ENHANCING LIVELIHOODS OF THE POOR THROUGH REVIVAL OF DEFUNCT LIFT IRRIGATION SCHEMES

IMPACT OF THE INTERVERTION OF NAANDI FOUNDATION IN AP

GLOCAL RESEARCH & CONSULTANCY SERVICES

STUDY COMMISSIONED BY

NAANDI FOUNDATION AND SRTT

Study team: Davuluri Venkateswarlu, Jacob Kalle and Praveen Kumar

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LIST OF ABBREVIATIONS

AMC	Annual Maintenance Cost
AP	Andhra Pradesh
APSIDC	Andhra Pradesh State Irrigation Development Corporation
CB	Capacity Building
DPR	Detailed Project Report
EC	Executive Committee
E & M works	Electrical and Mechanical works
GBM	General Body Meeting
LIS	Lift Irrigation Schemes
MACS	Mutually Aided Cooperative Society
NREGS	National Rural Employment Guarantee Scheme
SR Act	Societies Registration Act
SRTT	Sri Ratan Tata Trust

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INTRODUCTION

Background

During the last three and half decades the government of Andhra Pradesh undertook construction of nearly 1400 lift irrigation schemes across the state, with the objective of bringing four lakh acres under assured irrigation, which is otherwise drought stricken, subject to vagaries of monsoon, though within few yards from the rivers and streams. All these schemes were initially operated by APSIDC (Andhra Pradesh State Irrigation Development Corporation), which used to collect electricity charges from the farmers. After running these schemes for few years, APSIDC handed over them to the communities, which were unable to manage them due to the huge electricity bills and lack of technical competence. The schemes consequently became defunct.

The Government of Andhra Pradesh entrusted Naandi Foundation with the responsibility of reviving 85 schemes in Khammam, Mahbubnagar, Anantpur, Medak, Krishna and Kurnool districts. Over a period of two years, starting 2003, Naandi Foundation partially revived about 50 lift irrigation schemes. Subsequently, based on a need assessment, Naandi found that 65 schemes could be taken up for revival. In 2005, Naandi Foundation entered into a partnership with the Sir Ratan Tata Trust to take up additional technical repairs, social mobilization and capacity building of the stakeholders of these 65 schemes. Since Naandi Foundation could not complete the works as per Detailed Project Report (DPR) during the project period, it has requested the Trust to extend the period within the sanctioned budget. Trust has given approval for no cost extension from July 2007 to March 2008. As per extension plan the works are being implemented.

The first phase of partnership from 2005-06 to 2007-08, is now complete and the present study is an attempt to asses the impact of the interventions and find out to what extent the objectives of the Partnership are met.

Objectives of the study

1. To measure the change in livelihoods securities of Ayacut farmers before and after revival correlating to their socio economic house hold and community indicators.

2. Cost benefit analysis of revival process by measuring the lives impacted and Command area brought under stable irrigation vis-à-vis the investments made per acre/per household.
3. To study the operational and financial sustainability of the revived schemes and diagnose potential reasons that may hamper smooth community irrigation management.
4. To suggest a composite package of best practices and end to end solutions for the governments, water users and other stake holders in sustainable community irrigation management based on the study. Way forward suggestions.

Focus Areas and Themes

Stabilization of Command Area

- Defined Ayacut, Potential Ayacut vs. Actual Ayacut
- Land use intensity and cropping pattern
- Leakages and water loss minimization
- Water use efficiency

Institution Building

- Regularity of meetings and attendance
- Delinquency of water user charges
- Compliance with statutory provisions
- Rotation in leadership and shared responsibilities
- House keeping, transparency and controls
- Institutionalized democratic processes
- Networking to gain collective strength

Agriculture Resources Development

- Agriculture interventions
- Second crop orientation to tribal

Public Private Synergy

- Mobilization of state resources
- Participation in government programmes
- Institutional partnerships

Human Resource Development

- Capacity building of para professionals
- Team building and HRD
- Team Management training and capacity building activities

Methodology and Sample

Out of the total 65 schemes, 15 schemes across four districts are taken as sample for the present study, which consists of 13 schemes where both civil works and capacity building activities are being under taken. The remaining two schemes are selected from the schemes where only capacity building activities have been under taken. Table one presents list of sample schemes included in the study. The study is based on both primary and secondary sources of data. The secondary sources of data referred for this study include various project related documents- progress reports, base line information collected by Nanndi Foundation at the beginning of the project, consultants reports etc. The primary data was collected through filed visits and interactions with different stakeholders- farmers, LI societies members and project staff involved in implementation of programme. The tools used for primary data collection are semi structured interviews, focus group discussions and on filed observations. To study the impact of the project on individual farmer households' detailed data on changes in family social economic background, cropping pattern, crop yields, annual income and expenditure were colleted for 7 to 9 sample households in each scheme.

