's Annual Report 2006-07

iv) Small Farmer's share in Scheduled Commercial Banks' credit: While agriculture itself is not getting its due share in the bank credit, the small holder farmers who constitute the predominant proportion of the farming community get still lower a chunk in agriculture credit (table-8). The marginal farmers (those with holdings below 2.5 acres accounting for 63 per cent of the operational holdings), get 26.12 per cent of agricultural credit. However, those who are technically classified to be the small

farmers with holding between 2.5 to 5.0 acres, whose share in the operational holdings is 18.9 per cent get 26.42 per cent of Bank credit. But those with holding above five acres who account for 18.1 per cent of the total operational holding get 47.42 per cent of agricultural credit. (The credit disbursed is taken for the period 2004-05 from the table below; while operational holding data pertains to 2000-01 from table- although these are two different years, the pattern could not be very dissimilar). This suggests the phenomenon of low credit access to the small farmers – higher the holding higher would be the credit access from formal sources.

v) **Urban preference in Credit deployment:** The urban preference of commercial banks in their credit deployment is clearly observable (tables 9). The rural areas which contribute 10.8 per cent to the aggregate bank deposits, get only 8.3 per cent share in the gross bank credit, where as, the metropolitan centres get disproportionate share of 65.4 per cent in bank credit against their contribution of 54.1 per cent to the aggregate deposits.

Table-8. Scheduled Commercial Banks Direct Credit to Farmers: (Number of Accounts according to Size of Land Holding with Outstanding Advances)

Year/ Size of holding	Up to 2.5 Acres		2.5 to 5.0 Acres		Above 5.0 Acres		Total	
	No.	Amount	No.	Amount	No.	Amount	No	Amount
1990-91	6,136.8	2894.50 (23.36)	4,354.8	2,870.30 (23.16)	3,562.60	6,623.80 (53.46)	1,405.30	12,388.60
1992-93	6,057.30	3,437.40 (24.19)	4,459.80	3,328.00 (23.42)	3,877.70	7,444.20 (52.39)	14,394.70	14,209.60
2004-05	7,298.61	20,499.20 (26.12)	5,873.96	20,758.56 (26.42)	5,274.40	37,218.40 (47.42)	18,446.97	78,476.16

(Amount in Rs. Crore; Number in 000s)

Source: RBI's Hand Book on Statistics on Indian Economy Oct 1, 07.

Note : figures in parentheses show relative share in total

Table-9. Share of Rural and Urban Areas in Gross Bank Credit and Deposits in India

(As of March, 2006)

(Rs. Crores)

	Gross Bank Credit	Aggregate Deposits
Rural	1,26,078.34 (8.3)	2,26,061.18 (10.8)
Semi Urban	2,12,820.79 (10.0)	3,02,212.81 (14.5)
Urban	2,45,777.29 (16.2)	4,30,813.23 (20.6)
Metropolitan	9,90,541.04 (65.4)	11,320,87.02 (54.1)

Source: RBI, Basic Statistical Return June 22,2007.

Note: Figures in parentheses indicate relative share in total

vi) **Rural Credit-Deposit Ratio:** The rural areas not getting their due share are also indicated by the credit deposit ratio (table-10). The Credit Deposit (CD) ratio of the banks as a whole is 72.4 per cent in the year 2006, higher than the 66.0 per cent the previous year. But the rural CD ratio is much less at 55.8 per cent where as the metropolitan CD ratio is 87.5 per cent. Although there is an increase in the rural CD in 2006 compared to 2005 it is only by 4.8 percentage points but not as steep as 6.8 per cent occurred in the case of metro centres which are already enjoying a higher share.

Table-10. Credit Deposit Ratio of Scheduled Commercial Banks in India (Rural, Semi-urban, Urban and Metropolitan Classification in 2005 and 2006)

	2005	2006
Rural	51.0	55.8
Semi-urban	45.1	50.1
Urban	51.8	57.0
Metropolitan	80.7	87.5
Banks as a whole	**66.0**	**72.4**

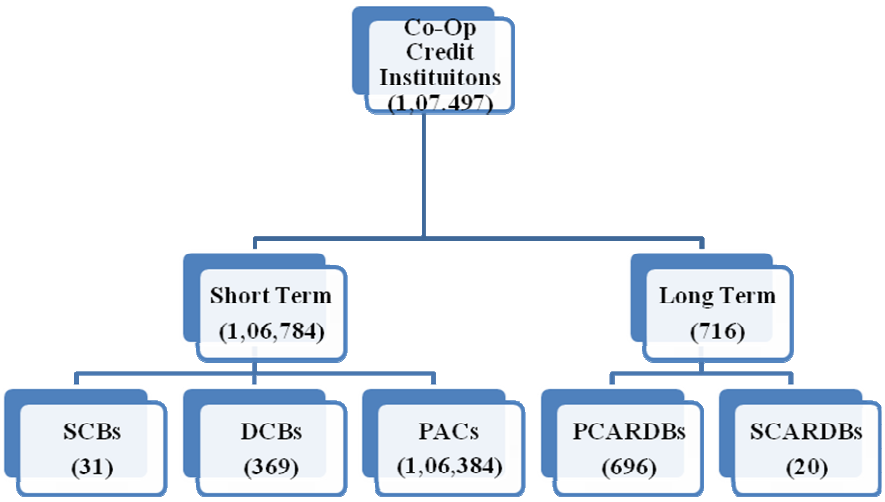
Source: RBI, Basic Statistical Return June 22, 2007.

B. Cooperative Credit Institutions: The cooperative credit structure in India comprises short term and long term structures. As of March, 2006, there are 1,06,784 short term and 716 long term institutions. The short term structure comprises State Cooperative Banks (31), District Cooperative Banks (369) and Primary Agricultural Credit Societies (1,06,384). The long term structure on the

other hand consists of Primary Cooperative Agriculture and Rural Development Banks (696) and State Agricultural and Rural Development Banks (20).

Chart-1. Rural Cooperative Credit Structure in India

(Position as of March 2006)



Source: Development in Cooperative Banking, Trends and Progress of Banking in India (2007),RBI.

Note: SCBs= State Cooperative Banks; DCBs= District Cooperative Banks; PACs= Primary Agricultural Credit Societies; PCARDBs= Primary Cooperative Agriculture and Rural Development Banks; SCARDBs=State Cooperative Agriculture and Rural Development Banks.

i) **Performance of cooperatives:** The weaknesses in the rural cooperatives is not a new discovery although their deterioration has been marked during the post reforms period. Way back in 1955, the committee on direction on Rural Credit Survey exhaustively listed the inadequacies of the cooperative credit in India (Gorawala, AD; 1955). The reasons for strengthening the rural credit institutions then given by the Rural Credit Survey are as valid today as they were found more than five decades back.

The apparent weaknesses, the Rural Credit Survey Committee said, were in relation to functional, structural and administrative aspects of the Cooperatives. As for the negative factors inside the cooperatives, there was a dearth of suitable personnel and lack of training to the members of staff to attend to their functions towards the effective realizations of the organizational goals. While this was the state inside, the conditions outside, in the rural society, were found to be worse. The all-round illiteracy, the grave and chronic deficiency of roads, storage and other economic requirements, all of which, the Committee said were relevant as part of the explanation. The main causes were much deeper than the apparent. It is difficult to find better words than what the committee said about these causes. So, it is quoted verbatim thus:

"The main causes are much deeper. They are largely socioeconomic in character and are relatable to certain fundamental weaknesses, which have developed in the rural structure. The not so strong can combine co-operatively and get the same advantage as the strong. But the very weak are not in the same position as the not so strong; certainly not if the strong have, in addition, a whole reservoir of institutional strength from which they can add immeasurably to their own. This disproportion provides a key to the wholly different records of co-operative credit in the west and in India; for, Co-operation can succeed only if, between the forces of Co-operation on the one hand and the opposing forces of private credit and private trade on the other, the disparity which always exists, is nevertheless within certain reasonable bounds. In this country, not only has there been too wide a disparity between the internal strength of the co-operative structure and the external forces pitched against it in competition; these latter have in many insidious ways entered into and vitiated the internal cohesion of co-operative bodies themselves.

In India today there is an aggregate of private financial power, which in point of location is largely urban and- what is more important - in point of bias, that is to say, of the practices, attitudes, preferences and interests of the individuals and institutions who share the power, is almost wholly urban-minded. In appreciable degree, this may be regarded as the heritage of a colonial economy, which, seated in the bigger ports and cities, drew to itself for export abroad the raw materials- the 'cash crops'- of the rural area; certainly, in the details of its interpenetration from city to town and from

town to village and in its main ramifications in the rural area it drew sustenance from the hoary inequities of caste and class and privilege."

"Meanwhile, for several decades there continued to operate, as there still operates, a mechanism of trade finance, etc., the working of which has, by and large, been against the interests of the rural population generally and the rural producer in particular. The resulting conflict may be very broadly described as between the 'urban' interests which had now established themselves and the 'rural' interests, which had always existed. The new pattern was such that the access to seats of power and sources of finance was largely cut off from the weaker sections that formed the bulk of the rural population. The location of both power and finance continues to be largely 'urban', and the institutions so located tend inevitably to be urban-minded in the sense that their directors and executives respond much more readily to urban than to rural interests. The urban-mindedness is not confined to private institutions of finance; it usually also extends to the more significant institutions of the State and to the headquarters and sub-headquarters of the administrations of the different Governments. To these seats of power and sources of finance, public and private, is established a chain of contact, influence and, where relevant, financial interrelation. At the far end of the chain, that is to say the village, are the village leaders such as panchayatdar and patel, who occupy the local seats of power, and the village financiers such as moneylender and trader who are the local sources of finance. In view of their being a part of the channel of power and finance, they are also the recipients of power and finance from sources and reservoirs higher up the channel; and for that reason they come under the broad description of 'urban'. Sometimes two or more of these - the village leader, the village lender and the village trader-are one and the same person; and a broad affinity governs their attitudes towards the rest even where there is more than one leader, more than one lender and more than one trader. Leadership in particular is important. It may be based on the ownership of property, on the advantage of education, on the hereditary position held in the preponderant local caste, on a combination of all or some of these factors and finally - and growingly- on political influence. All too rarely is effective village leadership based on merit or culture or on capacity to be of service to the village itself. When this leadership happens to be outside the local village institutions- the co-operative society in this context- it is a danger; when it is inside these institutions it is even more potently and more presently a danger. The danger partly arises from the fact that, while the State has a

vested interest in the success of Co-operation, the private banking and private trade, particularly at the village level, have a vested interest in the failure of co-operative credit. This is less and less strong and more and more implicit and impersonal at the higher levels, but stronger and more explicit at the lower stages. When local Co-operation gets into the charge of the village moneylender, and more especially the landlord-cum-moneylender, he becomes the society, the depositor and the borrower, all of them together or each in turn, with the ease with which the one Godhead becomes Brahma, Vishnu and Shiva- Creator, Preserver and Destroyer - in the more picturesque expressions of Hindu philosophy, or with the elusiveness with which matter and energy exchange roles in the more recent refinements of nuclear physics. The affinity of interests between moneylender and trader and their common interest in the failure of co-operative credit -notwithstanding that they may be content to ignore the society as long as it shows no signs of being other than insignificant - can be really explained. Both moneylender and trader, in so far as they are interested in the producer of cash crops or food grains which are sold in the urban market, derive that interest from the fact that there is enough profit at the marketing end to make their own transactions with the producer profitable, whether in the form of interest on the money lent or of commission of goods sold; in other words, they are, in this context, a part of the financial and trading machinery which operates in order to supply urban demand which is relatively paying, whether this demand is related to consumption, manufacture or export. Sometimes, temporarily overawed by superior official authority or enthused by missionary-minded officers, an important measure of co-operative policy, for example, may in fact be translated into practice in the village; but it is not often that the effect is lasting; frequently the directions merely remain on paper, especially where they involve some disadvantage to the more powerful in the village. Acting in concert with these, the subordinate official, whose functions take him to the village, creates for the benefit of the superior officers what might be called the illusion of implementation woven round the reality of non-compliance.

The state's way of help hitherto has been to over-administer and under-finance. But that is no remedy for a total problem, which is one not of rural-minded credit alone, but of rural-minded credit in conjunction with rural-minded development of agriculture and rural-minded organization of marketing, processing, etc. The total programme needed is one of rural orientation of the operative forces of the country's administrative and

financial organization. It implies a combination of rural conscience, rural will and rural direction. Such a combination strong enough to be an overriding factor in the situation has to come from Government and the more powerful institutions of Government".

The integrated scheme of rural credit proposed by the Committee follows directly from this analysis. It is based on the three fundamental principles: State partnership at different levels; full co-ordination between credit and other economic activities, especially marketing and processing and administration through adequately trained and efficient personnel, responsive to the needs of the rural population.

Reverting to the state of affairs now, it may be reiterated that the performance of cooperatives has not been satisfactory both in terms of its outreach to the poor farmers and the financial performance of the institutions. Cooperative system as a whole has an accumulated loss of Rs.9,131 crore as of March 2006 (table-11). The losses sustained in one year by all the rural cooperatives excluding primary agricultural societies in 2005-06 amounted to Rs.1,601 crore. These institutions have a huge non performing assets of Rs.47,888 crore which account for 23.8 per cent of their outstanding credit.

The share of cooperatives in the institutional credit has been declining over years. It has declined from 62 per cent in 1993 to 20 per cent in 2007. In fact the institutional credit was synonymous with cooperatives before the banks' nationalization when the cooperatives alone accounted for close 100 per cent of such credit. That means the role and importance of the cooperatives which had come into being with the exclusive purpose of supporting agriculture has drastically eroded during the post reforms period.

Table-11. Cooperative Credit Institutions in India: Some Performance Indicators

(**As of March 2006**)

(Amount in Rs. Crore)

1.Total Number of Rural Cooperative Institutions	1,07,497
2. Loans and Advances Issued	1,69,924
3. Loans and Advances Outstanding	2,01,118
4. Non Performing Assets (NPAs)	47,888

5. NPAs as percentage of Loans outstanding	23.8
6. Losses during the year	1,601*
7. Accumulated losses	9,131
8.Number of cooperative Institutions in losses**	53,920
of which:	
(a) SCBs	4
(b) DCCBs	88
(c) PACs	53,626
(d) SCARDBs	8
(e) PCARDBs	194

Source: and Progress of Banking in India(2007),RBI.

Note:

*Excluding the losses of PACs

** For expansion of abbreviation and total number of different Institutions see chart, "Rural Cooperative Credit Structure in India", in the document

C. Regional Rural Banks: Regional Rural Banks (RRBs) are the latest addition to the rural credit system in India. On finding the existing credit structure- cooperatives and commercial banks- inadequate in meeting the credit needs of the poor in rural India and also on account of the weaknesses in them, the Government of India in 1975 appointed a working group under the chairmanship of M.Narasimham, then additional Secretary, Banking Division of the Ministry of Finance, to suggest an alternative system which is more suitable to the task of providing credit to the small and marginal farmers, agricultural labourers, petty traders, rural artisans, hawkers and all those below poverty line (Narasimham,M;1975).

Based on the recommendations of the Working Group, the Government brought an ordinance in 1975 (later converted in to the Regional Rural Banks Act,1976) and started the new type of institutions- RRBs. While Central Government contributed 50 per cent to the share capital of the RRBs, the State Government, of whichever State they were set up, was mandated to contribute 15 per cent and the remaining 35 by a commercial bank which sponsored the RRB. So, each RRB, a public sector scheduled commercial bank, is jointly owned by the Central and State Governments and another scheduled commercial bank (with lone exception of a cooperative bank in U.P sponsoring an RRB,Kshetriya Kisan Gramin Bank). The area of operation each RRB was limited to one or two

districts to ensure uniformity in evolving the schemes; a homogeneous agro climatic area for entire bank was found to be useful for working out schemes applicable to whole of the Bank. The main features of the RRBs can be listed as follows:

- They were organized through a central statute.
- They were included in the RBI's (second) schedule as Commercial Banks in terms of Banking Regulation Act.
- Their ownership is shared by three agencies- the government of India, another bank that sponsors it (called sponsor Bank) and the state governments in the ratio of 50:35:15
- Their area of operation is one District or two (of course there are exceptions here and there).
- They were aimed at serving exclusively the interest of weaker sections.
- They were expected to run on a low cost basis.

"It may be summed up that the RRBs were established as state sponsored, region based, rural oriented, commercial banks which would blend the rural touch, local feel, familiarity with the rural problems and low cost profile which cooperatives possessed in a large degree. The modern business outfit's commercial discipline, ability to mobilize deposits and access to central money markets with a modernized outlook of the commercial banks had to be integrated. In a sense it was an experiment to hybridize commercial banking culture with rural ethos"(Deshpande, DV etal 1996).

All these provisions – smallness in size, Central Government's control and State Government's participation- in the RRBs' scheme were included with the goal to make them suitable to the needs of the poor in rural area. In fact these banks, which are called social banks, had been allowed to finance only to the people below poverty line till 1990 when the reforms were introduced in them. But reforms in RRBs unleashed in phases from 1992-93 onwards transformed them in to pure commercial banks whereby they have started showing urban preference and concerned more with the commercial viability over purveying the credit to the poor, that is, outright deviation from the very purpose of their establishment. The restriction on RRBs to confine in their lending only to the people below poverty line has been withdrawn and they have been brought on a par with other commercial banks. This translates to say that it is sufficient if RRBs earmark only 10 per cent in their lending to the people below the poverty line instead of lending exclusively to this class of people as envisaged in their original scheme.

