

# Andhra Pradesh Community Based Tank Management Project

Newsletter- 5

March 2011

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## Editorial

Andhra Pradesh Community Based Tank Management Project (APCBTMP) has completed three years of successful implementation. The Mid-Term Review Mission of the World Bank, "confirms that the project development objective remains valid and that satisfactory progress is being made in meeting them."

As it enters the fourth year, the project is committed to ground civil works in all the selected tanks covering the full target of 2.5 lakh hectares of ayacut.

This newsletter highlights the inspiring efforts of number of stakeholders across the state in increasing productivity, wise water use and sustainable operation and maintenance of tank system.

Ground water is the life line for farmers in areas devoid of surface irrigation sources. Sri. Murkanappa's success mantra is inspiring. So are the stories of Sri Keema Naik, Sri Venkata Reddy, and Smt. Manjula.

## World Bank Mid Term Review

*The Mid-Term Review Mission (September 13 - 21, 2010) by the World Bank confirms that "the project development objectives remain valid and that satisfactory progress is being made in meeting them. Close and continuous attention to WUA capacity building is being reflected in increased community awareness of WUA roles and responsibilities and in improved record keeping. Key indicators measuring agricultural productivity also appear to be on track. We are also glad to note that, based on a sample of tanks visited during the mission, construction quality has improved and that recommendations made by earlier Bank missions regarding compaction quality of tank bunds and involvement of WUAs in promoting construction quality have been taken on board by the project. The process of handing over operations and maintenance of rehabilitation tanks to WUAs has begun with the first batch of 120 tanks handed over to WUAs in August/September 2010. The project would henceforth track WUA performance in managing these systems through regular sustainability surveys. "*

- World Bank Mid-Term Mission Aide Memoire

### Grading of Tanks – APCBTMP (March 2011)

S. No	Activity	Total Marks	Number of tanks with marks				Total Number tanks
			>75% (A)	50-75% (B)	25-50% (C)	<25% (D)	
<b>Institutional Development</b>							
1	Corpus	25	1760	0	0	248	2008
2	Individual office management	3	1711	0	0	297	2008
3	Book keeping	3	1679	131	84	114	2008
4	100% attendance in meetings	3	461	1074	178	295	2008
5	Para workers identified	3	1921	0	0	87	2008
6	Trainings completed	3	455	589	559	405	2008
	<b>Total Marks (ID)</b>	<b>40</b>					
<b>Agriculture Livelihoods Support Services (ALSS)</b>							
7	Farmers trained	6	159	299	713	838	2008
8	Exposure visits	4	16	109	616	1277	2008
9	SRI tanks	6	0	0	0	103	103
10	Formal marketing contracts	5	6	0	0	264	270
11	Artificial insemination conducted	4	351	0	0	1657	2008
12	Fisheries adopted	5	229	0	0	140	369
	<b>Total Marks (ALSS)</b>	<b>30</b>					
<b>Tank System Improvement</b>							
13	Entry Point Activity (EPA)	6	1807	0	0	27	1834
14	Tender works grounded	10	1452	0	0	91	1543
15	Additional area under irrigation	4	405	58	33	1446	1936
16	Expenditure	10	600	303	349	684	1936
	<b>Total Marks (TSI)</b>	<b>30</b>					
<b>Grand Total</b>		<b>100</b>	<b>116</b>	<b>1401</b>	<b>349</b>	<b>0</b>	<b>1936</b>