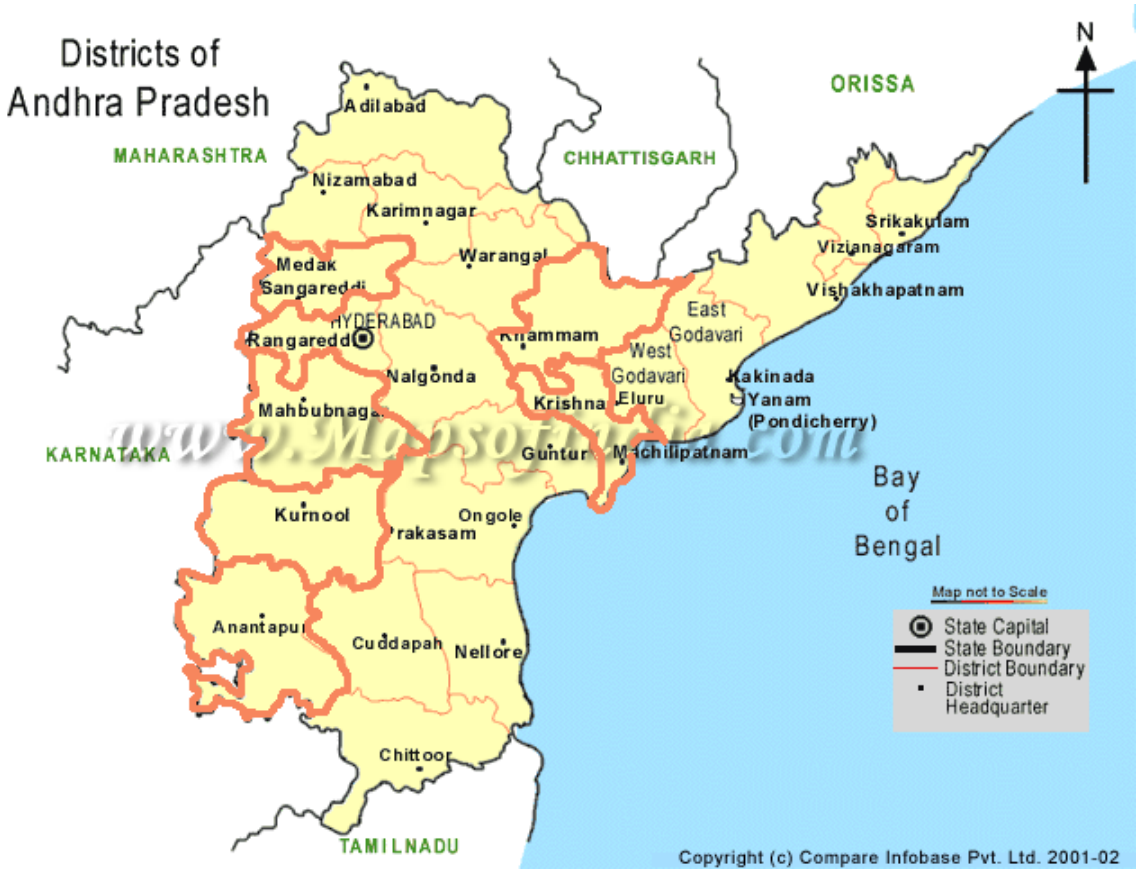


Table1: Distribution of sample

S/No	District Name	Total schemes	Sample	
			Only CB activity	Capacity Building + Civil Works
1	Khammam	16	0	5
2	Krishna	15	0	5
3	Mahaboob Nagar	12	1	-
4	Kurnool	14	1	3
5	Ananthapur	5		-
6	Medak	3		-
Total		**65**	**2**	**13**

Table 2: List of sample schemes covered

S.No	Scheme	District
1	Kandukur	Kurnool
2	Bodemanuru	Kurnool
3	Tangutur	Kurnool
4	K. Singavaram	Kurnool
5	Uppalachilaka	Khammam
6	Govindarala	Khammam
7	Ammagaripalli	Khammam
8	Latchigudem	Khammam
9	Paidigudem	Khammam
10	Budawada	Krishna

11	Tatigummi	Krishna
12	Kasarabad	Krishna
13	Kothapeta	Krishna
14	Dodadevarapadu	Krishna
15	Budamarsu	Mahaboobnagar

SECTION-II
INTERVENTIONS AND REVIVAL STRATEGY

The strategy adopted by Nanndi Foundation for revival of LI schemes has following components

- Social Mobilization
- Capacity Building and Training
- Civil and E & M Works & AMC
- Agricultural Resource Development

SOCIAL MOBILIZATION

The most critical component for revival of any project is mobilization of the community. Unless the community participates at every level of revival and takes the ownership, it is very difficult for successful implementation of revival strategies Thus; Participatory Irrigation Management (PIM) has got widespread recognition in revival process of irrigation schemes. Under the social mobilization the following managerial and financial interventions have been initiated:

Managerial

Institutional Management

For effective monitoring and implementation of the revival process, Naandi Foundation had placed in a strong Institutional Management system consisting of experienced managerial, technical, agriculture and social mobilization experts at all levels from central to operational level.

Formation and Strengthening of Farmers' Societies

By the time of Naandi Foundation had taken up the revival process, all the societies were registered under Societies Registration Act. As a first step of revival process, steps have

been initiated for registration of the societies under MACS (Mutually Aided Cooperative Societies) Act 1995. Except few societies, most of them have now been registered under this act and process is on for the rest of the schemes. Opening of Joint bank Account is the mandatory for registration under this act, which ensures proper checks and balances in utilization of the society funds.

Recruitment of community workers

To assist the project officers and executive committee of the L.I. Societies members in motivating and inculcate ownership in farmers on their common pool resource, Community workers were identified and recruited. Depending upon the Number of farmers and command area of each society at an average one community worker was deployed for every two societies.

Water Management:

For better management of water and to increase water use efficiency, Lascars were appointed with society funds. Lascars along with society presidents and secretaries have been given orientation on better water management practices by following the water distribution norms.

Compliance with the statutory provisions

As part of the revival process, trainings have been imparted to community workers , Book keepers and project staff on MACS Act for maintaining, updating of appropriate books and registers and also conducting regular annual audit.

Conducting regular meetings and District Level Network

Naandi Foundation had made it mandatory to conduct Society Executive Committees, Office Bearers, Book Keepers, Staff and Project Officers regular meetings at Village, district and state level on fixed dates for discussing various issues related to financial, Managerial and technical aspects for effective implementation of revival process.

Insurance of Pumps, Motors and Personnel

It is essential to sustain the project at times when sudden technical breakdowns, repairs and contingencies arrive. For this purpose Naandi foundation in collaboration with various insurance companies had insured the pumps, motors and personnel of some of the schemes.

<u>Financial</u>

Systematic Collection of water User charges

Earlier there was no proper system of water user charges collection and accounts thereof. During the revival process Naandi Foundation had initiated some steps so that farmers are now discussing and fixing amount of water charges per acre. The charges are varied from @ Rs. 300 to Rs.1000 depending on the crop and the season and local situation. The executive committee is responsible for collecting and depositing the same in the society's bank account

Corpus Fund

Financial self sufficiency is also one of the crucial components for sustainability of the schemes in long run. In this direction, Naandi Foundation had motivated the societies for creation of Corpus fund to manage the scheme on smooth track. The source for this fund is collection of membership fee @ 55/- per member and transfer of left over amount of water user charges in every year after deducting the O&M costs. Other sources for this fund are voluntary contributions from the rich farmers and matching grants released by the SRTT.

Works Contribution

In order to build owner ship and active participation of the farmers in revival process, the SRTT had made it mandatory to deposit in society's bank a/c an amount equitant to 10% works grant allocated to a particular society, for releasing the funds for revival process.

Linkages with Government Programmes for mobilizing other resources

Naandi Foundation had initiated some steps for society linkages with banks, NREGS and other programmes through passing resolutions in the GBMs for mobilizing other resources and undertaking some civil works

CAPACITY BUILDING AND TRAINING

Trainings and Exposure visits are very important aspects for capacity building of the stakeholders'. Towards this end, various training and exposure visits were organized.