The business indicators of RRBs, as of September, 2007, are given in table-12 below. The total number of RRBs, after their inter se amalgamation, has come down to 95. These banks are functioning with their 14,445 branches all over India. It may be observed that as many as 60 branches of RRBs are located at metropolitan centres. Similarly, they have 558 urban and 2,503 semi urban branches. That means 21.6 per cent of the branches of the rural banks are functioning in non rural areas defying the very purpose of organizing the Regional Rural Banks and ridiculing their very nomenclature. The shifting from rural areas has been rapid from the second part of the nineties. In 1998, of their total 14,479 branches, 12,348 were in rural area whose number by September 2007 went down to 11,334 which means the closure/shifting to urban centers of as many as 1,014 branches. While these many branches have disappeared from the rural scene, 697 new branches in semi urban areas, 239 in urban areas and 54 in metropolitan areas have cropped up.

Not only the shifting of branches to urban centres, but the other indicators too unmistakably suggest the growing urban preference of these so called specialized banks. For instance, the credit-deposit ratio of the RRBs which used to be close to 100 per cent, even sometimes more, has come down to 61.47 per cent. That means the rural resources are finding place in urban areas- investment in approved shares and securities – instead of ploughing them back in the rural areas from where they had been mobilised .

Similarly, the entire credit of the RRBs is not deployed in the rural areas. The irony is that a whopping Rs.17,446 ,out of the total credit of Rs.52,449 crore, of the RRBs which works out to a little more than 33 per cent, as of September 2007, was deployed in non-rural areas.

It is clear from the data that the RRBs are moving away from the small farmers and rural areas. More intriguing is the fact that the interest of interest of RRBs are found to be higher than the other commercial banks. That means they have given a goby to the concept of cheap credit to the weaker sections of the rural society.

The combination of all these measure which are opposed to the interest of the rural poor have helped the RRBs to become financially strong. All the RRBs put together have earned an aggregate net profit of Rs.617.13 crore in the year 2006-07. They have also reduced their Non Performing Assets considerably to 7.3 per cent of their outstanding credit. In other words, the RRBs have turned around to be the viable units from perpetual loss making entities. But, this was undoubtedly at the cost of weaker sections credit in rural area. A clear tradeoff is

observable between the social objective of providing hassle free cheep credit to the small farmers and other weaker sections and the financial viability of the rural lending agencies. The original approach of treating the losses sustained by the RRBs as an essential cost for the social benefit in terms of coverage of those who could not access institutional credit was put on the back burner.

As a further step to ensure viability, by achieving the economies to scale, the RRBs have been amalgamated into bigger entities. This steps amounted to the norm that each RRB should operate in a homogeneous agro-climatic area . Each sponsor banks has amalgamated all its RRBs in a given State into a single unit. For instance, in A.P the sponsor Bank wise amalgamation has reduced the number of RRBs from 16 to 5. Prior to the amalgamation, the State Bank of India had operated in eight districts through five RRBs- Srivishaka Grameena Bank in Srikakulam, Vijayanagaram and Vishakapatnam; Nagarjuna Grameena Bank in Khammam and Nalgonda districts;Kakateeya in Warangal;Sangameshwara in Mahaboobnagar and Manjeera Grameena Bank in Medakdistrict. With the amalgamation, the single unit A.P Grameena Vikasa Bank has started operating in all these districts - Srikakulam to Medak. With similar exercise in all the States the total number of RRBs has been brought to 95.

Table-12 Regional Rural Banks
(Business indicators - All India figures as of September 2007)
(amount in Rs. Crores)

1.Number of Banks	**95**
2. Number of Branches	**14,455**
of which:	
a) Rural Branches	11,334
b) Semi Urban	2,503
c) Urban	558
d) Metropolitan	60
3. Aggregate Deposits	**85,311**
of which:	
a) Rural	52,445
b) Non-rural	32,866
4. Outstanding credit	**52,449**
of which:	
a)Rural	35,003
b)Non-rural	17,446

5. Credit-Deposit Ratio	**61.47**
6(i).Non Performing Assets (ii) Percentage of NPAs to outstanding credit	**2,890** 7.3
7.Net profit	**617.13***
8.Number of RRBs in Profit	**111***

Source: RBI data and NABARD's Annual Report 2006-07.
*Note: These figures relate to March 2007 when the total number of RRBs was 133 which were later reduced by inter se amalgamation to 95.

D. Relative shares of credit institutions: There has been a great change in the relative shares of the individual players in the field of agricultural credit (table-13). The share of cooperatives in the agricultural institutional credit has come down from 62 per cent in 1992-93 to 20 per cent by 2006-07. The commercial banks on the other hand have increased their share from 33 per cent to 69.05 per cent during the same period while the RRBs have doubled their share from 5 to 10 per cent.

The change in the composition credit - increasing share of commercial banks in relation to the cooperatives - is marked during the post reforms period. The commercial banks have shown constant increase year after year – from 33 per cent in 1992-93 to 69.05 per cent in 2006-07. The cooperatives have shown the continued deterioration -25.07 per cent to 20 per cent over the same period. The Regional Rural Banks have shown doubling of their relative share from 5 to 10 per cent during this period.

It is very clear that the cooperatives -which have come into being with the sole purpose of providing agricultural credit- and the RRBs – set up to exclusively cater to the credit needs of the poor - together have shared only 30 per cent of the credit while the commercial banks have increased their share very rapidly. This means that the small holder farmers credit faced a set back because the commercial banks, in general, are supposed have commercial approach in their lending activity and are known for their big farmers preference.

Table-13. Share of Different Institutions in the Formal Agricultural Credit in India

(Amount in Rs. Crore)

Institution/Year	1992-93	2002-03	2003-04	2004-05	2005-06	2006-07
Cooperatives	9,378 (62)	23,636 (33.97)	26,875 (30.89)	31,425 (25.07)	39,404 (21.83)	42,480 (20.0)
Regional Rural Banks	831 (5)	6,070 (8.72)	7,581 (8.71)	12,404 (9.89)	15,223 (8.43)	20,434 (10.0)
Commercial Banks	4960 (33)	39,774 (57.17)	52,441 (60.29)	81,481 (65.02)	1,25,859 (69.73)	1,40,382 (69.05)
Other Agencies	-	80	84	-	-	-
Total	**15,169**	**69,560**	**86,981**	**1,25,309**	**1,80,486**	**2,03,296**

Source: Economic Survey 2006-07,GOI and Annual Reports of different years of NABARD

Note: Figures in parentheses indicate relative share in total

E. Overall decrease in Institutional share in total credit: While it is a matter of serious concern for the weaker sections oriented institutions either moving away from the poor or their share in total credit deceasing, the more worrisome is the reduction in the share of overall institutional credit in the total credit. The non-institutional share in agricultural credit which was a high 92.7 per cent in 1951as per the NSSO data has no doubt come down to 30.6 per cent by 1991. But its share has increased during the post reforms period – to 38.9 per cent by 2002. The share of money lenders in the non-institutional credit has steeply increased from 17.5 per cent to 26.8 per cent during this period. This explains the farmers' distress and their suicides after the launching of economic reforms.

Table-14. Relative Share of Borrowing of Farmers from Institutional and other Sources

(Percentage of individual source in total credit)

Source/Year	1951	1991	2002
Non-Institutional	**92.7**	**30.6**	**38.9**
of which			
Money lenders	9.7	17.5	26.8
Institutional	**7.3**	**66.3**	**61.1**

Source: All India Debt and Investment Survey, NSSO
*RRBs were launched in 1975; so, their share is included from 1991 in the table.

E. The Scenario in Andhra Pradesh: In Andhra Pradesh, there are, in all, 6,247 bank branches (table-15) functioning across the State. Of them, 4,484 are the branches of commercial banks; 1,171 are of RRBs and 592 are of District Cooperative Banks.

Table-15 Number of Bank Branches in Andhra Pradesh (**As of March 2007**)

Type of the Organization	Number of Branches
Commercial Banks	4,484
Regional Rural Banks	1,171
District Coop. Banks	592
Total	**6,247**

Source: Agenda notes 160th SLBC meeting, Andhra Bank 2007

There has been a trend of decreasing share of rural branches (table-16). While there is a continuous increase in the share of semi-urban, urban and metropolitan branches the rural share has been on the continuous decline.

Only 24 branches have been added in the rural areas during the three years period while 253 new branches have been opened in non rural areas. That means the spread of urban branches is ten times larger than the rural offices.

In 1995, government of AP has brought in a new Mutual Aided Cooperative Societies Act. According to this act state government do not have any role in controlling the societies. It also allows any number of societies in a village in place of single window system in the 1964 Cooperative societies Act of AP. While this new act paved way for formation of several women self help groups and their federation which are performing well to a large extent, this act also created several urban banks (Krishi Bank, Charminar Bank, etc) which have siphoned of money and cheated the depositors.

Table-16: Distribution of Banks Offices based on their Location in A.P

Type of Location	Number of Branches as on		
	March 31,2005	**March 31, 2006**	**March 31, 2007**
Rural	2,829 (47.19)	2,852 (46.42)	2,853 (45.66)
Semi Urban	1,365 (22.72)	1,394 (22.69)	1,409 (22.55)
Urban	1,206 (20.12)	1,278 (20.80)	1,350 (21.61)
Metropolitan	594 (9.90)	619 (10.07)	635 (10.16)
Total	**5,994**	**6,143**	**6,247**

Source: Ibid.
Note: Figures in parentheses show individual percentage in total branches

Agriculture's share in Credit in A.P: The agriculture's share in credit has been declining in total institutional credit in Andhra Pradesh (table-17). Although the agriculture's share, in credit, in Andhra Pradesh, is higher than the 18 per cent stipulation of the RBI. However, it has shown a declining tendency, from 29.96 per cent in 2005 to 27.35 in 2007.

Table-17. Share of Agricultural Advances in Total Bank Credit in A.P

Year	Agricultural credit	Percentage of Agril. credit in Total credit	Total credit (in Rs. Crore)
2005	21,685	29.96	72,316
2006	25,448	28.25	90,088
2007	31,862	27.35	1,16,486

Source: Ibid

Field experiences in A.P: Andhra Pradesh is the fifth biggest producer of food grains in the country is home of the largest number of indebted farmers live. According to RBI data about 19% of the direct agricultural loan accounts of the scheduled commercial banks are in Andhra Pradesh alone in 2005-06. The number of such accounts has been growing rapidly too — up by 10.2% annually during 2000-01 to 205-006. Increasing credit in a situation where costs of cultivation are increasing and net incomes are decreasing is leading to indebtedness. The amount of outstanding loans under these accounts has increased at an annual compound rate of 28.2% against 27% for the country as a whole raising the share of Andhra Pradesh in total outstanding loans from 12.3% in 2000-01 to 12.9% in 2005-06.

The field study conducted in randomly selected 49 villages has confirmed to the macro level findings of the increasing inaccessibility of the formal credit to the poor. Those who are not able to get loans from the banking system are borrowing at the high rates of interest ranging between 24 and 60 per cent per annum. Even those who are able to get loans from the bank are not getting them to the extent of their total needs whereby they are also borrowing from the private sources. Out of 145 persons studied only 87 farmers could obtain loans from institutional sources – 10 from cooperatives and 77 from commercial banks. The tenant farmers in general are not getting any loans from the banking institutions; those few tenants who get the loans get it in paltry sums like Rs.2000 to Rs.5000. Only those tenant farmers who own some land – say, cultivating 2 acres of leased land and 1 acre own – are able to get the institutional support, but, not in any case beyond their property ownership limit.

Several of the small holder farmers studied have sustained losses from their agricultural operations owing to high input costs. They survived on working as hired labourers on others' fields. S.Sunder of Nallakunta Thanda, for instance, took up cotton cultivation on six acres land –three acres leases land plus three

acres own land. He spent Rs.63,000 on cultivation including the lease amount of Rs.18,000. He ended up in a loss of Rs.3,000.

Mettapally Devendar of Choutupally cultivated cotton in two acres of leased land. He paid the lease amount of Rs.6,000 and sustained a net loss of Rs.6,000 which means his activity, even on own land, would have left him no surplus. He has an outstanding debt of Rs.6,00,000 which he took for the purpose of his daughter's marriage from the private money lenders at an interest of 24 per cent.

Shaik Thathif of Turakalasomaram grown paddy on two acres leased field and got a net income of Rs.10,000 after paying the lease amount of Rs.14,000/-

Md Basha of Turakalasomaram too grown paddy on three acres piece – one acre own and remaining two acres taken on a lease of Rs.14,000 earned a net income of Rs.16,000/-

G Koteshwar Rao of Gunturpally grown cotton and paddy on the 4 acres leased land and paid Rs.12,000 lease amount and made a net income of Rs.18,000. Of the farmers studied his is among highest earners; no other farmer earned more than Rs.18,000/- Without lease it would be Rs. 30,000 per four acres and Rs.7,500 per acre.

This situation suggests that the small holder farmers' activity does not generate incomes at subsistence level. The relief packages unfortunately do not take a practical view nor come out with the schemes to bail out the farmers in distress as evidenced in the recent Agricultural Debt Waiver and Debt Relief Scheme, 2008 of the Government of India.

F. Debt Relief Scheme, 2008: The Government of Indian announced a scheme called, "Agricultural Debt Waiver and Debt Relief Scheme, 2008", which is scheduled to be implemented by June 30, 2008. The Salient features of the Scheme are:

i) It applies to the loans disbursed (including restructured and rescheduled loans) by Scheduled Commercial Banks, RRBs, Cooperatives and Local Area Banks, before March 31, 2007 if they became overdue by December 31, 2007 and remained unpaid up to February 29, 2008.

ii) Entire amount of short term agricultural production loans (loans given for raising crops and repayable in 18 months) including interest due of small

and marginal farmers (cultivating as owner or tenant or sharecropper of agricultural land up to 2 hectares) meeting the above criterion will be waived.

iii) Overdue installments (both principal and interest) of the investment loans (term loans for agricultural and allied activities) disbursed before March 31, 2007 and became over due before December 31,2007 and remained unpaid up to February 29,2008 of small and marginal farmers will be waived.

iv) Even the big farmers who have taken investment credit not exceeding Rs.50,000 for allied activities (such as dairy, poultry farming and sheep rearing) will be treated as small farmers and the waiver benefit will be given if they meet the criterion of disbursement and overdue status as set out in clause (i) above.

v) The other farmers (with holding more than 2 ha of land) and meeting the criterion in clause (i) will be given relief as a onetime settlement. They will be given a 25 per cent rebate if they repay the remaining amount in not more than three installments, the last installment before June 31, 2009.

vi) The other farmers in 237 drought prone districts and those under Prime Minister's special relief package, listed in the annexure to the scheme, will get a rebate of Rs.20,000 or 25 per cent of the eligible amount, whichever is higher, provided the borrower pays the remaining amount.

Seventeen districts of Andhra Pradesh too figure in this list. They are: Adilabad, Chittoor, Kadapa, Khammam, Kurnool, Medak, Mahaboobnagar, Nalgonda, Prakasham, Ranga Reddy, Srikakulam, Anantapur, Guntur, Warangal, Karimnagar, Nellore and Nizamabad.

vii) The scheme doesn't apply to the loans sanctioned prior to March 31,1997.

viii) AP Government has announced Rs. 5,000 special incentive to farmers to repay loans promptly.

Incongruities of the Scheme: A close look at the scheme reveals the incongruities in it and its insignificant impact on the farmers in distress although it is estimated by the Government that it would involve a whopping outgo of Rs.71,680 crore from the exchequer.

a. Firstly, the scheme is confined only to those farmers who had availed bank loans whereas more than 70 per cent of the small farmers are estimated to be outside the formal credit system who are facing a bigger crisis with exorbitant interest on their private borrowings and stringent conditions. The small farmer definition of the Government which includes only those holding below two hectares of land excludes a large number of farmers in distress since many of those committed suicide in Vidharbha region were owing land more than this, to put it at the cost of repetition.
b. Secondly, those who have paid their loans in time are not getting any relief, although the A.P Government has promised a paltry Rs.5,000 to each of those who had been regular in repayment. It should be noted that those who paid their dues did not do it on account of their farming activity being more viable than others, but the loans were forcefully recovered from them. In some cases the banks, particularly cooperatives, renewed the loans without actual repayment to reduce their non performing assets through window dressing. All these farmers do not get any benefit for no fault of them.
c. Thirdly, the relief is confined only to the loans obtained for the purpose of agriculture and against the hypothecation of standing crops etc. But many of the farmers pledge their Gold ornaments and take loans for the purpose of agriculture. They resorted to this as banks were not willing to supply timely credit for the genuine agricultural operations; for that matter the other needs of small farmers are not separable from their agricultural needs. This is to say that the Gold loans of most of the farmers although appeared for other purposes were actually obtained for investment in agriculture.
d. Fourthly, the norms relating to disbursement and overdue dates are simply ridiculous. Many of the farmers who had genuinely suffered are outside the scheme for pure technical reasons. Finally, the rebate to other farmers is not practical because it envisages payment of three fourths of the loan by the farmers. If the farmers really had the capacity to pay 75 per cent of their loan amount together with interest they would have happily paid entire loan without anybody asking them for it. No farmer would like to be in perpetual indebtedness if he has the capacity to repay the dues incurred.

In sum, the scheme provides relief, if any, only to a limited number of small and marginal farmers. It has the potential of nurturing the much feared, 'moral hazard', a reason usually advanced by the opponents of farm loan waivers. But they should know that the farm loan waiver per se does not create it, but, the

conditions which exclude from the scheme those who repaid the loan without allowing it to become overdue or whose loans renewed, in the 'ever-greening process' (the sleight of hand of the cooperatives and other institutions who show the old dues as fresh sanctions without ever being able to recover the original amount) make the farmers feel the anomalous treatment.

b. **Crop Insurance:**The idea to put a system of crop insurance in place to protect the farmers, from the crop loss and resultant disastrous consequence, has been engaging the attention of the Government of independent India from the very beginning. A study was commissioned in the year 1947-48 to suggest a feasible scheme of insurance. Two alternative models – one, an individual approach in which the loss is to be assessed to the individual farmers and his holding and two, a homogenous area approach which assesses the loss in relation to the given homogeneous agro climatic area like whole village/block/taluq – were studied. The homogeneous approach was preferred over the individual approach as the latter was understood to be not feasible in terms of the costs involved to manage the scheme besides the moral hazard –the possibility of wrong claims by individual farmers.