Trainings

In order to build the capacities of the both primary as well as secondary stakeholders, Naandi Foundation had imparted various trainings on different aspects for effective monitoring and implementation of the revival process. The training was imparted on the aspects like Operation and maintenance of LI, Strengthening of Farmers' Cooperative Society, Maintenance of Accounts, Social audit, Agronomic practices, Water management, Facilitation skills and conflict resolution.

Exposure Visits

For building the capacities of both primary and secondary stakeholders, Exposure visits were also organized to S.R.I Paddy Fields, Successful LIS, to Safal Model at Bangalore, to successful Co-operatives outside State, Vegetable cultivation and Market Models out side.

UNDERTAKING CIVIL AND E&M WORKS

Along with critical aspects of the Social Mobilization and Capacity building, Naandi team had undertaken various civil and E&M works with SRTT funds in order to place the LI schemes in functional condition thereby enhancing the confidence levels of the community.

Civil Works

The kind of civil repairs attended to during the process includes reconstruction of head wall, Lowering of the intake pipe lines, construction of sump wells, repair of pump houses, refitting of pressure mains, repairs of pressure main leaks, desilting of canals, construction of canal regulatory structures, repairs of cisterns, replace of zero velocity valves

E & M Works

Under E & M Works , they have under taken repairs of existing pumps and motors, repair or replacement of panel board, repair of transformers , providing new Centrifugal pumps and motors instead of existing folder pumps, repair of suction and delivery valves, repair of vacuum pumps and vacuum pipe lines, replacement of AB switches and cables etc.

Annual Maintenance Cost (AMC)

Naandi team has taken initiative for societies entering into the AMC agreements with the repairing firms located in nearby towns of LIS so as to ensure timely attending of repairs thereby avoid any disturbances in water distribution in peak agriculture season..

AGRI RESOURCE DEVELOPMENT

Even though Agricultural Resource development was not the main thirst of the revival process in first phase and still the Naandi foundation had initiated the following agricultural interventions for increasing the productivity and to create awareness on new marketing techniques

Demonstration and Exposure visits

With regard to Agricultural Resource development, with the help of Agriculture Experts, twenty three Demonstration Plots have been cultivated to create awareness on new crop cultivation techniques like S.R.I paddy, vegetables and biodynamic . Exposure visits were also organized to these demonstration plots and other places like Chikballapur Vegetable and fruit forms in Karnataka and SAFAL's marketing yard in Bangalore

Second Crop Orientation

In order to increase the cropping intensity, Naandi team had initiated cultivation of second crop in tribal villages of Khammam district on pilot basis for the first time.

Distribution of Seeds on Subsidized rates

Naandi team by liaison with the state agriculture department and Tribal welfare department procured seeds on subsidized rates and distributed among tribal farmers in Khammam and Krishna districts.

SECTION-III
IMPACT OF THE INTERVETIONS

Stabilization of Command Area

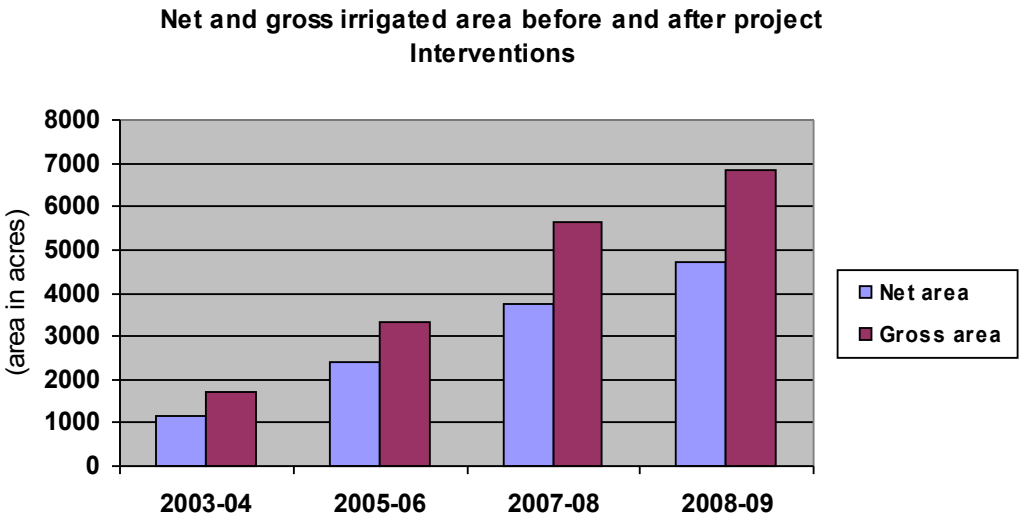
One of the key indicators for measuring the impact of the project interventions is the extent of additional area brought under irrigation. Naandi received financial support for its revival activities both from APSIDC and SRTT. Initially APSIDC supported the interventions for two years beginning from 2003-04 and subsequently SRTT extended its support for three years beginning from 2005-06. Table 3 presents data on designed, potential, net and gross irrigated area under 15 sample LI schemes before and after the project interventions. The year 2003-04 was taken as a base year for comparison as this represents the status of the projects prior to project interventions.

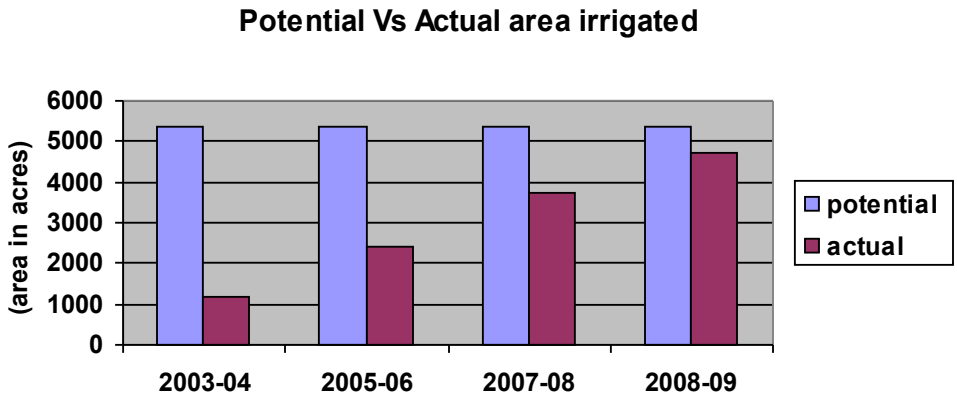
In many schemes there is a significant gap between designed and potential ayacut area. This is due to the fact that at the time of project construction in order show per acre investment on a lower side designed ayacut area was shown more than what can be achievable in ideal conditions. The potential area is what can be achievable in ideal conditions. Of the total 15 schemes, 11 (73.3%) of them were completely defunct and remaining were partially working in 2003-04. The additional irrigated area attributable for project interventions was estimated taking into consideration of the additional area already brought under irrigation by 2007-08 and area likely to be added in 2008-09 because in six schemes mechanical and civil works were completed only during 2007-08 and its impact can be seen only during 2008-09.

Table 3: Designed ayacut, potential ayacut Vs actual area irrigated

S/No	Name of the L I Scheme	Designed Ayacut	Potential Ayacut	Net and Gross Area Irrigated						Incremental area attributable to revival		
				2003-04		2005-06		2007-08		Achieved		Expected
				Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
1	Uppalachilaka	412	247	0	0	90	90	120	120	120	120	70
2	Govindarala	300	180	0	0		0	65	65	65	65	30
3	Pydegudem	100	60	0	0		0	0	0	0	0	40
4	Ammagari palli	924	554	0	0	90	90	170	239	170	239	120
5	Litchigudem	100	60	0	0	20	20	25	25	25	25	25
6	D D Padu	220	132	0	0	80	100	90	135	90	135	30
7	Kasarabada	690	680	380	680	475	825	680	1030	300	350	0
8	Kottapeta	904	900	390	490	420	545	900	1330	510	840	0
9	Budavada	531	319	0	0	150	165	294	424	294	424	30
10	Tatigummi	100	60	0	0	45	45	50	50	50	50	40
11	Kandukuru	590	354	0	0	96	96	200	200	200	200	175
12	K.Singavaram	1000	600	250	350	475	720	618	1236	368	886	0
13	Bodemanuru	340	204	0	0		0	0	0	0	0	150
14	Tanguturu	600	360	0	0		0	15	15	15	15	200
15	Budamarusu	700	630	140	210	480	640	524	770	384	560	44
	Total	**7511**	**5340**	**1160**	**1730**	**2421**	**3336**	**3751**	**5639**	**2591**	**3909**	**954**

The total designed ayacut for 15 schemes under study is 7511 acres. Out of this only 5340 acres is potential area that can be brought under irrigation if the schemes run in their full capacity. During 2003-04 only 21.7% (1160 acres out of 5340 acres) of the potential area was irrigated and this has increased to 70.2% (3751 acres out of 5340 acres) in 2007-08. It is estimated that 954 acres of additional area (net) will be brought under irrigation during 2008-09 under different schemes where civil and mechanical works were completed only during 2007-08. If this is included the additional area attributable to project interventions will increase to 88% of the potential area (4705 acres out of 5340 acres).





Cropping intensity

The assured supply of water has helped to increase cropping intensity. The gross irrigated area increased from 1730 acres in 2003-04 to 5639 acres in 2007-08. The total gross irrigated area is likely to increase to 6839 acres during 2008-09 considering the additional area that can be brought under irrigation on account of civil and mechanical repair activities completed during the end of 2007-08 year.

During 2007-08 Naandi Foundation made several efforts to motivate the farmers particularly in tribal areas to go for second crop. In tribal areas in Khammam district traditionally farmers are not habituated to cultivate second crop in rabi season. After kharif season lands are kept fallow and no crop is cultivated. As part of comprehensive revival of the LI schemes, two tribal villages namely Ammagaripalli in Khammam district and Budawada in Krishna districts were selected to introduce the second crop (Rabi). Farmers were provided seeds of various crops like maize, ground nut, tomato, green gram, sunflower, okra on

subsidized rates. During rabi season seeds were supplied for 153 acres in these two villages.

Changes in cropping pattern

Table 4 presents changes in cropping pattern in different schemes after project interventions. The data indicates that though paddy which is the principal food crop still occupies major portion of cropped area, the percentage of this crop in total cropped area has reduced from 48.8 % in 2003-04 to 36.2 % in 2007-08. On the other hand the percentage of area under commercial crops like cotton, chilli, maize and groundnut has slightly increased from 21 % to 27.5% during this period. In many of the schemes the vegetable seed cultivation is done for mainly marketing purpose. The percentage of area under vegetable seeds also increased from 0.6% to 7% during this period. Interestingly the area under subabulu which is very less labour intensive crop has increased from zero % in 2004-05 to 8.5 % in 2007-08. In Budamarusu, Kasarabada, Kotthapet and Doddadevarapadu schemes some of the big farmers have shifted to this crop due to scarcity of labour.

Table 4: Changes in cropping pattern (gross irrigated area in acres)

Crop	2003-04		2005-06		2007-08		Change from 2003-04 to 2007-08	
	Area	% to total area	Area	% to total area	Area	% to total area	Area	% change
Paddy	845	48.8	1528	45.8	2041	36.2	1196	142
Cotton	153	8.8	196	5.9	441	7.8	288	188
G.Nut	100	5.8	160	4.8	285	5.1	185	185
Maize	30	1.7	260	7.8	466	8.3	436	1453
Chilli	80	4.6	253	7.6	354	6.3	274	343
Caster oil	50	2.9	165	4.9	208	3.7	158	316
Vegetables	10	0.6	95	2.8	424	7.5	414	4140

Subabulu	0	0.0	110	3.3	480	8.5	480	
Black gram	26	1.5	30	0.9	90	1.6	64	246
Small Nut (Pilli Pesara)	331	19.1	450	13.5	595	10.6	264	80
Jowar	42	2.4	11	0.3	10	0.2	-32	-76
Bengal Gram	27	1.6	58	1.7	153	2.7	126	467
Green Gram	36	2.1	20	0.6	92	1.6	56	156
Total	**1730**	**100**	**3336**	**100**	**5639**	**100**	**3909**	

COST BENEFIT ANALYSIS

Table 5 presents total amount invested from different sources for revival of 15 sample schemes. The total amount spent for civil and mechanical works in these 15 schemes is Rs 1.04,99,158, out of this Rs 30,63,473 is from IDC funds spent during 2003-05 and Rs 71,15,685 is from SRTT funds and Rs 3,20,000 is from NREGE funds spent during 2005-08. Table 6 presents additional area brought under irrigation since 2003-04 and average investment per acre and per household. The total additional area brought under irrigation since 2003-04 is 3545 acres. Average investment per acre works out to be Rs. 2962. The total number of farmer households covered under these 15 schemes is 3057 and average investment on each household is Rs.3434.