The ministry of agriculture circulated the scheme, following the study, for the approval of the States which did not accept to implement it on account of financial burden on them.

Again in 1965, a crop insurance bill was introduced and again the States were not enthusiastic to implement it in view of the same reason, financial burden on them. No State had come forward to take the initiative although the centre offered to act as reinsurer to offset the losses that might be sustained by the insurance scheme established by the State Governments.

Following the recommendation of another Expert Committee in 1970, the General Insurance Department of the Life Insurance Corporation of India at last introduced crop insurance for a specific crop – H-4 cotton. After the nationalization of the general insurance in 1972 the General Insurance Corporation (GIC) was set up which took over the insurance scheme of H-4 cotton scheme. Later, the GIC included, in its insurance scheme, groundnut, wheat and potato and implemented it in some select States including Gujarat, Maharashtra, Tamilnadu, Andhra Pradesh, Karnataka and West Bengal. This scheme continued up to 1978-79. In all, the scheme covered 3,110 farmers who paid an aggregate premium of Rs.4.54 lac . The claim amount paid for those who suffered crop loss was Rs.37.88 lac.

A new pilot crop insurance scheme linked only to the bank loans was introduced in the year 1979 in 13 states and implemented till 1984-85. This scheme covered 6.23 lac farmers, in all, during this period. The premium amount collected from them was Rs.197 lac against the claim amount Rs.157 lac of paid under this scheme.

A comprehensive crop insurance scheme (CCIS) was introduced in the year 1985 in 22 States and Union territories. The scheme which was in force till 1999 covered 7.62 crore farmers and insured their crops worth Rs.24,922 crore. The premium collected under the scheme was Rs.403 crore while the claims settled amounted to Rs.2365 crore during the period from 1985 to 1999 that is, over a period of 15 years. While all the States put together have paid Rs.830 the centre paid Rs.1,535 crores towards the claim settlement. The amount paid was considered to be very high; the Planning Commission therefore brought to the fore the system of a realistic premium rates commensurate with the heavy claims.

The National Agricultural Insurance Scheme (NAIS) was therefore introduced in place of CCIS in the year 1999. The compensation was worked to be shared by the State and Central Governments in the equal proportion – 50 per cent each -in contrast to the CCIS under which the Insurance Company met one third of the claim while the remaining was equally shared by the States and the Centre.

A 50 per cent subsidy was given in the premium during the first year which was designed to be phased out in five years – reducing 10 per cent every year. That means the Government wanted the farming community to share a higher burden of insuring their crops.

An agricultural Insurance Company (AIC) was set up in the year 2002 with the responsibility to implement the NAIS. The company was promoted by The General Insurance Corporation, NABARD and three other insurance companies – National, Oriental and United Insurance companies. While GIC and NABARD provided 35 per cent each to the share capital of the AIC the three insurance companies contributed at the rate of 8.75 per cent each.

Table-3 National Agricultural Insurance Scheme
(Coverage during 12 seasons- Rabi 1999-2000 to Kharif 2005)

Number of Farmers	Area	Sum Insured

Covered	(in hectares)	(in Rs. Crores)
Andhra Pradesh	1,19,01,760	15,625.24
India	12,19,92,731	70,690.63

(Source: Agricultural Insurance company ltd)

Table-4. Premium and claims under NAIS
(12 seasons- Rabi 1999-2000 to Kharif 2005)

(Amount in Rs. Crores)

	Premium (paid by all farmers covered)	**Subsidy** (in premium by government)	**Total Claims**	**Claims Paid**	**Claims Payable**	**No. of farmers benefited**
Andhra Pradesh	434.61	66.28	983.82	692.80	291.01	20,50,470
India	2,225.31	239.57	6,470.84	5,894.82	576.01	1,97,35,759

(source: ibid)

The aggregate premium paid as a percentage of total claims has gone up from 17.25 per cent (Rs.2,365 crore claim against the premium of Rs.405 crore) under the CCIS to 34.38 per cent (Rs. 6470.84 crore claim against the aggregate premium of Rs.2225.31 crore) under NAIS. This shows a tendency of achieving the goal of reducing the Governmental responsibility in the implementation of the crop insurance scheme. In other words, the burden on the farmers has been increasing as a result of the so called policy of realistic rates and the gradual withdrawal of the Government from providing the insurance subsidy.

It is ironic that such policy is being implemented without first ensuring the viability of farming through the required support system of reducing the costs of inputs and remunerative prices to the produce besides putting in place an effective extension system to support the sustainable agriculture. This is only adding to the cost of cultivation which is further discouraging the small holder farmer cultivation.

In fact, the insurance benefit is very limited. More than 70 per cent of the small holder farmers who do not get any loans from the formal agencies are outside the scheme. Although there is a provision for those farmers who have not borrowed from any institution to make use of the scheme, they – the non-loanee farmers – are not able to make use of the scheme as their subsistence levels of incomes do not allow them to think of insurance protection. Secondly, there is no possibility of non-loanee farmers being attracted to the scheme as their counterparts who borrowed from the formal sources who are compulsorily brought under the scheme are not deriving any tangible benefit since the scheme

is area based –the loss to individual farmers is not compensated unless the whole unit- Mandal or Block – is affected or the whole village in a few of the districts where village is taken as a unit. Even those who are benefited are not fully compensated. Nor do they get timely relief.

Further, the cost of insurance is very high which consequently is increasing the cost of borrowing and cultivation. The cost is higher than projected because the rate is fixed per crop period. As a result, the farmers raising crops, like paddy, twice a year are forced to pay the premium two times a year. This is the reason why some farmers do not go to the bank for renewal of crop loans and allow them to become overdue to avoid the payment of premium at least for one crop.

In addition to crop insurance, the State and Central Government have implemented various personal insurance schemes including accident insurance policy and old age pensions in the rural areas as part of their social security measures. A new life insurance scheme, with State and Central participation, has been recently introduced in Andhra Pradesh from April 1, 2008. The scheme is expected to cover the lives of 38 lace unorganized sector workers with a small premium of Rs.10. The scheme is designed to cover the accidental and natural death as also permanent disability of the covered.

The protection schemes to the rural workers are pertinent in the context small holder farmers because 40.14 per cent of rural workforce is farmers as found by the National Commission of Farmers. These many small holder farmers are not able to make a living without working as agricultural labourers in rural areas.

c. Marketing

The Macro Scenario: Extent and Relevance

Marketing of smallholders produce is influenced by a variety of macro factors. They extend from village to international and they keep on influencing the livelihoods of smallholders in a continuous way by both micro and macro level factors. The main policies, institutions and processes that influence are described in this section

Policies

Various Reform Measures Initiated

As a requisite of the economic reforms and for overcoming different constraints the government at centre initiated many reforms in the marketing of agricultural produce since 2000. This was also necessitated by the changing global trends like growing niche markets, quality consciousness, certification etc. Many states followed the suit and Andhra Pradesh is one of the leading states in these reforms. These reforms have been impacting the marketing process and practices of smallholders in different ways.

Functional needs for market reforms

- Large investments required for development of post harvest infrastructure
- Major portion of investment expected from private sector
- Appropriate regulatory and policy environment necessary for private investment

Various reforms measures initiated

- Development of alternative marketing systems – private/ cooperative markets, model terminal markets, direct purchase, contract farming etc
- Progressive dismantling of controls and regulations under EC Act
- Law for implementing Negotiable Warehouse Receipt System
- Permission of futures trading in agricultural commodities
- Facilitation of common facilities for aggregation and value addition of produce in production areas
- Marketing Information System (AGMARKNET) to facilitate market intelligence services
- Initiation of e-trading/ e-auctioning in market yards

The important Acts reformed are APMC Act and Essential Commodities Act. The major reforms in these Acts are briefed below.

APMC Act

The main reforms in the APMC Act are

- Private / Cooperative Markets
- Direct Marketing and

- Contract Farming Programs
- Grading/Standardisation/Quality
- Establish Effective Linkages Between Farm Production And Retail Chains
- Public–Private-Partnership to Promote Professionalism in Existing Markets
- Stepping-Up of Pledge Financing and Marketing Credit
- Introduction of Negotiable Warehouse Receipt System
- Link Commodity Exchange with Market Yards for Price and Risk Management
- Information Technology to Promote Trade/ Market Led Extension Services
- Facilitate Investments

The Department of Agriculture and Cooperation also formulated a model law on agricultural marketing for guidance and adoption by the state governments.

APMC Reforms: Old to new system

Slide 8

Terminal Markets: The government has taken the initiative to promote modern terminal markets for fruits, vegetables and other perishables in important urban centres in India. These markets would provide state-of-the art infrastructure facilities for electronic auction, cold chain and logistics and operate through primary collection centres conveniently located in producing areas. The terminal markets would be built, owned and operated by a corporate/private/co-operative entity. This is an effort to shorten the value chain but not sure whether it brings more share of the value to the producer. And also the reach of such markets for smallholders is very distant as they mostly operate at primary levels in the value chain and not able to integrate along the chain. Direct handling of distant markets is not always necessary and not so easy for individual smallholders as it involve incremental investment, risks, high scale etc.

Slide 7

Essential Commodities Act

The Essential Commodities Act is the principal Act which controls the production, supply, storage and movement of, and trade and commerce in a

large number of agricultural commodities. Private investment in large-scale storage and marketing has virtually become non-existent due to the restrictive provisions of the EC Act. Amendment to the Act became necessary to promote investment in building agricultural marketing infrastructure, motivating corporate sector and processing units to undertake direct marketing of agricultural produce and to facilitate an integrated market. Facilitating free trade and movement of agricultural commodities would enable farmers to get best prices for their produce, achieve price stability and ensure availability at reasonable prices in deficit areas.

The standing committee in 2001 came to the conclusion that while the Essential Commodities Act may continue as umbrella legislation for the Centre and the States to use when needed, a progressive dismantling of controls and restrictions was also required.

> The Central Government have issued an Order under Section 3 of the Essential Commodities Act called the Removal of (Licensing requirements, stock limits and Movement Restrictions) on Specified Foodstuffs Order, 2002 in 2002. It removes all restrictions on purchase, stocking, transport, etc of specified commodities and also the requirement of licensing of dealers in respect of the specified commodities.

3.3. Schemes and Services

The government also initiated many schemes to extend marketing services for farmers. Some of such important major schemes are elaborated below.

Scheme for development /strengthening of agricultural marketing infrastructure, grading and standardization

Objectives of the Scheme

- to induce private and cooperative sector investments in market infrastructure development projects
- to strengthen existing agricultural markets, wholesale and rural periodic, to enhance efficiency
- to promote grading, standardization and quality certification of agricultural produce at farm/ market level

Components of the Scheme

- Functional Infrastructure
- Market user common facilities
- Shortening the Value Chain
- Direct Marketing
- Contract Farming
- E-Trading Infrastructure
- Market extension and market oriented production planning
- Input Supply

Linking of farm/ village to market: This scheme is started by marketing department of government of AP. It is intended to provide storage space, drying plat form, weighing machines, moisture meters and grading equipment including bagging/ packing facilities at the village(s) level to benefit farmers of Panchayat or group of villages locally as a viable unit. The entire scheme will be managed by community based organizations like the VOs.

Market Intervention Schemes

Minimum Support Price : The Economic Survey 2005-06 states "Market for farm output continues to depend heavily on expensive government procurement and distribution systems. A shift from the current MSP and public procurement system and developing alternative product markets are essential for crop diversification and broad-based agricultural development".

MSP: The background perspective

The system of minimum support prices (MSPs) was started in India in the mid-1960s to create a favourable incentive environment for the adoption of high-yielding varieties (HYV) of wheat and rice. It is an important means of market intervention by the government by offering administered prices.

Ensuring a remunerative and stable price environment is of paramount importance for agricultural produce given the fact that most of the cultivation in dry land areas by small and marginal producers and the markets for agricultural products are beset with many imperfections. Towards this end, minimum support prices (MSP) for major agricultural products (25 now) are fixed by the government, each year, after taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP).

The minimum guaranteed prices are fixed to set a floor below which the market prices can not fall. Procurement Price is the price at which the products are procured domestically by public agencies like FCI for release through PDS. Normally, procurement prices are lower than open market price and higher than MSP. Wheat and Paddy are the crops for which the government has the obligation to procure all the times ie even when the open market price is higher than MSP. For other crops, government procure only when the market prices crash below the MSP.

De-centralised procurement operations of Maize under MSP on pilot basis have raised hopes to decentralize market activities at farm or village level involving women-self-help groups as procurement agents locally for the purpose.

Procurement services

APMARKFED can procure commodities of specific quantity and quality from various agricultural market yards to different parties at minimal charges. APMARKFED can procure commodities of specific quantity and quality from various agricultural market yards to different parties at minimal charges.

APMARKFED also procures agricultural commodities on behalf of other interested parties by investing on its finances on the following terms.

- Order should be in bulk quantities
- 25% security for the party with at least 10% in the form of cash
- Maximum lifting period is 6 months
- Billing includes actual costs, interest, expenditure, manpower and service charges.
- Party should be present in any of the regulated market.

Nodal agencies designated for the purpose of procurement of paddy, coarse grain, maize, cotton and oilseeds under MSP and MIS such as A.P. Civil Supplies Corporation, A.P. Markfed, A.P. Oil Federation on behalf of FCI/NAFED/CCI could be largely encouraged under the proposed Concept to step-up their operations locally.

Creation of additional infrastructural support –facilities including upgradation of existing rural godowns to match SWC /CWC/FCI standards require financial out lay with the following break-up on a conservative (estimate) basis.

a) 1000 MT capacity rural godown (of an average size)
for a clusters of villages costs approximately Rs:20,00,000

b)	Drying /grading/ Market Plat form	Rs: 3,00,000
c)	Electronic Weighing machine (s)	Rs: 80,000
d)	Moisture metres (6 Nos)	Rs: 30,000
e)	Tarpaulins (5 Nos)	Rs: 5,000
f)	Kiosks /Internet facilities	Rs: 4,000
	Average Unit Cost	25,00,000

3.4. Institutional arrangements

The Department of Agriculture and Cooperation has three organisations dealing with marketing under its administrative control, namely, the Directorate of Marketing and Inspection (DMI), Faridabad; Charan Singh National Institute of Agricultural Marketing (NIAM), Jaipur; and the Small Farmers Agri-Business Consortium (SFAC), New Delhi.

Promoting marketing chains for domestic and export marketing is one of the objectives of SFAC

The SFAC was registered by the Department of Agriculture and Cooperation as a Society under the Societies Registration Act, 1860, on 18 January 1994. It is managed by a board of management consisting of 20 members and chaired by the union minister of agriculture as its ex-officio president, and the secretary to the Government of India in the Department of Agriculture and Cooperation as its ex-officio vice president. The managing director is the chief executive of the SFAC. It has established 18 state-level SFACs by contributing a corpus fund. The mission of the Society is to support innovative ideas for generating income and employment in rural areas by promoting private investments in agri-business projects.

Marketing Research and Information Network (AGMARKNET)

This is a central sector scheme that was launched by the Department of Agriculture and Cooperation in March 2000. The scheme aims at progressively linking important agricultural produce markets spread all over India and the State Agriculture Marketing Boards/ Directorates and the DMI for effective exchange of market information. The market information network,

AGMARKNET (agmarknet.nic.in), is being implemented jointly by DMI and NIC, using NICNET facilities available throughout the country.

The objective of the scheme is to facilitate collection and dissemination of information for better price realisation. The scheme provides funds to state- and national-level institutions managing the markets and executing market-led extension activities and thus, has no separate gender-specific provisions under the scheme. The portal covers market, price, infrastructure and promotion-related information for efficient marketing.

A.P. Markfed (Andhra Pradesh State Co-operative Marketing Federation Ltd) was
established in the year 1957 with Head-Quarters at Hyderabad. It is a federation of
Marketing Co-operative Societies in A.P. With the main object of helping the farmers to secure better price for their produce by taking care of their market needs and providing agricultural inputs. Against this objective the Markfed's present activity consists of sale of farm inputs like chemical fertilizers, pesticides & seeds, maintenance of warehouses and procurement of Agricultural commodities through its member societies.

District Co-operative Marketing Societies (22) and Primary Agricultural Co-operative Societies (1451) help in the supply of inputs to the farmers and marketing the commodities produced by the farmers.

The Andhra Pradesh Co-operative bank help in financing the activities of the District Co-operative Marketing Societies and Primary Agricultural Co-operative Societies.

PRODUCERS' VOLUNTARY ASSOCIATIONS (PVAs)

Commodity – Specific producers' Associations are to be organized among farmer – grower's (village-wise) as support – voluntary groups to give phillip to the proposed concept;

Organising commodity – specific growers' associations at village, market (AMC) and state level integrating their functions in relation to market – centric activity;

Nodal agencies designated for the purpose of procurement of paddy, coarse grain, maize, cotton and oilseeds under MSP and MIS such as A.P. Civil Supplies

Corporation, A.P. Markfed, A.P. Oil Federation on behalf of FCI/NAFED/CCI could be largely encouraged under the proposed Concept to step-up their operations locally.

Proposed Concept is in tune with the policy guidelines of Govt. of India to enable the farmers to market their produce within a 8 KMs radius (distance) locally.

Future challenges

Statutory Aspects:

- Some States still not willing to allow direct marketing or private markets – political opposition to reforms/ organized retail chain
- Authorities are overprotecting existing marketing channels – not facilitating change/ competition/ new channels – also not modernizing APMC Yards
- Trade/ movement restrictions still existing for certain commodities
- Single point levy of tax/ single point payment yet to be facilitated in most States
- Single window systems to evolve for SPS Certification & Export Clearances (APEDA Authority Amendment Bill to be processed).