Table 5: Funds invested for Revival of LI Schemes during 2003-2008 (Rs)

District	Name of the Scheme	No of Farmers	IDC	SRTT	NREGS
			2003-05	2006-08	2006-08
Krishna	Kasarabad	265	94,224	476,507	
	Kothapeta	430	139,280	672,247	20000
	Tatigummi	117	61,003	642,349	
	Dodadeverapadu	95	33,560	134,110	
	Budawada	250	371,292	534,023	
Khammam	Uppalachilaka	220	113,000	339,863	
	Govindarala	126		557,913	
	Ammagaripalli	300	425,892	512,113	150000
	Lachigudem	38	113,259	942,061	
	Pydigudem	128	54,060	225,140	

Kurnool	K.Singavaram	214	129,999		100000
	Kandukuru	98	326,729	890,000	
	Tanguturu	247	529,347	319,426	
	Bodemanuru	229	152,752	869,933	
Mahaboobnagar	Budamarusu	300	519,076		50000
Total		**3057**	**3,063,473**	**7,115,685**	**320000**

Note : Naandi received financial support for its revival activities both from APSIDC and SRTT. Initially APSIDC supported the interventions for two years beginning from 2003-04 and subsequently SRTT extended its support for three yeas beginning from 2005-06.

Table 6: INVESTMENT PER ACRE / HOUSEHOLD

No of Schemes	15
Total Investment (Rs 30,63,473 from IDC, Rs.71,15,685 from SRTT funds + Rs 320000 from NREGE funds for civil works)	Rs. 1,04,99,158
Additional area brought under irrigation (Achieved + Expected)	3545 acres
Investment per Acre	Rs. 2962
Total number farmer households benefited	3057
Investment per household	Rs 3434

In order to assess the impact of the scheme revival on individual farmer households' detailed data on changes in family social economic background, cropping pattern, crop yields, annual income and expenditure were colleted for 101 sample households across all the schemes. The data clearly indicates that the revival of the scheme helped the farmers to improve their net income from agriculture. Table 7 presents per acre average yields and net income from different crops for 2003-04 and 2007-08. The assured water supply after the revival of schemes helped the farmers to improve their crop yields and net income from agriculture. Compared to 2003-04, there is an improvement in per acre average crop yields and net income from different crops in 2007-08. Per acre average paddy yields increased by 38.2% (from 17 to 23.5 bags), groundnut yields by 42.8% (from 14 to 20 bags), cotton yields by 77.7% (from 4.5 to 8 quintals) , chilli yields by 45.4% (from 11 to 16 quintals) and maize yields by 53.6% (from 14 to 21.5 quintals). The net income from different crops also increased during 2003-04 and 2007-08. In case of paddy the net income increased from Rs 3000 to Rs 5400 , groundnut from Rs 4000 to Rs. 6000, cotton from Rs 3000 to Rs 6500, chilli from Rs 7200 to Rs 12500 and maize from Rs 2800 to Rs 4800.

Table 7: Changes in average crop yields and net income (per acre) for sample HHs

Crop	2003-04		2007-08		Change from 2003-04	
	Yield	Net income (Rs.)	Yield	Net income (Rs.)	Yield	Net income (Rs)
Paddy	17 bags	3000	23.5 bags	5400	6.5 bags	2400
Ground nut	14 bags	4000	20 bags	6000	6 bags	2000
Cotton	4.5 quintals	3000	8 quintals	6500	3.5 quintals	3500
Chilli	11 quintals	7200	16 quintals	12500	5 quintals	5300
Maize	14 quintals	2800	21.5 quintals	4800	7.5 quintals	2000

Note: The average per acre crop yields and net income data presented in the above table are based on data collected from 101 sample households from 15 schemes. The net income is derived by deducting the total cost of cultivation including labour charges (paid out as well as family labour costs. Family labour costs were worked out by imputing the market wage rates to their labour days contribution. The total cost of cultivation does not include interest on working capital and supervision costs) from gross income (market value of the crop including byproducts)

Though there is an improvement in average yields of different crops after revival of the schemes the current yields are relatively very low when compared to some areas in the state where intensive agriculture is practiced. The crop yields are particularly low in LI schemes in Khammam district where tribal farmers are in majority. There is a lot of scope for further improvement in productivity of different crops and net income from agriculture.

Table 8 presents the net annual income of sample households from agriculture and other sources before and after the project interventions. The revival of the scheme and assured water supply helped the farmers to improve their net income from agriculture. The average annual net income per household from agriculture witnessed 85.3% (Rs 8900 to Rs. 16497) increase during 2003-04 and 2007-08.

Table 8: Income from agriculture for sample households

Source	**2003-04**	**2007-08**	**Change from 2004-05**	
	Amount (Rs)	**Amount (Rs)**	**Amount (Rs)**	**% increase**
Income from agriculture	8900	16497	7593	85.3
Other Sources	7600	10950	3350	44.1
Total	16500	27447	10943	66.3

Additional employment generation

The additional area brought under irrigation and increased cropping intensity led to additional agricultural wage employment generation. In many project villages scarcity labour particularly during peak agricultural period is reported. Implementation of NREGS is also additional factor for contributing for additional wage employment at village level. In many schemes farmers have reported that after revival of LI schemes there has been a reduction in out migration of labour from their villages for wage work to cities. Labour scarcity in some areas has led the farmers opting for less labour intensive crops like Maize, Bengal gram and Subabulu. Out of 101 sample house holds surveyed, 28 families were involved in seasonal out migration for wage work in 2003-04. In 2007-08, this number has come down to 13 families (54% reduction). The main reason for this reduction is that most of the earlier migrant families are now are getting assured water supply to irrigate their lands due to revival of LI schemes. On the other hand the overall increase in net irrigated and cropping intensity have contributed in generating additional wage Labour employment at the village level.

IMPACT ON INSTITUTION BUILDING

Strong community based institutions are pre requisite for the long term sustainability of the LI schemes. Building the capacities of Lift Irrigation societies is one of the key components of the project. As part of institutional building a number of interventions were made since 2005. In the first year of the project period the entire interventions were focused on social mobilization and institutional building aspects. An attempt is made in this section to assess the impact of these interventions on building capacities of farmers` societies for sustainable management of the LI. schemes.