Economic Reforms and Small Holder Agriculture:

An ad hoc set of policies after 1990, inspired by the general wave of liberalization across the country, has attempted to unevenly withdraw this support to the farming community (Patnaik 2003; Vakulabharanam 2005). Insofar as the pre-liberalization policies had come to benefit the poorer agricultural groups, the withdrawal of this support has come to mean greater distress for the farmers, and indirectly it has had adverse effects on the wages of agricultural workers.

Liberalization processes have also contributed to the overall output slowdown in a significant way. In particular, public investment in agriculture (see table 6) (which has usually facilitated yield improvements) declined slightly in nominal terms, from Rs. 4395 crores in 1990-91 to Rs. 4221 crores in 1999-00. The slack in public investment has been taken up only to a certain extent by private investment, which grew from Rs. 10441 crores in 1990-91 to Rs. 13083 crores in 1999-00. The figures for total investment as a share of GDP are more revealing – it fell from 1.92% in 1990-91 to 1.37% in 1999-00 and kept declining

throughout the 1990s (see figure 1). In recent years there has been some improvement in this scenario, but total investment as a share of GDP is still comparable to what it was in 1990-91. One important area in which investment has occurred is irrigation, which is crucial for agricultural growth in many parts of India. However, since 1990-91, growth rate in irrigation has been much lower than the same in previous decades (see Vakulabharanam and Motiram, 2008). Also, much of the investment into tubewells is private, and this has also had adverse implications for sustained output growth (given its adverse impact on groundwater). We can also observe that irrigated area per person has actually fallen in recent times, and irrigated area as a proportion of the net sown area is still low in parts of India (see Vakulabharanam and Motiram 2008).

Table 6: Agricultural Investment in India

Year	Total	Public	Private	Public Share	Private Share	Share of GDP
	(Rs. Crore)	(Rs. Crore)	(Rs. Crore)	(%)	(%)	(%)
1960-61	1668	589	1079	35.30	64.70	
1970-71	2758	789	1969	28.60	71.40	
1980-81	4636	1796	2840	38.70	61.30	
1990-91	14836	4395	10441	29.60	70.40	1.92
1995-96	15690	4849	10841	30.90	69.10	1.57
1996-97	16176	4668	11508	28.90	71.10	1.51
1997-98	15942	3979	11963	25.00	75.00	1.43
1998-99	14895	3870	11025	26.00	74.00	1.26
1999-00	17304	4221	13083	24.40	75.60	1.37
1999-00	43473	7716	35757	17.70	82.30	2.20
2000-01	38735	7155	31580	18.50	81.50	1.90
2001-02	47043	8746	38297	18.60	81.40	2.20
2002-03	46823	7962	38861	17.00	83.00	2.10
2003-04	45132	9376	35756	20.80	79.20	1.90
2004-05	48576	10267	38309	21.10	78.90	1.90
2005-06*	54539	13219	41320	24.20	75.80	1.90

Source: Economic Survey of India

1960-81 figures are for base year 1980-81; 1990-00 figures are for base year 1993-94; 1999-06 figures are for base year 1999-00. Percentage share of GDP is at constant prices. (Adapted from Vakulabharanam and Motiram (2008).

Market determinism: Agricultural liberalization policies have been attempted mostly in the realm of agricultural markets, both external and internal. The simple dictum of 'getting prices right' is the main policy imperative for pushing through reforms in this arena, so that agricultural producers supposedly have the correct incentives that are determined by the market (Schiff and Valdes 1992, Krueger 1992). There are two aspects to this story. First, the differentials between domestic and international prices ought to be erased. Second, input prices ought to be governed by the logic of the market. These policies have been motivated along the lines that there had been an anti-agriculture bias in developing countries, and that domestic agricultural prices had been kept artificially low in order to promote industry.

The implications of this understanding are that government subsidies in various input markets should be gradually eliminated, and that Indian agriculture should be opened to the external sector. The actual implementation of policies has been somewhat uneven, regionally as well as in terms of the extent and reach of the ideas of liberalization. Pressures from various rural groups[3] (both elite and non-elite), and the enthusiasm of various state level leaders[4] have determined the extent to which liberalization policies have been implemented. A summary of measures implemented so far is presented in table 7.

Table 7: Summary of Liberalization Measures Introduced in the Agricultural Sector

Area of Liberalisation	Policy Changes and Measures of Implementation
I. External Trade Sector	a. In tune with the WTO regime, since 1997 all Indian Product lines placed in Generalised System of Preferences (GSP).

[3] This is discussed in the next section in greater detail.

[4] Agriculture is a state government subject in India. The center only makes broad guidelines, but the actual implementation depends upon the state governments. For example, Andhra Pradesh government in the 1990s and until 2004 has been one of the most active proponents of agricultural reforms.

	b. In 1998, Quantitative Restrictions (QRs) for 470 agricultural products dismantled. In 1999, further 1400 agricultural products brought under Open General Licensing (OGL) and canalization of external trade in agriculture almost reversed.
	c. Average tariffs on agricultural imports reduced from 100% in 1990 to 30% in 1997.
	d. Though India is in principle against Minimum Common Access, it is actually already importing 2% of its food requirements.
II. Internal Market Liberalisation	
1. Seeds	a. Since 1991 100% foreign equity allowed in seed industry. b. More liberalized imports of seeds.
2. Fertilizers	a. Gradual reduction of fertilizer subsidies since 1991.
3. Power	a. Since 1997 Power Sector reforms were introduced at the behest of the World Bank in States like Andhra Pradesh and power charged increased. b. Power sector opened for private sector.
4. Irrigation	a. Water rates increased in some States. b. Participatory water management was sought to be introduced through Water Users' Associations (WUAs). c. States like Andhra Pradesh made new large irrigation projects conditional on 'stakeholder' contribution to part of investment.
5. Institutional Credit	b. Khursro Committee and Narasimham Committee (1992) undermining the importance of targeted priority sector landing by the commercial banks. c. The objectives of Regional Rural Banks' (RRBs) priority to lending to weaker sections in rural areas diluted since 1997.
6. Agricultural Marketing	d. Changes in the provisions of Essential Commodities Act. e. Relaxation of Restrictions on the inter-State Movement of farm produce. f. Encouragement of Contract Farming. g. Agricultural Commodity Forward Markets.

Source: Reddy (2006)

h. Agricultural liberalization in Andhra Pradesh

Agricultural policies in Andhra Pradesh can be divided into two phases after the introduction of economic reforms. The first phase was introduced by the then chief minister Chandrababu Naidu in mid 1990s. The second phase started after the state assembly election of 2004, when the mandate was clearly against the neglect of rural areas under Chandrababu Naidu's regime[5].

Here we summarize the salient features of the new strategy of the agricultural department in Andhra Pradesh under Chandrababu Naidu, i.e. the first phase after reforms. The old state-centered paradigm emphasizing land reforms, irrigation investments, research, and subsidies was abandoned. The new paradigm emphasized agricultural growth, export-oriented farming, value addition in agriculture, consolidation of land holdings by changing the lease structures, and investment of corporate capital in agriculture. The state government was a leader among various states in implementing the reforms listed in the above table. Some of the measures introduced in the state had the effect of increasing the input costs for the farmers. First, power subsidies were cut significantly (Murthy, 2001). In terms of per-hectare impact, this reduction hurt those farmers with small landholdings much more than the rest (Chowdhury and Reddy, 2000). Second, large-scale measures were introduced to channel institutional credit through micro-credit structures that the World Bank has been popularizing across the world after the success of the Grameen Bank experiment in Bangladesh (summary from the agricultural policy document, Andhra Pradesh).

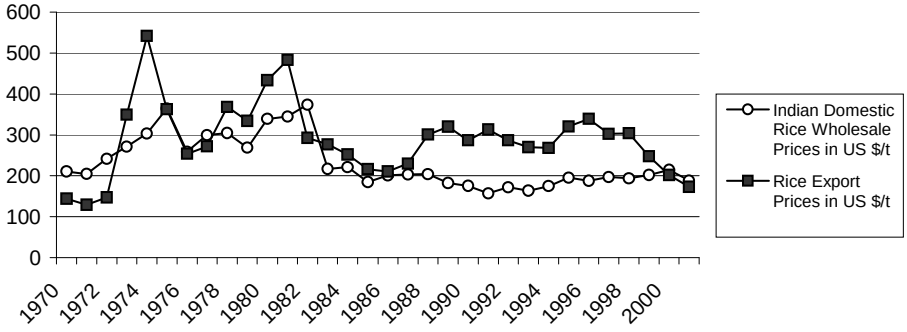
Agricultural Prices under Liberalization: Since trade liberalization measures have been implemented on a large scale as reported in Table 7, it is interesting to find out what actually happened to domestic agricultural prices, i.e. if there is indeed convergence between international and domestic prices and rise in domestic prices as the advocates of liberalization have posited.

Global Prices and Prices in Andhra Pradesh: For the first set of questions, I focus on two crops that have been very important in the economy of Andhra Pradesh in terms of their growth over the last twenty five years i.e. rice and cotton. India has become a rice exporter during the last few years and was among the top three exporters of rice in the world in 2002. The comparison of

[5] The second phase, which we do not discuss in detail here, is characterized by increased spending on irrigation, introduction of free power, and the introduction of the national rural employment guarantee act (NREGA). The effects of these need to be analyzed from surveys that will be conducted in the future. But the first two imperatives (other than the NREGA) are largely motivated by the Green Revolution ideas.

global and local nominal prices in Andhra Pradesh is presented in Figure 1. World rice prices are falling even as domestic rice prices have remained stagnant. The price convergence for this crop has come about primarily because of a drop in world prices, not the other way round.

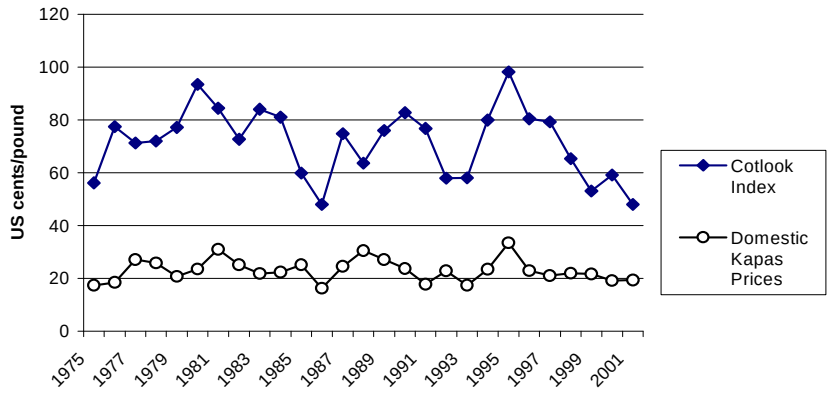
Figure 1: Global Rice Prices (nominal) and Wholesale Rice Prices (nominal) in AP (1970-2001)



Sources: 1. Statistical Abstracts for domestic prices
2. IRRI Statistics for export Rice Price Series

India has been importing cotton since quantitative restrictions were removed. Before 1998-99, Indian domestic lint prices were consistently lower than the world prices (Mohapatra, 2002). In more recent times, as the world price of cotton lint has been declining significantly, textile manufacturers have begun to import cotton lint mostly from the US. While farmers produce cotton *kapas*, world prices are available in cotton lint, which is cotton *kapas* without seed. It is not possible to compare these two prices directly because the process of producing cotton lint from *kapas* has its own changing structure of costs. We present the world lint prices and Andhra Pradesh cotton *kapas* prices in Figure 2. Especially during the period of liberalization, these prices seem to display higher correlation than earlier. But the recent trend is that of falling prices.

Figure 2 Global Cotton Lint Prices (nominal) and Domestic Kapas Prices (Nominal)



Sources: 1. USDA for Cotlook Index A.
2. Statistical Abstracts for Domestic Cotton Kapas Prices

For both rice and cotton, contrary to the expectations of the advocates of liberalization domestic prices fell even as international prices fell more steeply during the liberalization period.

On the whole, there is enough evidence to argue that liberalization policies have had a significant impact on Indian agriculture and in particular on AP agriculture in terms of price declines due to greater integration. In the next section, we look at empirical evidence on the distributional effects of these policies from across the developing world, and in particular, AP.

Agricultural Liberalization and Distribution: In the Indian context, recent statistical estimates (Rao and Storm, 2003 and Deaton, 2003) point to the fact that after reforms were introduced, agricultural output as well as inequality stagnated in rural areas while poverty has declined roughly at the same rate as in the decade prior to liberalization. The story that we narrate below of the welfare declines of small producers and laborers in AP are more universal in India as shown above.

Data and Problems: The National Sample Survey Organisation (NSSO) conducts detailed household surveys of consumer expenditure once every five years (quinquennial) on a large scale in India. We select four NSS quinquennial surveys to make our case. The rationale for selection is to capture trends during phases before and after the introduction of liberalization policies. For this

purpose, I select the following four rounds – 1983-84, 1987-88, 1993-94 and 1999-2000. Roughly, the period before 1993-94 would correspond to the pre-liberalization period and the period after 1993-94 would correspond to the post-liberalization period in agriculture.

The NSS 55th round surveys conducted during 1999-2000 have become controversial (see Deaton, 2003, Tarozzi, 2001, and Sen, 2000). We replicated the methodology of Deaton (2003) for the Telangana region.

Welfare Declines of Marginal Farmers and Laborers during Liberalization: The National Sample Survey, apart from providing data about consumer expenditures at the household level, also reports data on items such as landownership and type of household. Based on the land ownership data, we classify households in Andhra Pradesh into different classes (like the ones presented in section II) - large farm, medium farm, small farm, and marginal farm or as landless in the rural areas. Table 10 presents the values for the first three rounds and the adjusted values for the 1999-2000 round.

From the table, several observations can be made. First, the average per capita expenditure in the rural areas for AP goes up between 1983 and 1993 i.e. the pre-liberalization period, and comes down rather sharply in the post-liberalization period. Second, there are steep declines for the landless labor and marginal farmers in the post- liberalization period reversing the trend of the earlier period when they were experiencing gains. Third, while the large, medium and small farmers also experience declines after the advent of liberalization, these are less perceptible than those of the two classes that I mentioned above. On the whole, during the liberalization period, per capita expenditure values for all the classes have fallen even though the declines have been sharper for the poorer sections. This explains the slight increase in poverty. Within the agrarian population, these results indicate a rise in inequality because the per capita declines have been sharper for the poorer classes.

Table 10: Per capita expenditure (Rs) of agrarian classes in AP (1983 to 2000)

	1983-84	**1987-88**	**1993-94**	**1999-00**

Large Farmer	151.61	183.18	166.81	164.35
Medium Farmer	135.64	146.15	142.95	138.18
Small Farmer	117.20	132.84	139.93	135.02
Marginal Farmer	120.08	124.71	124.23	125.63
Ag Labor	94.63	100.85	110.43	106.95
Non-Ag Self	115.07	134.29	135.01	126.86
Non-Ag Labor	107.57	116.84	116.15	127.55
Others	148.72	169.29	196.63	178.34
Weighted averag	114.51	125.58	128.68	124.30

Source: National Sample Surveys for the respective years.

The results do not agree with the claims of the policy makers favoring liberalization that the farming population on the whole will experience welfare gains with the elimination of the so-called anti-agricultural bias in the pre-liberalization policies. As a whole, the agricultural population in AP got impoverished after the advent of liberalization policies with more intense adverse effects being borne by the poorer sections. The above explanations for the All-India story work very well for the Andhra Pradesh too. In fact, the dependence on informal moneylenders is very high relative to the rest of the country as is visible from Table

Chapter 3

Micro Solutions

Case study discussions:

Our belief based on evidence available is that sustainable farms are small and mixed -- mixed crops, mixed trees and mixed livestock, with all three mixed together in an integrated pattern that mimics natural biodiversity and reaps the benefits of collaborating with nature. The main benefit is health: healthy soil, healthy crops and livestock, and healthy yields, along with low input costs.

Productivity

How many times have we heard that large farms are more *productive* than small farms, and that we need to consolidate land holdings to take advantage of that greater productivity and efficiency? The actual data shows the opposite -- small farms produce far more per acre or hectare than large farms. Small farmers, especially in the Third World, are much more likely to plant crop mixtures -- intercropping -- where the empty space between the rows is occupied by other crops. They usually combine or rotate crops and livestock, with manure serving to replenish soil fertility.

Such integrated farming systems produce far more per unit area than do monocultures. Though the yield per unit area of one crop -- corn, for example -- may be lower on a small farm than on a large monoculture farm, the total production per unit area often composed of more than a dozen crops and various animal products can be far higher.

At first glance Anjamma's field looks as though it urgently needs to be weeded and as though several plants at once have bolted. But order prevails in this green confusion: the traditional system of at least twelve different crops, including four different varieties of millet, two varieties of red gram, lentils, beans and two oilseeds, is called Pannendu Pantalu. „This means that even under the most unfavorable conditions there is still something to harvest," she explains. „However, if I only grow one variety and it is lost, then I have nothing left. " Anjamma and her husband have worked hard for a long time. When they got married they only owned a sickle. First of all they worked as day labourers, then as share croppers who had to hand over half of the yield to the landowner. After a while they had their own team of oxen that they hired out. Finally, they bought four acres of land, a large square plot, some of it even with fertile black earth. Anjamma, too, has her own seed, over 60 varieties and species. She makes up her own „plant cocktail" depending on how good the first rain is, for different soil types and changing according to the seasons, for food, animal feed and cooking oil. Her collection includes some plants that provide a yield even when there is little rain and one variety „that not even the crows touch". She grows mung and green gram for sale. What a contrast to this is the field of a wealthy farmer just next

door. There only sorghum is growing, which looks windswept and paltry, interspersed with weeds. He obviously doesn't need to use the field better. But, Anjamma says, richer farmers are increasingly coming to her to borrow seed. The fact that her seed and knowledge are in demand makes her proud and self confident.