Status prior to project interventions

At the time of project intervention, though all the schemes had farmers` societies/ committees in place, none of them were working properly. In most schemes societies exists only on paper. There were no regular meetings, elections, participation of members, proper records, bank accounts, audit, procedures for conducting meetings, water regulation, tax collection, etc. The situation was slightly better in partially working schemes such as Budamurusu in Mahabubnagar, Kasarabada in Krishna district and K.Sigavaram in Kurnool districts compared to schemes such as Tangutur and Bodemmanur in Kurnool district,

Lachigudam, Pidigudam, Govidarala, Ammagaripalli in Khamma district and Budawada in Krishna district which were completely defunct. As some of these schemes were defunct for a long period the farmers in these societies became disinterested and societies were also become dysfunctional.

Interventions

When project began in 2005 the main task before Naandi Foundation was first to revive these defunct societies. As part of building the capacities of farmers` societies a number of interventions were made which include-

- Awareness/motivation meetings
- Registration of societies under MACS Act
- Training programmes for farmers and office bearers on institutional management aspects (conducting regular meetings, maintenance of proper records and accounts, auditing of records, transparency, water management & facilitation skills and conflict resolution etc.)
- Technical training to pump operators on handling machinery
- Exposure visits to LI schemes where farmers` societies are managing their schemes well

Impact of the interventions

Various capacity building activities undertaken by Naandi Foundation had a very positive impact on improving the performance LI societies. When compared 2005 there has been a considerable improvement in the functioning these institution now in terms of members participation, conducting regular meetings, maintaining records, conducting audit, water regulation, collecting water taxes, maintaining corpus fund, AMC agreements, entering insurance contracts for machinery, pump operators and luskars, society office bearers, liaison with government departments for additional resource mobilization.

In many of the schemes the societies are now conducting meetings in a regular intervals and maintaining the records and accounts with the help of book keepers. Societies have appointed Luskars and pump operators and salaries of these people are being borne by the societies from their revenues. In 13 schemes, societies have arranged Annual Maintenance Contracts with repair firms for motor repairs. This helped them to attend the motor repairs in time. In the past the tail end farmers in many of the schemes suffered with unavailability of water due to lack of water regulation norms. Now the situation has improved and water

distribution norms are in place in most of the societies and they are holding the responsibility of equitable water distribution to tail end farmers too. Importance of maintaining corpus fund has been realized by many societies. In 11 out of 15 schemes studied societies have collected corpus fund ranging from Rs 13000 to Rs 60000 and deposited in the respective Banks on the name of the society account as fixed deposits.

RATING THE PERFORMANCE OF LIFT IRRIGATION SCHEMES

In order to assess and rating the performance of the Lift irrigation schemes, the following four parameters have been taken. These parameters have been assigned with different weightage marks depending upon their importance in terms of institutional sustainability.

- Participation and Dialogue
- Performance
- Self Management
- Innovation and Technology

Participation and Dialogue

The main focus under this parameter is to assess the participation and owner ship levels of the members in effective running of the scheme. A total of twenty marks weightage has been assigned to this parameter and the following aspects were covered under this head.

- EC meetings and attendance
- General Body meetings and attendance
- Quality of members' participation
- Transparency – wall writings and social audit

Performance

Performance is the most important indicator for successful running of the LI schemes societies in sustainable manner. Therefore, a total of thirty five marks weightage has been assigned and the following key aspects have been covered under this parameter.

- Water use Efficiency
- Area under Second Crop
- Collection of Water User Charges
- Additional Resource Mobilization.

Self Management

The guiding aim of any revival process should be to bring equity, sustainability and efficiency. Hence, Self Management is also a key indicator for assessing sustainability of LI scheme. A total of thirty five marks have been assigned and the following aspects have been covered under this head.

- Water Distribution
- Tail end issues & adequacy of water received by the tail ends
- Decision on Water User Charges
- Compliance with Statutory Provisions
- Conflict resolution
- Arrangement for regular Service and Repairs of E & M works

Table 9: Rating the performance of Lift Irrigation Societies

Name of the Scheme	Participation& Dialogue (20 marks)	Performance (35 marks)	Self Management (35 marks)	Innovation & Technology (10 marks)	Total Marks (100)
	Marks Scored	Marks Scored	Marks Scored	Marks Scored	
KURNOOL					
Kandukur	18	19	25	3	**65**
Bodemanuru	10	9	13	1	**33**
Tangutur	12	9	13	1	**35**
K. Singavaram	18	27	31	3	**79**
KHAMMAM					
Uppalachilaka	15	16	20	3	**54**
Govindarala	15	19	20	1	**55**
Ammagaripalli	16	20	22	3	**61**
Latchigudem	15	19	19	1	**54**
Paidigudem	11	9	14	1	**35**
KRISHNA					
Budawada	16	23	29	1	**69**
Tatigummi	16	20	28	3	**67**
Kasarabad	18	24	32	3	**77**

Kothapeta	18	23	32	3	**76**
Dodadevarapadu	15	20	23	1	**59**
MAHABOOB NAGAR					
Budamarsu	20	20	31	3	**74**

In terms of institutional performance, there are variations among different LI societies across different regions. Table 9 presents marks scored by different societies based on their performance levels on different parameters. Though there is a considerable improvement in the present performance levels in all the LI societies when compared to their performance in 2003-04, from institutional sustainability point of view many of the societies still have to improve their performance further.

On a 100 point rating scale 8 out of 15 societies (Kothapeta, Kasabada, Budawada, Tatigummu in Krishna district Budamarus in MB Nagar, K. Singavaram and Kandukur in Kurnool district, Ammagaripalli in Khammam district) scored marks between 60 to 80. Four societies (Doddadevarapadu in Krishna , Lachigudam, Govindarala and Uppalachilaka in Khammam) scored marks between 50 to 60. Remaining three societies (Tangutur and Bodemmanur in Kurnool district, and Padigudam in Khamma district) scored marks below 40. The main reason for the relatively low performance of societies in Tangutur, Bodemmanur and Paidgudam is the delay in completing civil and mechanical repair activities and bringing the schemes in running condition. Civil and mechanical works were completed and schemes were ready for operation only in the first quarter of 2008. It is difficult to generate and sustain interest among farmers when scheme is not in a running condition. In terms of self management and participation and dialogue parameters the societies located in tribal pockets in Khammam district scored relatively low marks compared societies in other districts. It is quite evident that by virtue of being a tribal area (and therefore very backward and with poor indicators), this region will benefit in a sustainable way from more focused investment of time, energy and resources.

SECTION-IV
KEY LEARNINGS AND RECOMMENDATIONS

KEY LEARNINGS

Following are some of the important learnings from the experience of Naandi Foundation in addressing various issues related to revival of defunct Lift Irrigation schemes and their management.

INSTITUTIONAL BUILDING EFFORTS IN LI SCHEMES CAN NOT YIELD EXPECTED RESULTS WHEN SCHEMES ARE NOT IN A RUNNING CONDITION

Despite adopting a common strategy and making similar efforts for institutional building across all the schemes the learning was that motivation and participation levels of the farmers and functioning of the societies is relatively better where the schemes are in functioning stage when compare with the schemes which are in defunct stage. For instance , the schemes like Pidigudem in Khammam and Bodemanur and Tangutur in Kurnool districts, where the civil and E&M works have not been completed till the first quarter of 2008 and the farmers have not received any benefits so far, the overall participation levels of the community and functioning of LI societies is relatively weak when compare to other schemes which are in functioning state.

LINKAGE OF REVIVAL PROCESS WITH GOVT PROGRAMMES

Livelihood approach to revival process and broad based stake building process maximizes the opportunities of mobilizing investment from various programmes of the Government. The Rural Employment Guarantee Scheme, Comprehensive Land Development Scheme and other poverty reduction schemes can be very meaningful integrated with restoration of Lift Irrigation schemes.

COST SHARING APPROACH ENHANCES COMMUNITY INVOLVEMENT

In order to build owner ship and active participation of the farmers in revival process, it is important that they also should share some percent of the total cost. Works contribution and cost sharing is a useful strategy to stimulate new negotiations around water use and management and thereby evolve mechanisms of equity based stakes for different users

PREVENTIVE MAINTENANCE OF MACHINERY AND DISTRIBUTION NETWORK

Some of the Lift Irrigation schemes are prone to regular floods there by causing damages to motors and transformers which results in lot of expenditure for their repairs and maintenance. Therefore, as part of the revival process, provision of safe platforms for flood prone LIs is essential in order to ensure safety of motors and transformers there by LI societies would save a lot of money on the one hand and on the other side it would not face any disturbance in water distribution during peak crop season.

STRONG COMMUNITY BASED MANAGEMENT INSTITUTIONS ARE A PRE-REQUISITE FOR SUSTAINABLE MANAGEMENT OF LI SCHEMES.

Strong community based management institutions are a pre-requisite for sustainable management of Lift Irrigation Schemes. The Institutions should be broad based and provide space for participation of all the users in decision making process.

CONSCIOUS EFFORTS ARE REQUIRED FOR IMPROVING WOMEN PARTICIPATION.

The management institutions of Lift Irrigation societies are dominated by men. Conscious efforts are required for improving the women participation in LI societies.

PROVISIONS TO MEET FUTURE CONTINGENCIES

Unexpected technical breakdowns and repairs are quite common in lift irrigation schemes. Under these circumstances, Insurance of pumps and Motors, Annual maintenance Agreements and creating some provision for meeting the future contingencies enhances the confidence levels of the farmer societies to manage their schemes in sustainable way.

RECOMMENDATIONS

- Though there is an improvement in average yields of different crops after revival of the schemes the current yields are relatively very low when compared to some areas in the state where intensive agriculture is practiced. The crop yields are particularly low in LI schemes in Khammam district where tribal farmers in majority. There is a lot of scope for further improvement in productivity and net income from different crops. In the next phase of the project more focus should be given to agricultural extension and value added services for improving the farmers' net income.

- Creation of adequate corpus fund to meet any sudden break down of machinery or repairs is essential for long term sustainability of the LI schemes. At present, out of 15 sample schemes , four schemes do not have corpus fund at all and in the rest of the schemes the fund amount ranges from Rs.6250.00 to 64126 which may not be sufficient enough to meet the costs of major repairs and breakdowns of pumps and motors. Hence, there is a need to encourage the societies to increase their corpus fund amount.

- The performance rating of the LI societies clearly indicates that some of the societies especially in tribal areas are under performing with respect to participation and self management. Hence, additional and handhold support for some more time is required for all the schemes located in tribal areas. It is quite evident that by virtue of being a tribal area (and therefore very backward and with poor indicators), this

region will benefit in a sustainable way from more focused investment of time, energy and resources.

- Presently water charges are being collected on the basis of per acre and per crop rate. The societies should be encouraged to levy water charges on volumetric consumption to ensure that they are equitable and reflect the true consumption cost.

- Presently in tribal areas, there are various subsidies available on agricultural inputs but due to lack of awareness and knowledge most of the farmers are not availing these facilities. Therefore, there is a need to educate farmers to avail these facilities.

- Presently some of the schemes are receiving limited hours (7 hours) of power supply that to in two spells leading to under utilization of potential capacity of the pumps and motors. This has become one of the obstacles for societies to bring their potential ayacut area under irrigation. LI Societies should be encouraged to approach higher officials and elected representatives for dedicated power supply of 16 hours per day.

- The damage of pumps, motors and transformers is relatively more in the schemes located in flood prone areas. Therefore, in the revival process due care should be taken right at the time of planning the E&M works, to make provision for safe platforms for motors and transformers to avoid possible damages due to floods.

- There is a lot of scope for generating additional funds for civil works by linking up with the government programmes like NREGS, Comprehensive Land Development Scheme etc., but many of the societies have not yet completely explored these possibilities. Therefore, LI societies should be motivated to utilize these opportunities of mobilizing investment from various government programmes.

ANNEXURES

Table 1: CAPACITY BUILDING: TRAINING PROGRAMMES

Sl.No	Name of the scheme	Capacity building details					
		Lascars	Pump operators	Community workers	Book keepers	Office bearers	DRC training
Krishna							
1	Dr. kL Rao	1	1	1	1	3	1
2	Kothapeta	1	1	1	1	3	2
3	Tatigummi	1	1	1	1	3	1
4	Doddadevarapdu	1	1	1	1	3	
5	Budawada-1	1	1	1	1	3	1
Khammam							
6	Lachigudem	1	1	1	1	3	2
7	Pydegudem-II	1	1	1	1	3	
8	Uppalachalaka	1	1	1	1	3	
9	Ammagaripalli	1	1	1	1	3	2
10	Govindrala	1	1	1	1	3	
kurnool							
11	K.singavaram	1	1	1	1	3	1