Food security

While 91% of the planet's 1.5 billion hectares of agricultural land are increasingly being devoted to agro-export crops, bio fuels and transgenic soybean to feed cars and cattle, millions of small farmers in the Global South still produce the majority of staple crops needed to feed the planet's rural and urban populations. Small increases in yields on these small farms that produce most of the world´s staple crops will have far more impact on food availability at the local and regional levels, than the doubtful increases predicted for distant and corporate-controlled large monocultures managed with such high tech solutions as genetically modified seeds.

Alternative PDS story from DDS

The important outcomes of the program are:

1. Restoration of environmental and ecological balance, enhancing productivity and value of lands and conservation of Biodiversity

In the context of a policy environment that neglected dryland agriculture for decades, farmers in these areas continued either subsistence farming practices or went for high input chemical farming that degraded and destroyed ecological balance and biodiversity. Mono cultural cropping systems have begun replacing mixed farming systems, especially with the medium and big farmers in this area. From a gene pool that had shrunk to less than 20 varieties when DDS launched the program in Medak district. Women farmers turned the tide and are now cultivating around 80 varieties, ensuring not only food security for themselves but also to future generations and a number of local communities in the district. The high diversity of crops has minimized the risk of crop failure and has enabled farmers to earn more income.

A diversity of species provides a range of economic and investment opportunities. l Food security is improved by a range of varieties which help reduce the risk of loss due to pests, and increase tolerance to climatic stress. Protection is provided against epidemic pathogens – the more genetically uniform a population is, the more vulnerable it is to epidemic disease. l Genetic information is available to plant breeding and pharmaceutical industries, the outputs of which contribute to food security and improved human health. Exposure to environmental risk reduced through supporting ecosystem processes which protect poor people from variables such as drought and flood. Nutrition and health are improved by providing a source of medicines and vitamins for humans and livestock.

Increase in food intake and improvement in health and nutrition status

Apart from cultivated grains, the members of the APDS program, who mostly are dalit women, have a tradition of eating several varieties of uncultivated foods collected from

fields. Uncultivated foods are important from the perspective of gender and poverty. Through the APDS program, the importance of uncultivated foods in the diets of poor households has been brought into focus and the program has identified over 80 uncultivated foods consisting of vegetables, greens, berries, etc., that freely grow on fields and common lands in the villages.

Fodder for Livestock

Livestock, especially bullocks and buffaloes, are an integral part of dryland agriculture. They not only provide draught power but also are vital in maintaining soil fertility in these regions. Livestock is also seen as household asset to generate extra income and provide insurance against risk during periods of droughts and stress. Livestock in the program area has been dwindling over the years due to lack of fodder as more and more lands are becoming fallow. With the intervention of APDS program, this trend was arrested as the regenerated lands now provide enough fodder for the cattle in the villages.

Nutritional Value of Cereals and Millets

Nutritionally, the intake of a variety of cereals and millets is always desirable as they provide required micronutrients essential for healthy growth and development. This has significance especially, for the poor in dry land areas whose staple diet has changed over the years from consumption of a variety of cereals and millets to one of dependence on PDS rice. This change has resulted in several nutritional deficiencies in the diets of the poor. Malnutrition and deficiency of micronutrients can be corrected by consuming a variety of coarse grain cereals. Compared to standard grain like rice, cereals and millets are richer in calcium, minerals and phosphorous. The APDS program has helped revive the cultivation of traditional crops that address not only the food security needs of local communities but also their nutritional requirements but were neglected due to lack of governmental support.

Reduction in Distress Migration:

The APDS program has been able to slow down distress migration from the villages to some extent. Another angle to the problem is that in some of the villages, local people do not have the option of migration and are forced to remain poor because either the villages are far away from urban centers or they are too poor to bear the costs of migration. With the introduction of the APDS program, local people now have more seasonal agricultural employment as more and more fallow lands are brought under cultivation. One of the spin-offs of this program has been providing employment for certain rural artisan groups such as basket weavers to make bamboo baskets for storing grain for the community grain fund in each village, vermicompost units that produce organic manure for local requirements, NPM practices that provide employment for women to collect neem seeds and make need powder and decoction for crop spraying, etc.

Empowering Women

The women members of the APDS program initially suffered triple handicap of being poor, being women and being dalits. But, these handicaps soon gave way to new forms of social organization, education and awareness, economic freedom and empowerment.

The evidence of women empowerment as a part of the overall impact of APDS program can be seen as: Individual empowerment within the household; a sense of self-worth, and influence in household level decision-making. A sense of respect in the eyes of others in the village community, linked to their improved economic wellbeing. Women no longer see themselves as mere agricultural labourers but see themselves as proud farmers. Group solidarity and sense of identity amongst sangham members has made them more assertive in claiming their rights.

Up scaling
DDS has up scaled this program through networking with many NGOs in many districts. To make it more visible and reach many more needy farmers government should think of incorporating this into main stream rural development programs such as IKP etc.,

Seed management:

CSA seed village program

Seed has become an important input for which the farmers are relying more and more on the markets and self-sufficiency (both in the physical and legal sense) and diversity become important concerns. To address the issue of self-sufficiency, Centre for Sustainable Agriculture has begun a Seed Village program. Through this program several small farmers were benefited in many ways of which few are mentioned below:

- Timely availability of seed from known and Reliable source
- Good quality seed for better price.
- Better quantity (no deception in weight)
- Improved skills and knowledge in seed selection, collection, preservation and sales resulted in more no of seed producing farmers.
- Better germination rate and yields less incidence of pest and disease resulted in better returns
- Revival of traditional knowledge on seed storage.
- Increased interactions among farmers and women were recognized as seed producers and managers.
- Networking provided them better opportunities for exchange and sustainability of the program

Water management:

5 % model from LAYA in east Godavari tribal belt:

In LAYA's operational area recharge and water holding capacity is very less . In order to address this particular problem LAYA initiated a program in 2 villages initially. With support from AFPRO, work started in 5 villages and in later to12 villages.

The 5% model is nothing but identify suitable spot to store water in a given field and dig a pit with following measurements. Width should be ¼ of the total width of the plot and length should be 1/5 of the total length of the plot with 1 meter depth. The pit should be locate din such way where natural slope should lead the rain water into the pit. This slowly percolates into field and increases the moisture of the soil. This is suitable in clay soils. This helped in stress periods

Rolipally. Govinda Reddy is from Vattigadda village in Y.Ramavaram Mandal, east godavari district who is practising this since 5 years. Because of this practice his paddy yield has increased remarkably from 10 bags to 20 bags an acre.

Linking with NREGA will encourage other farmers to adopt this method. Regular de silting is required which laborious. Covering of the pit is also important as animals may fall and drown. Except these 2 cautions the method is very simple and cost effective.

Fodder banks:

Anthra case study:

Chennapur Village: Anthra started its work in the village in January 05. 43 women have been involved in the project. Based on the preliminary findings about the fodder and water availability in the village, Anthra evolved an operational plan to rebuild fodder and water security in the village, in participation with the villagers. We have been successful in making farmers understand the need to adopt mixed cropping practices, as a major strategy to enhance fodder during the year. They have also realized that they need to be actively involved in growing other fodder varieties. Farmers who own buffaloes started cultivating green fodder and have also been involved in multiplying fodder seeds. 21 farmers were involved in multiplying traditional grass species like Dichanthium annulatum, Panicum repens and mainstream species such as PC23 Jowar and Paragrass. Tree fodder species (Acacia nilotica, Albizia lebbeck, Leucaena leucocephala and Moringa oliefera) were raised in the community nurseries during the past 2 years and distributed to 41 women farmers. In Chennapur village the survival rates were Leucaena leucocephala (74.4%), Albizia lebbeck (91%), Moringa oliefera (78%) and Acacia nilotica (60%). To enhance drinking water for animals, a water tank was constructed and a traditional water tank has been renovated. In the Kharif season women cultivate Maize, Redgram and Jowar on the drylands, under mixed cropping

systems and cultivate paddy in the wetlands. While the farmers have been introduced to ecological farming practices, they were successful in using these ecological practices (natural manure, vermin-compost, herbal pesticides), to cultivate Rabi crops, which are largely vegetables such as onions, brinjal, tomatos, chillies, ladies finger etc.

Case studies to be enclosed

Impact of the program on small farmers:

- Fodder seed banks were created.
- Green fodder availability increased
- Local grass species were identified, conserved and cultivated.
- Common lands were used for raising fodder trees
- Local animal healthcare system revived
- Local breeds conservation through natural service
- Organic agriculture practices / methods were introduced
- Manure and vermi composting techniques were introduced

Constraints:

- Limited water for irrigation and irregular rainfal
- Young people are not interested in livestock management and agriculture
- Young people are attracted to ***factories and city life*** though they realize later that they do not belong to those life styles.

Case studies from CWS:

Case studies from 10 villages to create fodder banks in forest as well as common lands with collective efforts and rights.

Notes:

Demand side management of Groundwater by farmers:

Case studies from APWELL project and APFAMGS Project:

To improve the living conditions of small and marginal farmers of 7 drought prone districts of Andhra Pradesh this project provided irrigation through bore wells. Detailed case study is enclosed.

APWELL started as a groundwater development project and moved towards a community groundwater management initiative. A total 3467 bore wells have been commissioned, irrigating 34,636, covering 13,867 small holder families. While focusing on the economic status of farmers, the project went across castes, creed, religion or gender which was felt a great asset, particularly by farmers. The overall reach of APFAMGS project in terms of farmers is about four lakh.8 APWELL intervention through group managed bore well irrigation system not only prepared small holder farmers to face vagaries of monsoon but also stooped out-migration. Ganta Ramaih along with his wife Ganta Subbamma eked out living by cultivating a small of patch of dry land in Obayapalle village of Prakasam District. Unable to meet family needs, they often worked as agricultural labors in others field to supplement their farm income. They cultivated castor and red gram, fetching a maximum of 3000 per acre, when rain gods blessed their fields. A drought year threw them in debts. Subbamma heard about the activities of APWELL Project from a friend in the neighboring village and went to explore the possibilities of becoming member of Bore well User Association (BUA). Several days of discussion interspersed with heated arguments between the husband and wife followed, as Ramaih argued as to how he can share the water from a bore well drilled on his land with others. The land and water underneath belonged to him. With persuasion of APWELL field staff and Subbamma, he finally signed the agreement of water sharing with other 3 small holder farm families in the village. They never dreamt of a bore well water source in their small piece of dry land. After the family shared the water for irrigating their fields, they harvested 5 quintals of chilly and 30 quintals of cotton, apart from good harvest of groundnut on two and half acre land, they took on lease. This year, their income was INR 32,000

Access to water, scientific information and enabling government schemes not only creates rural employment but also arrests out migration from villages, as shown by the experience of APFAMGS Project. Kalachatla, YG Thanda, Gundala Thanda, Laxmi Thanda and Minapuram Thanda form part of the Vajralavanka HU, in Anantapur district. About 110 families in these villages are small holder farmers. Due to regular failure of monsoon and no irrigation source, they turned labors in rabi season, migrating to towns as far as 100-200 kms. This year, 10 defunct wells became functional, due to incessant rains. Additionally, these small holders organized themselves into Ambedkar Groundwater Management Committee, with the facilitation of APFAMGS. The committee created a platform for discussions around water, water use efficiency, and migration and government schemes. Empowered with the scientific information and initiative of the committee, 46 small holder families could install sprinkler irrigation systems on their farms, thus creating enough work for all members of the families. This

rabi season, about 100 migrants decided to stay back and pursue farming on their own farms.

Experiences form APGMAGS project shows that access to scientific information makes a farmer so powerful, s/he will be in a position to question the wisdom of not only fellow farmers, but also the extension workers and scientists. Access to scientific information of a farmer, other than that of a pesticide dealer can cut down input costs, which will again have multiplier effect. While access to scientific information of a farmer results in his own economic benefits, it will have multiplier effect in the vicinity and bring in a general welfare of the farming community. A vigilant farmer enriched with scientific information can save many of fellow farmers from catastrophe of economic losses on account of motor burn-outs.

Crop choices:

Mono culture replaces bio diversity

Venkateshwarlu of Nagellamudipi in Polerammavagu Hydrological Unit (HU) in Prakasam district owns four acres of land. He shares water with four other farmers from APWELL bore well. His bore well was not among the observation wells identified on technical criteria. Having learnt about the concept of Participatory Hydrological Monitoring (PHM), he was keen to know what was happening in his bore well. He pleaded with APWELL staff to include his bore well in the observation well network. As a result of his persistent follow up, his well was included and the neighboring observation well farmer agreed to share his water level indicator with him. He is at present monitoring water levels regularly. After actively participating in Crop Water Budgeting (CWB) exercise, his original rabi crop plan of paddy, ragi and cotton changed to ragi, groundnut and vegetables.

CROP DIVERSIFICATION THROUGH HORTICULTURE

AF has been promoting dry land horticulture for the past 18 years, as an additional source of agricultural income, to make the farmers resist the impact of recurring droughts. Under its dry land horticulture programme, AF has, till date planted about 1,03,00,000 fruit plants like Mango, Sapota, Tamarind, Amla etc.

This has brought about 72,000 ha. of area belonging to about 114,000 farmers under crop diversification.

To ensure the survival of plantations in Anantapur district's hot and arid climate, and the uncertainly of water availability during summer months, AF introduced paying incentives for pot watering of plantation for 3 years.

AF also advocated the same in Govt. watersheds where it was working. After a long period of negotiations AF was successful in bringing the policy to pay incentives in all Govt. watersheds across the state.

The following effects have generally been observed where AF has taken-up its' Dry land Horticulture programme.

1. Dry land Horticulture has become an additional and dependable source of income.
2. The farmers feel secure that they have a very productive land asset.
3. This has enabled them to resist the impacts of droughts.
4. This has increased their land fertility and mono cropping hazards have reduced.
5. Finally it has increased the market value of their lands.

A CASE STUDY ON HORTICULTURE

Mr. Chenna Kesava Reddy is a farmer from Palavenkatapuram village. He has 5 acres of rain fed land. He used to cultivate groundnut. On AF's suggestion he planted 320 mango trees in his 5 acres of land in 2001 and cultivated groundnut as inter crop. Because of consecutive drought year after year his debts started increasing. Whatever small amount of crop he got, the moneylenders were taking away. Again he had to take loans from them for next year's capital. This way he got into a debt-trap and was unable to clear the loans, which had grown to an extent of about Rs.12,000/-. But the fruit trees plantation came to his rescue. This year the plantation was bearing fruits and he sold the tree usufruct for Rs.15,000/-. He cleared all his debts and is a happy man now. He says he is grateful to AF for the support.

(Dr. Y.V. Malla Reddy)
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Rice is replaced by vegetables

I hail from Mannemvaripalle village, about 12 km from Markapur town in Prakasam district of Andhra Pradesh. I have a small family and eke out living by farming on a 5-acre farmland. As there are no surface water sources in my village, I depended solely on groundwater for irrigating my crops, which I did through two borewells.

CARVE, a Markapur based NGO, entered our village in the year 2003 for implementing APFAMGS Project. The implementation started with a general meeting of village elders, followed by a cultural program focusing on the need for farmer managed groundwater systems. They later conducted several meetings for sharing the concept and components of the project. Apart from establishing a rain gauge station in our village, they identified four borewells for measuring water levels and borewell discharge. One of my borewell was also selected, after I expressed my willingness. They then went on to make provision in my borewell for carrying out measurements. After practical training, I was handed over the required equipment to carry out measurements. That is how I came to be involved in the project activities.

From then onwards I collected water level data regularly (once in fifteen days) and promptly recorded in the Hydrological Monitoring Record, provided by the project. My son also became active in the project and volunteered to collect and record rainfall data. From then onwards we took water level and rainfall measurements and recorded them in a book. The project people also formed a Groundwater Monitoring Committee. I raised sweet orange, chilly, rice and cotton on my 5-acre farmland. Under the observation borewell, I raised the orange orchard. Observing water levels, I came to realize that I am using too much water reflected in lowering of water levels in dry periods. I also realized that rice cultivation under the second borewell might have also contributed to lowering of the water level in the observation well, as I understood in one of the training that over pumping not only lowered the water level in borewells located on a farmland but also others in the same HU (I realized later that my land forms part of Yadalavagu HU). Though my orange orchard survived the drought of 2005, rice crop put me into financial losses. I then started thinking as to how I can ensure sustained income to support my family, not causing drastic lowering of water level in the HU. In the month of October 2005, CARVE-APFAMGS organized Crop Water Budgeting exercise at HU level to estimate the quantity of groundwater available for Rabi cropping. My wife participated in the CWB workshop. After she returned home, she shared with me her experience of participation. She told me that the water level in general in Yadalavagu HU was lowering fast, corroborating with my observation in my borewell. She also told

me how changing of crops dramatically changed the quantity of groundwater pumped. She also shared water requirement of several crops. After long family deliberations, we decided that the best suitable crops for our family are vegetables, because they not only provide us food for self-consumption but also can generate some income. And most importantly, they consume much less water than rice crop. As decided, we planted vegetables (bitter gourd, beans, tomato and lady's finger) under the second borewell, in stead of rice. Through this I estimate that we saved 3200 m of groundwater approximately. Additionally, our investment also came down from INR 10,000/- per acre on rice to INR 5,000/- per acre on vegetables. After the season, we made a profit of INR 4,000/- on vegetables apart from ensuring nutritive food for our family. What satisfies me the most, apart from profitable farming is that the feeling of becoming part of a community effort to manage our groundwater resources in a scientific and sustainable way.

Institutions: NOTES TO BE ADDED

Watershed committee

IKP

BUA

Transformer committee

Case studies:

Assistance from government:

I belong to Dharshanagadda village of Achampet mandal in Mahbubnagar District. CARE–APFAMGS visited our village two years back and selected three bore wells for observing water levels and discharge. My bore well is one of them. They trained us to measure water levels. We take measurements of water level twice every month and write the same on a board for every one to see. We formed a Groundwater Monitoring Committee to which I was elected as President. CARE–APFAMGS staff gave us training on new methods of farming, ground water management and also how to conduct committee meetings. We identified sever

general issues and discussed about them in our GMC meetings. Two such cases, wherein the GMC played a major role to solve issues are described here. It was a general practice in our village to throw garbage in front of the house. Children and some time adults urinated and defecated very near to their houses. This practice was causing health problems and was the main cause of sickness and diseases in our village. Children were most vulnerable as they play around the houses, unaware of the results of unhygienic practices. After this issue was taken up for discussion in GMC, three of the six garbage dumps were removed with immediate effect. Members of GMC then went on in a campaign mode and were successful in convincing most of the villagers for giving up the unhealthy practices. Women of our village washed clothes near drinking water taps, leaving behind puddles of dirty water. These stagnant pools of water provided breeding ground for mosquitoes and flies causing diseases like malaria and typhoid. We discussed this issue in the GMC meeting and decided to level the pits and explain the women about the importance of clean surroundings and it's relation to health. We carried out the leveling of ground through shramadan and we can no more see stagnant water. Additionally, all the villagers stopped washing clothes at the water points. We record minutes of committee meetings regularly. One day an Officer from the Agriculture Department visited our village and explained the benefits of preserving the forests and social forestry. To inform him about the work of GMC, I showed him the minute's book and book of accounts. He appreciated our work and enrolled us into "Rytu Mitra" group and granted INR 2,450/- as matching grant to the money we saved for operation and maintenance of monitoring equipment.

We were not only trained in recording data but also in different methods of using scarce groundwater efficiently, including usage of drip and sprinkler systems. Through our efforts, we could get government subsidy for four sprinkler systems. This is the first time any farmer in our village is using any kind of water saving device, thanks to CAREAPFAMGS. Finally, I appeal to my fellow farmers: "don't wait for any saviour to come and solve your problems. Try to solve them through your own collective efforts. There will definitely be a time when outsiders will come and help you".

CONSTARINTS IN UP SCALING THE EXPERINCES

- Sometimes the alternatives do not directly address the farmers problem

- Government schemes do not provide flexibility to accommodate farmers need. (eg. NREGA works)
- Government funding is limited to certain works
- Depends on official heading the scheme or organization
- Farmers do not like to use the land other than crops (5% Model)
- youth is not interested in farming or in livestock
- Water is major problem in many areas (Fodder Banks)
- Reduction of tree fodder sp., due to weed problem and shade problems it is discouraged by other farmers
- Cash crops are introduced – cotton and tapioca , short term cash is more attractive
- No time to think upon long term effects on soil by switching to cash crops (leased out lands for cotton and tapioca)
- Government policies (artificial insemination / natural service)
- Financial assistance to take up certain physical works is essential (bunding , SMC works,)
- Difficult to convince Community as whole in certain cases (groundwater)
- Difficult to show long term results as evidence to convince farmers (soil nutrition)
- Concept of private property to common good (groundwater)
- Lack of support from research and extension institutes
- Government schemes – (two rupees rice scheme increases cultivable fallow lands, shortage in labor force, traditional livelihood disappear)
- Subsidy for unnecessary inputs – (chemical fertilizers)
- Non local breeds of livestock and chickens (local breeds not supplied)
- Introduction of Bt cotton in interior areas (biodiversity)
- Involvement of entire community in certain interventions (agriculture bio diversity)
- Not equipped to address new issues.

Contributory factors of success:

- Availability of suitable simple technology:
- Involvement of both men and women farmers
- Use of local resources
- Direct and immediate answer to problems
- Different definition to yield
- Reduction in cost of cultivation
- Building strong institutions
- Gender mainstreaming of the program
- Capacity building at all levels
-

Reference

Siva Prasad, K. and Pakki Reddy, G., (1999) "Capacity Building in the Andhra Pradesh Netherlands Biotechnology Program." *Biotechnology and Development Monitor*, No. 39, p. 6-9.

BBC News -Thursday, 1 July, 2004, 10:08 GMT 11:08 UK Indian Prime Minister Manmohan Singh has promised assistance to families of farmers who have committed suicide in southern India

Perspectives for Small* Farmers in Developing Countries: Do they have a Future?

By Professor Ramesh C. Agrawal, Centre for Advanced Training in Agricultural & Rural Development, Faculty of Agricultural and Horticultural Sciences, Humboldt University, Berlin, Podbielskiallee 66, D 14195 Berlin, Germany

Andhra Pradesh: the land is ours Jyoti Fernandes **from open democracy**

http://km.fao.org : The way forward for small holder farmers

A study on Alternative Public Distribution System - A Novel Initiative of Deccan Development Society ,Ch. Srinivas & S. Abdul Thaha Glocal Research and Consultancy Services Hyderabad Study commissioned by Deccan Development Society

IFPRI Discussion Paper 00727 - November 2007
Diversification in Indian Agriculture towards High-Value Crops -The Role of Smallholders by P. S. Birthal, National Centre for Agricultural Economics and Policy Research P. K. Joshi, National Centre for Agricultural Economics and Policy Research Devesh Roy, International Food Policy Research Institute and Amit Thorat, Jawaharlal Nehru University Markets, Trade and Institutions Division

Transferring an Indigenous Practice for Soil Improvement: Cattle Manure with Groundnut shells by Drs. V.Maruthi, Senior Scientist of Agronomy, and K. Srinivas, Senior Scientist of Soil Science, as a part of their research and experimentation in the farmers' fields with regard to the Indigenous Knowledge under the aegis of Central Research Institute for Dry land Agriculture, Santhoshnagar, Hyderabad, Andhra Pradesh, India.

On the Margin Poor & their Lands *A Livelihoods Analysis of the Dalit Watershed Development Program of DDS* August, 2004 WASSAN

Farmers' Suicides in India Some Sociological Reflections by Dr. P. Radhakrishnan, Journal South Asian.

Government of Andhra Pradesh - Socio economic survey 2007 – 2008, planning department, A.P. Secretariat, Hyderabad.

Small farms as a planetary ecological asset: Five key reasons why we should support the revitalization of small farms in the Global South Posted May 9th, 2008 by admin by Miguel A. Altieri

www.ddsindia.com
www.laya.org.in
www.wassan.org
www.cpf.org
www.apfamgs.org
www.anthra.org
www.birdsorg.net
www.csa-india.org
www.southasianmedia.net
www.foodfirst.org/pubs/policybs/pb4.html

Marketing of smallholders produce: Extent and Practices

5.1. Market and influence on smallholders

Markets are of fundamental importance in the livelihood strategy of most rural households, rich and poor alike. Markets are where, as producers, they buy their inputs and sell their products; and where, as consumers, they spend their income from the sale of crops or from their non-agricultural activities, to buy their food requirements and other consumption goods. Because of this, rural poor people in many parts often indicate that one reason they cannot improve their living standards is that they face serious difficulties in accessing markets.

Interacting with agricultural markets is thus an important aspect of the livelihood strategies of many rural households,

It is of importance to all rural households, and assisting rural poor people in improving their access to markets must be a critical element of any strategy to enable them to enhance their food security and increase their incomes.

If it is true that markets, and improved market access, are of critical and immediate importance to rural poor households, it is also evident that they are a prerequisite for enhancing agriculture-based economic growth and increasing rural incomes in the medium term.

The issue of market access may usefully be considered according to three dimensions:
physical access to markets; structure of the markets; and producers' lack of skills, information and organization.

Market structure: Rural markets are characterized by extreme asymmetry of relations between, on the one hand, large numbers of small producers, and on the other, a few market intermediaries. Such market relations are characteristically uncompetitive, unpredictable and highly inequitable. Rural producers who face difficulties in reaching markets often become dependent on traders coming to the village to buy their agricultural produce and to sell them inputs and consumer goods. However, especially in remote areas, a trader may not arrive reliably or at all, and producers are often faced with little choice but to accept the first offer of the first trader who shows up, however unfavourable it might be. Such a situation is exacerbated when the trader is also the only source of information on prices and other relevant market information.

Lack of skills, organization and information: In their participation in agricultural markets, poor producers find themselves at a major disadvantage. Many have a poor understanding of the market, how it works and why prices fluctuate; they have little or no information on market conditions, prices and the quality of goods; they lack the collective organization that can give them the power they require to interact on equal terms with other market intermediaries.

The provision of market and price information can assist producers with farm-gate marketing decisions: linked to training both to help them interpret and act upon that information, and to organize collectively, it can also help them to understand marketing processes more fully and to develop strategies to achieve better and more stable prices for their agricultural produce. The smallholder producer is served better by – and will ultimately benefit more from – a competitive and vibrant private-sector market than by one that is monopsonistic and uncompetitive.

Many markets are imperfect. The economically disadvantaged, who often do not have access to resources, especially knowledge resources required for effectively

participating in the market, are usually unequal partners in market exchange and hence the markets of course are woefully inadequate to serve as institutions to protect their interest. But even as economic institutions, particularly in a developing country, they suffer from several imperfections: information asymmetry, incomplete integration, interlocking of different markets (the most commonly known instance being the interlocking of credit, produce and wage markets) through common set of actors, uneven, and at times discriminatory force of regulations and prevalence of spatial monopolies due to poor infrastructure are some of the more glaring imperfections. These imperfections make them even worse mediators of exchange from the point of view of the poor.

5.2. Market for produce of ecological farming

Marketing of agricultural products comprises different business activities, different flows of products (called "marketing channel") and different firms (called "middle man") performing two main functions:

- Physical handling, storage, processing and transfer of goods as they move from producers to consumers – "operational efficiency"; and
- Exchange and price setting processes in the market system – "pricing efficiency"

There is very little information available on the size and success of the domestic organic market in India. Recently, a number of domestic marketing initiatives have been launched with some success. Several brand-name companies have begun to include organic products in their lines. In rural areas, various farmers' groups and NGOs have started selling organic products. Organic food can cost 20 to 50 percent more than conventional foods.

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India's "organic production" touched a figure of 14,000 tons in 2002 which is very meagre compared to the total foodgrains production. Of this exports stood at a

meagre 11000 tons in 2002. This included seven broad categories like Coffee, Tea, Spices, Rice, Wheat, Pulses, Oilseeds, fruits and vegetables, cashewnut, cotton and herbal extracts.

Most organic production originates from small farmers. Wholesalers and traders account for a 60% share in the distribution of organic products. Large organized producers distribute their products through supermarkets as well as through self-owned stalls. Supermarkets and restaurants are the major marketing channels for organic products. Some retail chains include organic products in their product range on an experimental base. The majority of the domestic organic market originates from the metropolitan areas.

This, however, need to be seen in broader context. As deliberated earlier, most of the cultivation by smallholder farmers in the state is in line with principles of ecological farming, even though most of it is not *certified* as so. 65% of the country's cropped area is "organic by default," according to a study by *Rabo India* and this is particularly the case with smallholder farmers. Thus, the market for produce of smallholders is broad in nature and extent and mostly similar to that of the market for general agricultural produce. It is estimated that about 50% of the agricultural produce is available as marketable surplus.

The marketing channel for organic products in India has been confined primarily to exports with domestic marketing still in its infancy. Very few alternative marketing channels have been explored so far to promote domestic sales of organic products. The creation of a proper balance between export and local consumption, however, warrants exploration of various domestic market and marketing alternatives, such as weekly farmer's markets, buyers-sellers meet, organic fairs, and so on.

5.3. Prevailing marketing practices

In view of the size, geographic spread and diversity in landholding, traditionally, different marketing practices are evolved and establishes for agricultural produce. Different such practices are direct selling to trader at village level, sale in market yards, sale to government/ quasi government agencies, cooperative marketing and contract farming.

Of the above, direct sale by the farmer to trader/ money lender who comes to village for buying or the local trader is the most common type of sale by smallholders. This, being happening at first level ie village/ farm gate, the price realized and thus the share in the value to the farmer is very less. This sale is mostly distress in nature, being tied up to credit, inputs etc and in compulsion to sell off the produce. The practice processing, storage, value addition is not seen in this.

Sale of the produce to commission agents in market yards is another important mode of marketing by the smallholders. Farmers are subjected to many market imperfections in this practice like poor information and knowledge, exploitative market practices of levies, weighment etc.

Cooperative marketing is one effective institutional arrangement by farmers themselves for collective marketing of their produce. The Markfed is the government promoted cooperative institution for marketing of the agricultural commodities. Apart from this, such collectives have been promoted by some NGOs and other agencies in the state.

Private markets/ direct marketing

Establishment of private market yard and direct purchase from farmers

Contract Farming

The main features of this type of contract farming are that selected crops are grown by farmers under a buy back agreement with an agency engaged in trading or processing. In such cases, the centralized processing and marketing agencies supply technology and resources, including planting materials and occasional crop supervision. Under such contracts, the farmer assumes the production related risks, which the price risk is transferred to the company. In some cases, the company also bears the production risk, depending on the stage of crop growth at which the contract is made. In any case, the company bears the entire costs of transaction and marketing. It is this variant of contract farming which is said to be one of the ways by which small farmers can participate in the production of high value crops like fruits, vegetables, flowers etc. and benefit from market led growth.

Small farmers in India are generally capital starved and cannot make major investment in land improvement and modern inputs. Contract farming

can fill up this gap by providing the farmers with quality inputs, technical guidance and management skills.

There are few success stories on contract farming such as Pepsico India in respect of potato, tomato, groundnut and chili in Punjab, Safflower in Madhya Pradesh, oil palm in Andhra Pradesh, seed production contracts for hybrids seed companies etc. which helped the growers in realization of better returns for their produce. Other success stories of contract farming are Amul and NDDB for milk procurement, sugarcane cooperative in Maharashtra, and prawn-acqua culture in Andhra Pradesh.

However, the spread and success of contract farming would require the following conditions to be met.

1. The contract farming should be made legal. In case of violation of contract, from either side, farmers as well as the company should be in a position to approach an organization or institution, which can mediate and settle the dispute.
2. There should be an institutional arrangement to record all contractual arrangements, may be with the local market committee or panchayat or some Government machinery.
3. The contract farming should have a provision for both forward and backward linkages. Unless both input supply and market for the produce are assured, small farmers will not be in a position to participate in contract farming.
4. There should be a contract farmers association or cooperatives at the plant level which will improve their bargaining power vis a vis the company.
5. The proposed contract crop should have a distinct advantage in terms of relative yield and profit, which will provide higher income to the contract farmers on stable basis.

5.4. Constraints in the present marketing system

The agricultural marketing system in the state is beset with many constraints in view of many intrinsic as well as external limiting factors. Such constraints faced by smallholders are deliberated below.

Most of the development was confined to wholesale markets. Rural markets remain out of development ambit.

The purpose of state regulation of agricultural markets was to protect farmers from the exploitation of intermediaries and traders and also to ensure better prices and timely payment for their produce. Over a period of time, these markets have, however, acquired the status of restrictive and monopolistic markets, providing no help in direct and free marketing, organised retailing and smooth raw material supplies to agro-industries. Exporters, processors and retail chain operators cannot procure directly from the farmers as the produce is required to be channelised through regulated markets and licensed traders. There is, in the process, an enormous increase in the cost of marketing and farmers end up getting a low price for their produce. Monopolistic practices and modalities of the state-controlled markets have prevented private investment in the sector.

Marketing is the main problem for particularly for organic produce. Further the cost of the organic products is high which only the elite and foreigners can afford for which smallholders don't have access. The organic marketing in most of the countries is still relatively small and on an average it is less than half a percent of the total agricultural sector except in Germany and Austria, where 2-3 per cent of their agriculture area is under organic production.

Apart from the above, following are specific limitations in the marketing of produce of ecological farming of smallholders.

1. Lack of access to relevant knowledge and information
2. Enormous amount of mandatory documentation involved in the process of inspection and certification, which is too cumbersome to maintain for those small farmers, who are illiterate
3. Lack of demand in the domestic markets
4. Constraints on access to international markets
5. Institutional barriers, such as, scarcity of professional institutions capable of assisting the farmers throughout production, post-production and marketing processes

The marketing channel for organic products in India has been confined primarily to exports with domestic marketing still in its infancy. Very few alternative marketing channels have been explored so far to promote domestic sales of organic products.

Agricultural Markets: Present Constraints

- Predominantly small and marginal farmers; have very small quantities of marketable surplus
- Inadequate infrastructure
- Multiple intermediaries and exploitation
- Post harvest losses
- Lack of standardization, grading and certification
- Unorganised producers have limited bargaining power

6. Market view: A look from value chain perspective

Value chain is an effective tool in understanding the various nuances of production, processing, value addition, marketing of the produce. Illustrations of value chains of some important commodities produced by smallholder farmers are given in this chapter. This will give broad overview of the different aspects of production and marketing which is not much different from produce of ecological farming in smallholders' context.

6.1. Value chain and market analysis of Ragi

In this study, the Ragi value chain and sub-sector was analysed to gain understanding of its production processes, market (from local to international) for commodity as well as its products. The study has covered 5 districts of Andhra Pradesh – Srikakulam, Vizianagaram, Visakhapatanam, East Godavary and Chittoor. 85 % of the total area under this crop is grown in Srikakulam, Vizianagaram, Visakhapatnam, Anantapur, Chittoor and Mahabubnagar districts.

The analysis of Ragi value chain shows that Ragi is grown on dry, peripheral and marginal land with no irrigation facilities. This type of land cannot be used to grow any other crop with small scale of financial investments. Ragi cultivation is still done in traditional way, evolved over generations. It is not at all technology intensive and tune to modern cultural practices. Farmers are using own local variety seeds in all the districts. Use of improved or hybrid varieties, inorganic fertilizers and pesticides are negligible. Ragi cultivation is also observed to have minimum cultural practices. Except for plough and manure application before sowing Ragi, no other cultural practices are followed but for one weeding in case of broadcasting. Family members, particularly female members, contribute most of the labour, required for crop.