12	Kandukuru	1	1	1	1	3	1
13	Tangutur	1	1	1	1	3	1
14	Bodemannur	1	1	1	1	3	1
Mahaboobnagar							
15	Budamarsu	2	2	1	1	3	1

Table 2: EXPOSURE VISITS AND AUDIT DETAILS

Sl.No	Name of the scheme	Exposure visit details			Audit details		
		No.of persons	Place of visit	Purpose	2004-2005	2005-2006	2006-2007
Krishna							
1	Dr. kL Rao	3	Thummalapudi in Khammam district	Maintenance of LIS by farmers society	Yes	Yes	Yes
2	Kothapeta	3			Yes	Yes	Yes
3	Tatigummi	3				Yes	Yes
4	Doddadevarapdu	3				Yes	Yes
5	Budawada-1	3				Yes	Yes
Khammam							
6	Lachigudem	3	Rayapudi in Guntur district	Maintenance of LIS by farmers society		Yes	Yes
7	Pydegudem-II	3				Yes	Yes
8	Uppalachalaka	3				Yes	Yes
9	Ammagaripalli	3				Yes	Yes
10	Govindrala	3				Yes	Yes
kurnool							
11	K.singavaram	3	Rayapudi in Guntur district	Maintenance of LIS by farmers society		Yes	Yes
12	Kandukuru	3				Yes	Yes
13	Tangutur	3				Yes	Yes
14	Bodemannur	3				Yes	Yes
Mahaboobnagar							
15	Budamarsu	3	Rayapudi in Guntur district	Maintenance of LIS by farmers society	Yes	Yes	Yes

TABLE 3: AMC, INSURANCE, CORPUS FUND AND WORKS CONTRIBUTION

Sl.No	Name of the scheme	AMC	Insurance	Corpus fund - Amount in Rs		Works contribution -Rs
				SRTT	Society	
Krishna						
1	Dr. kL Rao	Yes	Yes	30500	30500	119127
2	Kothapeta	Yes	Yes	32063	32063	168088
3	Tatigummi	Yes	Yes			66950
4	Doddadevarapdu	Yes	Yes			17800
5	Budawada-1	Yes	Yes	6138	6138	60186
Khammam						

6	Lachigudem	Yes	Yes	3563	3563	49579
7	Pydegudem-II	Yes	Yes	3125	3125	16327
8	Uppalachalaka					40486
9	Ammagaripalli	Yes	Yes	24375	24375	44765
10	Govindrala		Yes	10000	10000	52553
kurnool						
11	K.singavaram	Yes	Yes			
12	Kandukuru	Yes	Yes	16250	16250	97336
13	Tangutur		Yes	6138	6138	45796
14	Bodemannur	Yes	Yes	12500	12500	119620
Mahaboobnagar						
15	Budamarsu	Yes	Yes		20000	

TABLE 4: AGRI INTERVENTION LIST 2007-08

Sl.No	Name of the scheme	Intervention	Number of Beneficiaries	Budget
Krishna				
1	Kothapeta	Vegetable Cultivation	12	16000
2	Budawada-1	Vegetable Cultivation	1	1750
Khammam				
3	Ammagaripalli	Vegetable Cultivation	4	3600

TABLE 5: INSURANCE OF PUMPS AND MOTORS

Sl. No.	Name of the LIS	No.of Motors	No.of Pumps	Details of Insurance		
				Insured Amount Rs.	Name of the Insurance Company	Period
1	Govindrala	2		100000	United India Insurance Co	April-07 to March-08
2	K.Singavaram	4	4	100000	The New India Assurance	June-07 to May-08
3	Kandukuru	3	3	100000	The New India Assurance	June-07 to May-08
4	Dr K L Rao	4	4	4000000	The New India Assurance	April-07 to March-08
5	Thatigummi	2	2	50000	The New India Assurance	April-07 to March-08
6	D D Padu	2	0	50000	The New India Assurance	April-07 to March-08

7	Kothapeta	4	0	150000	The New India Assurance	April-07 to March-08
8	Lachigudem	2	2	10000	United India Assurance	1 Year
9	Pydegudem-II	2	2	10000	United India Assurance	1 Year
10	Ammagaripalli	2	2	20000	United India assurance	1 Year
11	Bodwada	3	3	100000	The New India Assurance	April-07 to March-08
12	Bodemmanuru	2	2	30000	The New India Assurance	1 Year
13	Tanguturu	2	2	30000	The New India Assurance	1 Year
14	Budamarsu					

TABLE 6: ANNUAL MAINTENANCE CONTRACT (AMC)

		Annual maintenance contract		
Sl. No.	**Name of the LIS**	**Contractor Details**	**Amount Rs.**	**Period**
1	K.Singavaram	Mr.D.Sultan mahamood Basha	10000	April-07 to March-08
2	Kandukuru	Mr.T.Raghava Reddi	6000	April-07 to March-08
3	Dr K L Rao	Mr Linkan	10,000	June -07 to July-08
4	Thatigummi	Mr Ramesh	2000	July -07 to June -08
5	D D Padu	Mr Ramesh	3000	Juen-07 to July -08
6	Kothapeta	Mr Ramesh	3000	June -07 to July-08
7	Lachigudem	R.K.Elecronics, BCM	3000	18.02.07
8	Pydegudem-II	R.K.Elecronics, BCM	3000	18.02.07
9	Ammagaripalli	R.K.Elecronics, BCM	6000	27.03.07
10	Bodwada	Mr.Viswanatham	6000	June -07 to July-08
11	Bodemmanuru	Vemaiah	6,000	June -07 to July-08
12	Budamarsu	Srinivas Reddy	20000	10-5-2007 to 10-5-2008

Table 7: SEED DISTRIBUTION

Varity wise Farmers List							
S.No	**Varity of Seed in quantity**	**Quantity distributed**	**Acres (Both the villages)**	**Budawada L.I.S**		**Ammagaripalli L.I.S.**	
				quantity	**No.of Farmers**	**quantity**	**No.of Farmers**
1	Ground nut	1200Kgs	16.5 acres	1200kgs	36		

2	Maize	39 Packets @5 KGs /packet	25 acres	14 Pkts	8	25 Pkts	10
3	Bobberlu	60Kgs	6 acres	60 kg	6		
4	Green Gram	96 packets @4kgs / packet	62 acres	44 Pkts	22	52 Pkts	20
5	Thil	55kgs	22 acres			55 Kgs	15
6	Tamato	20 gms	2 acres	20 gms	3		
7	Ladies finger	250 gms	1 acre	250 gms	2		
8	Sunflower	10 Packets	10 acres			10 Pkts	6
9	Cucumber	50 gms	1 acre	50 gms	2		
		Total	**145.5**		**79**		**51**