Only 15-20% of Ragi food surplus enters into the commercial marketing system, remaining is kept for own consumption for a year. The surplus Ragi is exchanged for other items of household consumption through barter system. Most of this exchange takes place in the villages between either villagers for other agriculture produces or petty traders for household consumption items. The petty traders exchange 3 Kgs of Ragi with items worth Rs. 8 to 10 and sells to local trader at the rate of Rs. 3.50 to 4.50 per kg. These local traders, in turn sell, Ragi at the rate of Rs 5 per Kg to other wholesale traders, who sell Ragi in state level markets.

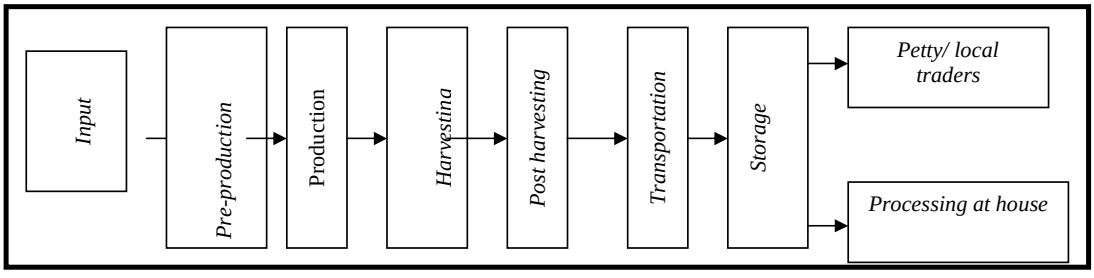
The major state level markets are in Srikakulam, Parvatipuram, Ankapalli, Vijayawada, Madanpalli and Kurnool. Here, Ragi is sold at Rs 7 or 8 per Kg.

The national market for Ragi is in Yashwantpur, Kolar, Banglore and Hassan in Karnataka. These centers supply Ragi to Rajsthan, Delhi, Uttar Pradesh, Maharastra, Chattisghad, West Bengal and Madhaya Pradesh, mainly. The peak season for Ragi trade is from February to June and it is available in 4 grades in the market - Poultry feed, Local, Graded and Medium.

Ragi marketing channels are not well developed. The main reasons for this are limited demand in urban areas, lower prices of Ragi, lower margins in Ragi trade, scattered and irregular supplies on account of only food surplus being sold and large distances between producing areas and the main urban centers. However, Value chain, from local market to final consumer, clearly shows that there is significant value addition in terms of place and form within Andhra Pradesh itself. Selling of Ragi as raw commodity after grading and flour at super market offers huge margins, which are kept by supermarkets and middlemen. For example, around 50% of total margin from consumers' money goes to supermarket and only 22% comes in the hands of producer, when graded Ragi is sold by supermarket.

Niche market for Ragi malt and other products in urban area is increasing. It is difficult to project the size of niche market, but it is expected to grow in near future as health consciousness among average Indian, particularly working middle class, is increasing. This coupled with their increased disposable income and willingness to pay for healthy food ensures high demand for Ragi based food in future. To indicate the size of market, the total Ragi trade is around 2.7 lakh quintals per year in Andhra Pradesh and around 48 lakh quintals per year in India.

Value Chain of Ragi



Stage: Transportation

Ragi is carried to home from field manually in baskets or gunny bags. Both men and women carry it back to home. Majority of Ragi trade takes place in the village either in between villagers, where they exchange other crops and Ragi or in between petty traders and Ragi farmers. Hardily, farmer takes Ragi to shandy or local markets. In required, they carry only very small amount, ranging from 3-5 Kgs, to buy the items of other household in barter system. In such a case, Ragi is carried manually again.

Stage: Storage for consumption

Generally, Ragi is stored in the special big baskets made of Bamboo or other straw in Orissa. Same basket may also be used to store other grains. These are stored in baskets or gunny bags Andhra Pradesh.

Stage: Processing at household

Ragi grains are grinded to flour by women with the help of stone grinder or at local flour or rice mill. No specific technology is used. Although Ragi grain can be stored for longer period, the Ragi flour cannot be kept for long, not even for days. It taste changes very fast. Therefore, it has to be grinded very frequently. It takes around 2 hours to grind one kg of flour, which is consumed in a day by a family of four members.

6.2. Market study of Groundnut

Karnataka, Andhra Pradesh, Gujarat, Tamil Nadu and Maharashtra are the important States in the country in terms of production and market arrivals of groundnut.

The following are the major assembling markets for Groundnut in the state.

Major assembling markets

Karim Nagar, Jogityal, Jannikunta, Nizamabad, Warangal, Kesanudrah, Nahaboobagad, Suryapet, Miryalaguda, Kadapa, Prodductor, Markapur, Kandokor, Tandur, Vikarabad, Pargi, Pondur, Rajan, Srikakulam, Mahaboobnagar, Badepally, Gadwal,

Narayanapet, Kurnool, Adoni, Dhone, Anantapur, Hindupur, Kadiri, Kalyandurgh, Tadipatri.

Distribution

Assembling and distribution system of marketing are closely related. The producer makes the movement of Groundnut from the farm to the assembling centers, while a number of market functionaries can be involved in the distribution dealing with its subsequent movement to the final consumer. The purchase of Groundnut for processing units is mainly done by the commission agents in all major assembling markets. As such, commission agents are the important distributing agency for Groundnut. In the assembling markets, processing units also purchase and dispatch Groundnut to their own units. The distribution for retail sale in the non-producing states is mainly done by wholesalers. The Groundnut is distributed through different ways i.e. wholesale distribution, retail distribution, direct marketing to miller etc.

The following agencies are engaged in the distribution of Groundnut at various stages of marketing.

Producers	Commission agents
	Groundnut millers/processors
Village traders	Co-operative organisations
Itinerant traders	Government organisations
Retailers	Exporters and importers
Wholesale merchants	

Marketing constraints

Processing	There is a need of improved technologies for Groundnut processing. At present, age-old techniques were used in processing, which reduces the out put.
Technology	Producers were not using improved Technologies in producing Groundnut right from the selection of improved high yielding seeds to use of improved equipments and post-harvest operational techniques.
Aflatoxin	Groundnut is vulnerable to attack by Aspergillus flavus fungus, which produces Aflatoxin. An Aflatoxin level up to certain limit is acceptable but beyond that the produce is not suitable for consumption.
information	Due to lack of market information regarding prevailing prices, arrivals etc., most of the producers market the Groundnut in the village itself, which deprives them of getting remunerative returns.
Adoption of grading	Grading of Groundnut at producers' level ensures better prices to producers and better quality to consumers. However, most of the markets are lagging behind in providing grading service at producers' level.
storage facilities	To avoid the distress sale, storage facilities in villages are found to be inadequate. Due to lack of storage facilities at rural stage, substantial quantity is lost.
facilities	Due to inadequate facilities of transportation at village level, in most of the states, producers are forced to sell Groundnut in the village itself to itinerant merchants or traders directly at low prices.
Training of producer	The farmers are not trained in marketing system. Training shall improve their skill for better marketing of their produce.

Malpractices	Many malpractices prevail in the markets of Groundnut i.e. excess weighment, delay in payment, high commission charges, delay in weighing and auction, different kinds of arbitrary deductions for religious and charitable purposes etc.
problem	Lack of market finance is one of the major marketing problems in the smooth running of marketing chain.
facilities	Due to inadequate marketing infra-structural facilities with producers, traders, millers and at market level, the marketing efficiency is affected adversely.
middlemen	The existence of a long chain of middlemen reduces the producer's share in consumer's rupee.

Marketing channels

The following are the important marketing channels existing in the marketing of Groundnut

Producer - Merchant – Commission Agent- Wholesaler – Oil Miller

Producer – Merchant – Commission Agent – Oil Miller – Wholesaler – Retailer – Consumer

Producer – Oil Miller – Wholesaler – Retailer – Consumer

Producer – Merchant – Commission Agent – Oil Miller – Retailer – Consumer

Producer – Merchant – Commission Agent – Oil Miller – Wholesaler – Retailer(for Kernels)

Common Institutional Channels:
Groundnut is also purchased by the public and co-operative sector agencies. It plays a very significant role in the procurement and distribution of Groundnut. National Agricultural Co-operative Marketing Federation of India Limited

(NAFED) is the nodal agency for procurement of Groundnut. The main institutional marketing channel for Groundnut is as under;

Producer- Village Co-operative Society – Processing Units of Co-operatives, State Co-operative Federation – Co-operative Retail Stores – consumers.

State Co-operative Marketing - Oil Miller (Private/Co-operative) - Co-operative Retail Store/ Fair Price Shop - Consumer.

Producer – Village Co-operative Society – Oil Miller – Oil Wholesaler – Retailer – Consumer.

Producer - NDDB - NDDB Processing Unit – Retailer – Consumer.

Marketing costs

Marketing costs are the actual expenses incurred in bringing goods and services from the producer to the consumers. The marketing costs normally include;

handling charges at local points

assembling charges

transport and storage costs

handling charges by wholesaler and retailer

expenses on secondary services like financing, risk taking and market intelligence

profit margins taken by different agencies.

A study carried out by Directorate of Marketing and Inspection (DMI) and published in their report on "Marketing of Groundnut in India" on the marketing costs, margins and price spread for Groundnut, it was revealed that the producers' share in consumer rupee was on an average 71.56 percent, marketing costs 16.21 percent and marketing margins on an average 12.23 percent.

Particulars	**Andhra Pradesh**
A. Producer's Share in consumers rupee	**79.40**
B. Marketing Costs	**13.23**
C. Marketing Margins	**7.37**

Supply Chains

Evolution of Supply Chains

Slide 5

Supply chain development: Major Constraints		
	Issues	***Action needed***
	Predominantly marginal or small farmers – small quantities of marketable surplus & limited bargaining power	Aggregation of produce needed for value addition & bargaining power - farmers to have better market access through SHGs, Cooperatives, Farmers' Companies etc. – Aggregation/ Collection/ Value Addition Centres to be set up near farm gate. Predominantly marginal or
	Poor availability of markets & monopolistic tendencies of APMCs	Amendments in State APMR Acts to allow & facilitate alternate channels of marketing with a open choice to farmers – direct purchasing, farmers' markets, contract farming, private markets, modern terminal markets, e-trading etc.
	Inadequate infrastructure in wholesale markets/ rural primary markets	Modernization of existing markets with public investment or through PPP & facilitating setting up of modern private markets
	Multiple and exploitative intermediaries – low returns	Encouragement to shortening of supply chain/ vertical integration through direct marketing, organized retail chain, incentives to integrated cold chain infrastructure with an end to end approach (TMC).
	Lack of cleaning, grading, packaging & quality certification facilities	Promotion of aggregation/ consolidation in various ways, incentive to grading & quality assurance infrastructure and creation of awareness about quality & food safety standards.
	Multiple agencies involved in quality confirmation & regulation of exports	Creation of single window quality confirmation (Food Safety & Standards Law already in place) & export clearance systems.
	Limited access to market information and marketing opportunities available	Enriching Marketing Information Network, strengthen market intelligence delivery under PPP & activation of Common Service Centres (CSCs) in villages for easy access to information.

Evolving supply chains

Slide 4

Evolving organized retail chain

Slide 3

7. Profiling of Cases

As outlined in previous chapters, although there is no clear demarcation between cultivation by smallholders particularly in rainfed conditions and ecological farming in a defined and certified way and the extent of recognized ecological farming particularly by smallholders in very less in proportion. However, there have been some efforts in the state by government and non-government agencies to promote ecological farming in the state. Although the scale and distribution of such intervention are not high, they provide certain valuable experiences from which lessons can be learnt.

Such interventions include promotion of ecological farming by Deccan Development Society (DDS), organic farming by Timbaktu, Marketing by Village Organisations (VOs) under Indira Kranthi Patham (IKP). Each of the case is deliberated in the following.

7.1. Case study: Marketing interventions by VOs of IKP

The collective procurement and marketing of agriculture, horticulture and Non Timber Forest Produce by establishing Procurement Centers under the aegis of Village Organizations and Mandal Samakhyas is being promoted in the project mainly to eliminate unfair trade practices, to enhance the incomes, remunerative prices and bargaining power of poor women producers, and to generate profits. The management of Centers will help women enter into commodity trading by collectivization and through enhanced knowledge of the trade. So far 232 VOs have been identified as STAR centers (with marketing turnover above Rs.50 Lakhs during 2005-06).

Different activities taken up by each procurement centre are as follows.

1. Direct marketing
2. MSP Operations
3. Agri. Inputs.
4. Food security.
5. Non Pesticide Management.

It is also planned that in next 3 years each star center will be equipped with own building, Godown (1000MT Cap.), 100MT drying platform, all physical infrastructure, processing units (Mini dall mill/Mini Rice Mill/ Oil mill etc).

The ultimate objective of marketing is "every VO should work as a mini Market yard and every farmer and NTFP collector should not carry their produce beyond 5 Kms."

Progress

VOs started Marketing activity from May 2001 as pilot intervention in one commodity (Neem Fruit) one Mandal, one district (1000 Producers). Encouragement from farmers, enthusiasm from VOs Marketing activities scaled up from one district to 19 districts (300,000 producers in 2007-2008).

Different commodities dealt so far are Paddy, Maize, Redgram, Soya, and Neem.

Slide 2

Impacts of the interventions:

Weighing Benefits:
Usage of proper certified weighment scales is a key intervention area which eliminates traders' unfair practices of depriving the poor in the total quantities, as well as ensures that VOs procure by weight instead of volumes where producers loose as much as 30%.

Saving on Driage Loss and other deductions:
VOs levy driage loss charges on a realistic basis, often using moisture meters, which ensures higher remuneration for producers. Earlier traders levied the charges in kind by taking additional 3-5 kgs per quintal, or in cash.

Enhanced price:
The marketing interventions by VOs reduced the gap between the nearest market price and farm gate price paid to producers.

Cash payment:
VOs pay the producers the entire amounts in cash at the time of purchase itself. This practice totally eliminates the prevalent practice of payment in small installments by traders where value on sales is lost by the producers.

Saving on Transportation:

The Producers save on transportation costs and other personal expenses when selling at nearby markets.

Saving wage labour:
As the Procurement centers are in villages, the day's wages are saved by the producers, as they now sell their produce at a time convenient to them.

Information dissemination:
The VO centers are run in a transparent manner with market price information and quality parameters etc. made known to all the villagers.

Change in trade practices:
The biggest impact of the VO/MS procurement centers is perceived in the fact that Private traders are now compelled to change their terms of trade. The transparent and fare trade practices followed by the VOs have forced the local traders to adapt similar tactics to retain their business interest, in terms of pricing etc., which enhances the bargaining power of producers.

Future Plans
The project aims to increase the number of beneficiaries of marketing interventions to more than 10.50 lakh from the current 2.91lakh members. It is also expected that the cumulative turnover of Village Organizations from marketing will reach Rs.750 Crores, a steep rise from the current 310.72 Crores achieved in 07-08.

Road map ahead

- 7000 procurement centers (including 1000 NTFP centers in ITDA areas.)
- Setting up retail chain at every town to sell commodities procured like rice, other cereals, pulses, spices, edible oil etc.
- Provide adequate infrastructure – storage, drying, value addition facilities to each procurement center.
- Taking up value addition activities at the appropriate level of aggregation.
- Developing market linkages with exporters, processors and service providers.
- All NPM villages shall take up marketing activities and procurement centers will propagate NPM.

7.2. Case study: DDS interventions

It is a cooperative venture started by the Women Sangam members living in 70 villages around Zaheerabad and promoted by Deccan Development Society. This was started in the year 1999. It is registered in the name of Deccan Development Society Mutually Aided Credit Cooperative Society Ltd (DDS MACCS) under MACS Act

The ideals set out for themselves are as follows:

- To provide a safe and stable marketing avenue for the small and marginal farmers in the villages to sell their surplus produce.
- To release those farmers from the clutches of *dalaries* i.e. middlemen who are robbing the producers as well as consumers.
- To bring into focus the traditional food grains like korra, sama, sajja, jowar etc whose consumption is dying down.
- To encourage traditional crop cultivation using organic methods by providing marketing facility for the farmers.
- To dissuade the rural population from using the subsidised rice and wheat instead of their traditional nutritious food grains like korra, jowar etc.
- To bring into focus the nutritional value of the traditional organic food grains in the villages as well as in urban areas.
- And ultimately to make available the food grains and other essential items at their door steps for those rural poor who cannot afford to make bulk purchases from the urban markets.

During the year 2003 the turnover is:

- Value of purchases Rs.11,53,826/-
- Value of sales Rs.12,99,334/-
- Net Profit Rs. 32,231/-

The items are supplied at the door step of the villagers at very reasonable prices (comparatively lower than the retail prices adopted by the local merchants).

A mobile van was acquired by the sangam during the year October 2001. The commodities are now supplied in easily purchasable quantities (properly packed) through this mobile van to all the villages. About six villages are covered everyday. This is proving to be a boon for the poor members of sangams and farm labourers in all these villages.

As is the case in respect of any ideal program that may have been started by any genuine organisation, we too have faced certain initial set backs in the shape of insincere workforce, and unethical sale of improper produce by some farmers etc. Now a large number of urban consumers are making enquiries about the organic food stuffs available at their end and are coming forward to provide mobile outlets in their respective areas.

7.3. Case study: Organic Farming Interventions by Timbaktu Collective

Introduction

Timbuktu Organic is the brain-child of Timbuktu Collective, a well-known NGO based near Chennekothapalli village in Anantapur District. It is a collaboration of Adisakthi Thrift Society, Chennekothapalli and the Timbaktu Collective. Timbaktu Organic started in 2005 with with 27 farmers covering 80 acres in 1 village. In 2006, Timbaktu Organic is working with 160 farmers, covering 480 acres in 8 villages.

Program Purpose

Timbaktu Organic's overall purpose is to enhance the income and food security of dry land smallholder farmers of Anantapur district over 3.5 years and in the long term, improve their livelihood security through sustainable agriculture methods.

Timbaktu Organic would adopt the following strategies to achieve this purpose –

- Promote diversification of the groundnut–monocropping pattern through millets and pulses
- Promote eco-friendly organic farming methods that build on the traditional knowledge base of the farmers and utilise locally available resources such as biomass, livestock and labour
- Organise marketing support for the farmer's organic produce in both rural and urban markets

Intervention

The federation of the three MATC Societies, "Mahasakthi", has come forward to initiate a three-year project – "Timbaktu Organic".

Activities

In brief, the activities that are required to be undertaken to implement such a program are explained below using the context of Timbaktu Organic:

Product Range

At present Timbaktu Organic's product range includes rice, both raw and parboiled; semolina, flour of millets such as foxtail or korra; little or saama; kodo or arika; pearl or sadda; great or jonna; finger or ragi; peanuts; cold pressed

peanut oil, redgram lentils or tuvar dal, baked food stuffs, cooked organic food, groundnut de-oiled cake.

Organic certification

Organic certification of the sangha members' farms and crops is organised through the Participatory Guarentee System which is being promoted by the Organic Farming Association of India - Goa and the Food and Agriculture Organisation.

In essence, on the ground, this certification system involves the following:

- Forming a small group of farmers and organising their subgroups on the basis of the location of their lands
- Signing of an agreement with each farmer about the committments to be fulfilled by the organisation and the farmer regarding the program activities
- Signing of a pledge by the farmer, that he/she will follow farming practices in line with the PGS National Organic Standards
- 2 meetings in a month throughout the whole season, in which the use of chemicals by any farmer is discussed and verified by the village volunteer and respective brindam members and recorded in the sangha minutes. At the time of purchase, the farmer's record of chemicals use is checked.
- A diary is maintained for every farmer by the village volunteer, which records all details of the work done by the farmer on his/her farm, including use of chemicals if any. This record is checked in every sangha meeting.

Processing and Storage

A storage and processing unit of the capacity to store about 60 tons of produce at any point of time was constructed. This included space for sundrying, space of grading and other labour-based operations and machine processing units for turning oilseeds into seeds and oil form, millets into rice, rava and flour form and pulses to its split form. In all, Redgram, Cow Pea, Horsegram, Groundnut, Castor, Sunflower and 6 varieties of Millets are the different commodities handled.

Building market linkages in rural and urban areas

The basic business model of the program is to improve income of the farmers by transforming production processes to organic with the focus to reduce input costs and improve yields for the farmers, and to organise primary processing of the produce into basic commodities such as rice, rava, flour, oil, nuts and dal, and market in branded retail packets to individual and small rural and urban

customer groups such as retail stores, consumer networks, organic food processors, restaurants, trade fairs/exhibitions, rural self-help groups etc.

7.4. Case study: ITC's E-Choupal and Profitable Rural Transformation

ITC is one of India's leading private companies, with annual revenues of US$2 billion. Its International Business Division was created in 1990 as an agricultural trading company; it now generates US$150 million in revenues annually. The company has initiated an e-Choupal effort that places computers with Internet access in rural farming villages; the e-Choupals serve as both a social gathering place for exchange of information (*choupal* means gathering place in Hindi) and an e-commerce hub. What began as an effort to re-engineer the procurement process for soy, tobacco, wheat, shrimp, and other cropping systems in rural India has also created a highly profitable distribution and product design channel for the company—an e-commerce platform that is also a low-cost fulfillment system focused on the needs of rural India. The e-Choupal system has also catalyzed rural transformation that is helping to alleviate rural isolation, create more transparency for farmers, and improve their productivity and incomes.

The Big Picture:

ITC's International Business Division, one of India's largest exporters of agricultural commodities, has conceived e-Choupal as a more efficient supply chain aimed at delivering value to its customers around the world on a sustainable basis.

The e-Choupal model has been specifically designed to tackle the challenges posed by the unique features of Indian agriculture, characterised by fragmented farms, weak infrastructure and the involvement of numerous intermediaries, among others.

The Value Chain - Farm to Factory Gate:

Slide 1

E-Choupal unshackles the potential of farmer who has been trapped in a vicious cycle of –

low risk taking ability > low investment > low productivity > weak market orientation > low value addition > low margin > low risk taking ability.

Such a market-led business model can enhance the competitiveness of Indian agriculture and trigger a virtuous cycle of higher productivity, higher incomes, enlarged capacity for farmer risk management, larger investments and higher quality and productivity.

Further, a growth in rural incomes will also unleash the latent demand for industrial goods so necessary for the continued growth of the Indian economy. This will create another virtuous cycle propelling the economy into a higher growth trajectory.

8. Potential Ways Forward

Overall, the status of marketing of smallholders offer many challenges. The markets for certified products are not still well established, the transaction costs are still high in view of infancy of such markets, very less scale, very few interventions to learn from and scale-up and the critical influence on the livelihoods of smallholder farmer.

This calls for searching new avenues of interventions and broadening the approaches. Some alternate paradigms have to be explored so that the age old constraints in present approaches can be overcome and making the livelihoods of smallholders much sustainable.

Following are some alternate ways which have potential to be adopted and improve the livelihoods of smallholders in a significant way.

- Making agriculture demand driven as against the present approach of production driven
- Transition to Agri-Business
- Market driven based on what consumer wants
- Cutting the value Chain
- Knowledge led growth
- Private Investment
- Farmers institutions

One most important shift that is needed make agriculture demand driven rather than the present approach of mostly production driven. Being excessively focused on just increasing production has sidelined the importance of demand aspects. And it can be noted that market failures has emerged as one of the most common constraint for farmers, the other one being credit. The shift should be to the extent of looking at consumers need, their demand, preferences, seasonality, segmentation, niche market, promotion and then plan the production. In the emerging scope of agri-business, integration with various such opportunities is also the need of the hour. Terminal markets, Agri-marts are such opportunities.

Promoting institutions of farmers is the most effective way to tackle the identified challenges. Particularly, collectivization is highly needed for activities of marketing, processing, value addition etc. this is because these activities

require scale, they cut the value chain by making that institutions themselves can take up many of the market functions thus realizing maximum share of the value to the producer. This is particularly in need for smallholders whose scale is less and have to bear high transaction costs to deal with markets individually. This is also in view that the existing approaches are mostly top down; not localized and not community driven.

The form of the institutions may vary as per the context. They can be cooperative, producer companies, societies. However, for the purpose, Producer Company offers high promise as the legal form of the institution in view of high autonomy to deal with markets, be competitive in the market place and have better bargaining power.

References

Ahlawat S R 1988. Green Revolution and Agricultural Labour. New Delhi: Deep and Deep.

Ahlawat S R 2003. Sociology of Agrarian Crisis: Peasant Suicide and Emerging Challenges. *Man and Development,* September, 2003.

Balagopal, K. 1988. *Probings in the Political Economy of Agrarian Classes and Conflicts*. Hyderabad: Perspectives Press.

Banerjee A, Bardhan P, Basu K, Datta-Chaudhuri M, Guha A, Majumdar M, Mookherjee D, Ray D. 2002. "Strategy for economic reform in West Bengal," *Economic and Political Weekly*, October 12.

Bardhan, PK 1982. Agrarian class Formation in India. *Journal of Peasant Studies*. October.

Bardhan, Pranab and C. Udry. 1999. *Development Microeconomics*, New York: Oxford University Press.

Beck Tony 1994. Common Property Resources Access by Poor and Class Conflict in West Bengal. *Economic and Political Weekly*, 29(4): 187-197.

Beck Tony and Madan G Ghose (2000). Common Property Resources and the Poor: Findings from West Bengal. *Economic and Political Weekly*, 35(3) : 147-153.

Bhargava P M 2003 High Stakes in Agro Research – Resisting the Push. *Economic and Political Weekly*, Aug.23.

Boyce, James, 1993. *The Political Economy of Growth and Impoverishment in the Marcos Era*, London: Macmillan.

Byres T J 1981. The New Technology, Class Formation and Class Action in the Indian Countryside. *Journal of Peasant Studies*, 8(4): 405-54.

Chaturvedi Sachin 2002. Agricultural Biotechnology and New Trends in IPR Regime – Challenges before developing countries. *EPW*, March 30, 2002.

Chowdhury K.R., and Reddy D.N. 2000, *The New Agricultural Policy: Who is it for*, Sundarayya Vignana Kendram, Hyderabad pp. 91-98.

Da Corta, Lucia and Davuluri Venkateshwarlu, 1999. Unfree Relations and the Feminisation of Agricultural Labour in Andhra Pradesh, 1970-95. *Journal of Peasant Studies*, 26 (2 & 3): 71-139.

Dhanagare D N. 1995. Green Revolution and Social Inequalities in Rural India In Sharma K L (ed). Social Inequality in India : Profiles of Caste, Class, Power and Social Mobility. Jaipur: Rawat Publications.

Dev, Mahendra. 2004. "How to Make Rural India Shine," *Economic and Political Weekly*, 39 (40): 4415-4422.

Harriss John. 1986. Capitalism and Peasant Production : The Green Revolution in India In Harriss John (Ed). Rural Development : Theories of Peasant Economy and Agrarian change. London : Century Hutchinson.

Hazell and Ramasamy, 1991; The Green Revolution Reconsidered : The Impact of High Yielding Rice Varieties in South India. Baltimore: John Hopkins University Press.

Economic and Political Weekly (EPW) 2006. Special Issue on Farmer Suicides. 41(16).

Food and Agricultural Organization (FAO) 2003. *State of Food Insecurity in the World*, Rome.

Hariss-White and Janakarajan, 2004. *Rural India Facing the 21st Century: Essays on Long Term Village Change and Recent Development Policy*, London: Anthem South Asian Studies.

Himanshu, 2007. "Recent Trends in Poverty and Inequality: Some Preliminary Results," *Economic and Political Weekly*, 42(6), pp. 497-508.

Iyer Gopal K and Manick Mehar Singh 2000. Indebtedness, Impoverishment and Suicides in Rural Punjab. Delhi: Indian Publishers Distributors

Jha P 1997. Agricultural Labour in India. New Delhi: Vikas Publications.

Jodha N A 1995. Common Property Resources and the Environmental Context – Role of Biophysical Versus Social Stresses. *Economic and Political Weekly*, 30(5).

Kapadia Karin and Jens Lerche1999. Introduction. *Journal of Peasant Studies*, 26(2 &3): 1-9.

Krishnaraj Maitreyi 2006. Food Security, Agrarian Crisis and Rural Livelihoods – Implications for Women. *Economic and Political Weekly*, December 30, pp. 5376-5388.

Krueger, Anne. 1992. *The Political Economy of Agricultural Pricing Policy*, *Vol.5*, Baltimore and London: The Johns Hopkins University Press for the World Bank.

Kuruganti Kavitha, 2006. Biosafety and Beyond – GM Crops in India. *Economic and Political Weekly*, Vol.XLI, No.40, pp. 4215-7.

Kuruganti, Kavitha. 2007. "World Bank and its Influence on India & Andhra Pradesh," Paper submitted to the Indian People's Tribunal on the World Bank.

Lipton, M 1989 New Seeds and Poor People. Baltimore: John Hopkins University Press.

Ministry of Agriculture, Government of India, 2006-07. *Agricultural Statistics at a Glance*.

Misra, Srijit. 2006. "Agrarian Scenario in Post-reform India: A Story of Distress, Despair and Death," *Working Paper*, Mumbai: Indira Gandhi Institute of Development Research.

Motiram, S. and J. Robinson 2007 "Interlinking and Collusion," mimeo, Department of Economics, Dalhousie University.

Motiram, S. and V. Vakulabharanam 2007. "Corporate and Cooperative Solutions for the Agrarian Crisis in the Developing Countries," *Review of Radical Political Economy*, 39(4), pp. 360-367.

Murthy, Ramachandra K. 2001. Translated title from Telugu – *Analysis of the power reforms*, Lifeline Communications, Hyderabad.

National Sample Survey (NSS) 2005. "Situation Assessment Survey: Indebtedness of Farmer Households, NSS 59th Round," Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

National Sample Survey (NSS) 2006. "Some Aspects of Operational Holdings in India, 2002-03, NSS 59th Round," Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

National Sample Survey (NSS) 2007. "Nutritional Intake in India, 2004-05, NSS th Round," Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

Pande, Rohini, 2007. "Rural Banking," Entry for *The [Oxford] Companion to Economics in India*, Kaushik Basu (Ed.), Delhi: Oxford University Press.

Patnaik, Utsa, 2003. "Global Capitalism, Deflation and Agrarian Crisis in Developing Countries," *Journal of Agrarian Change*, Vol 3 (No.s 1 & 2), pp. 33-66.

Patnaik, Utsa, 1997. "India's Agricultural Development in the Light of Historical Experience," in T. Byres (ed.) *The State, Development Planning and Liberalisation in India*, New York: Oxford University Press.

Patnaik Utsa, 2003. "Food Stocks and Hunger: Causes of Agrarian Distress. *Social Scientist*, 31(7-8).

Prasad N Purendra 2003. Rights of Farmers in the Context of Suicides in Andhra Pradesh. *Indian Journal of Human Rights*, vol. 7, No.s 1 &2, January-December.

Ramachandran, V.K. and M. Swaminathan, 2002. "Rural Banking and Landless Labour Households: Institutional Reform and Rural Credit Markets in India," *Journal of Agrarian Change*, 2 502-544.

Rao, J. Mohan and Servaas Storm. 2003. "Agricultural globalization in developing countries: Rules, rationales and results," in C.P. Chandrasekhar and J. Ghosh (Eds.), *Work and Well-Being in the Age of Finance*, New Delhi: Tulika Publishers.

-----. 1998. "Distribution and Growth in Indian Agriculture," Terry Byres (Ed.), *The Indian Economy: Major Debates Since Independence*, Delhi: Oxford University Press.

Ramamurthy, Priti 1994. Patriarchy and the Process of Agricultural Intensification in South India In A.W Clark (ed). Gender and Political Economy of Asian Systems. Delhi: OUP.

Ramanjaneyulu G V and Kavitha Kuruganti (2006). Bt Cotton in India – Sustainable Pest Management? *Economic and Political Weekly*, Vol.41 (7), 561-3.

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Reddy, D.N. 2006. "Economic Reforms, Institutional Retrogression and Agrarian Distress," *Working Paper*, Hyderabad: University of Hyderabad.

Revathi E 2005. The New Seed Regime and the Agrarian Crisis : A Critical Appraisal of Private Seed Market and Regulation (Unpublished Paper).

Rothermund D. 1988. An Economic History of India. New Delhi: Manohar Press.

Rudra Ashok 1982. Indian Agricultural Economics – Myths and Realities. New Delhi: Allied Pub.

Rudra, Ashok, 1992. The Political Economy of Indian Agriculture, Delhi: K.P. Bagchi and Company.

Sainath, M. 2005, "The Swelling Register of Death," *The Hindu*, December 29.

Sarma EAS. 2004. Is Rural Economy Breaking Down? – Farmers' suicides in Andhra Pradesh. *Economic and Political weekly*, Vol.xxxix, No.28, pp.3087-89.

Schiff M., and Valdes A. 1992. *The Plundering of Agriculture in Developing Countries*, World Bank publications.

Sen, Abhijit. 2003. "Globalisation, Growth and Inequality in South Asia: Evidence from Rural India," in C.P. Chandrasekhar and J. Ghosh (Eds.), *Work and Well-Being in the Age of Finance*, New Delhi: Tulika Publishers.

Sen, Abhijit and Himanshu, 2004a. "Poverty and Inequality in India I," *Economic and Political Weekly*, Sept 18.

Sen, Abhijit and Himanshu, 2004b. "Poverty and Inequality in India II," *Economic and Political Weekly*, Sept 25.

Shah Esha 2005. Technological Vulnerability and Farmers' suicide in South India. (Unpublished paper).

Sharma D Shalendra 1997. Agricultural Growth and `Trickle Down' Reconsidered: Evidence from Rural India. *Development in Practice*, Vol.7, NO.3, Aug, pp. 267-275.

Shiva Vandana 1989. The Violence of the Green Revolution : Ecological Degradation and Political Violence in Punjab. Dehradun.

Singh, Himmat 2001. Green Revolution Reconsidered : The Rural World of Contemporary Punjab. New Delhi: OUP.

Srinivas M N 1992. On Living in a Revolution and Other Essays. Delhi: OUP.
Thorner Daniel 1982.

Srivastava, Siddharth, 2006. "India's Rural Poor Climb the Economic Ladder," *Asian Times*, December 1.

Stern W Robert. 1993. Changing India : Bourgeois Revolution on the Subcontinent. New Delhi: Foundation Books.

Vaidyanthan, A.K. 2006. "Farmers' Suicides and the Agrarian Crisis," *Economic and Political Weekly*, 41 (38), 4009-4013.

Vakulabharanam, V. and Motiram S. 2008. "Political Economy of Agrarian Distress in India Since 1990s," Paper presented at the Columbia-LSE-New School Symposium – Great Transformation? India's New Political Economy Between September 14-16, 2007; mimeo, IGIDR Mumbai (Available on request from the authors).

Vakulabharanam, V. 2005. "Growth and Distress in a South Indian Peasant Economy During Agricultural Liberalisation," Journal of Development Studies, 41(6): 971-997.

----- 2004 "Immiserizing Growth: Globalization and Agrarian Change in Telangana Between 1985 and 2000," Dissertation, Department of Economics, Amherst: University of Massachusetts.

Vasavi A R 1999. Agrarian Distress in Bidar: Market, State and Suicides'. *Economic and Political Weekly*, 34(32): 2263-2268.

Vasavi 2005. Individualization of Agriculture : Suicides and the Making of Agrarian Distress. (Unpublished Paper).