# Overview

## Status of Works Grounded (31 March 2011)

S. No	District	Project Tanks	Ayacut (Ha)	AA Tanks	Works grounded	
					WUA	Tender
1	Adilabad	57	6,456	56	54	29
2	Anantapur	142	17,432	142	138	121
3	Chittoor	167	17,099	166	160	131
4	East Godavari	18	1,281	18	17	17
5	Kadapa	63	9,761	63	62	62
6	Karimnagar	67	7,375	67	66	43
7	Khammam	104	17,152	104	103	94
8	Krishna	65	9,560	59	52	48
9	Kurnool	44	5,969	44	44	44
10	Mahabubnagar	277	26,368	273	271	215
11	Medak	192	18,669	190	189	180
12	Nalgonda	136	13,364	135	121	61
13	Nellore	127	23,422	124	124	102
14	Nizamabad	46	6,112	46	42	33
15	Prakasam	40	7,010	39	37	30
16	Ranga Reddy	41	6,305	40	40	40
17	Srikakulam	91	7,680	75	68	73
18	Vizianagaram	92	11,015	86	74	71
19	Visakhapatnam	132	12,296	80	57	60
20	Warangal	121	16,903	120	116	94
21	West Godavari	13	2,380	9	0	0
<b>Total</b>		<b>2,035</b>	<b>243,610</b>	<b>1,936</b>	<b>1,835</b>	<b>1,549</b>



*Field Day on ICM Paddy by Agriculture Officer, Hatnoora, Medak District*

Components	Unit	No.
<b>Institution Development</b>		
Support Organizations involved	N	260
Tanks allotted to Support Organizations	N	2008
Tank Improvement and Management Plans (TIMPs) prepared	N	1938
WUA management committee members trained	N	31860
WUA Subcommittee members trained	N	32700
Paraworkers trained	N	7054
Corpus fund	Rs/Lakh	403
Kind contribution	Rs/Lakh	233
Tribal Development Plan prepared	WUA	47
Tanks Handed over	N	178
<b>Improvements of Minor Irrigation Tanks</b>		
Administrative approvals accorded	Tanks	1936
Technical sanctions	Tanks	1868
WUA works grounded	Tanks	1835
Tender works grounded	Tanks	1549
100% works completed	Tanks	362
75-100% works completed	Tanks	154
50-74% works completed	Tanks	136
25-49% works completed	Tanks	124
01-24% works completed	Tanks	767
<b>Participatory Groundwater Management (PGM)</b>		
Tanks selected	N	315
PGM groups formed	N	2271
PGM group members	Men	18501
PGM group members	Women	17174
Farmers trained in PGM	N	4992
Module 1 (Need and Methodology of Participatory GW Estimation)	N	265
Module 2 (PHM Equi.handling, data Collection & dissemination)	N	245
Module 3 (Crop Water Budgeting)	N	114
PHM Volunteers collecting data	N	1225
CWB Workshops organised	Tank	111
<b>Agricultural Livelihoods Support Services (ALSS)</b>		
Demonstrations completed	N	2794
Vermi compost units grounded	N	527
Kisan melas organised	N	436
Fingerlings stocked	N	489
Gopalmitras trained	N	378
Ram lamb units grounded	N	18
Formation of the CIGs for marketing	N	367

# Strengthening Community Based Institutions

"My name is Keema Naik. I hail from Thimmaipalem, a remote tribal village in Peddavoora mandal of Nalgonda district. Our tank, Peddacheruvu has about 137 ha ayacut. I have been elected as chairman for Peddacheruvu WUA in the last elections."



## **WUA discussing how to build a strong Corpus**

"As a Chairman, we have decided to work on restoring the dilapidated tank along with WUA members. At this stage in 2009, GCS (Green Cross Society) Supporting Organisation came to our village on behalf of APCBTMP.

"GCS conducted a series of meetings, trainings and workshops on the objectives of APCBTMP for effective functioning of the WUA and operations and maintenance of the tank".

"In one such meeting focus was on how to generate a corpus fund for O&M from the beginning of the project. The tank ayacutdars became enthusiastic when they understood the importance of mobilizing and generating a good Corpus fund and various ways and means to do it. This has helped me to develop our Corpus Fund (O&M Account) for our tank maintenance."

"The WUA management Committee used to discuss the issue and monitor the progress in the collection of corpus funds during our monthly meetings. As a result, over the months, slowly but steadily the corpus amount has reached Rs. 75,520/-. The amount has been deposited in WUA O&M Account in SBH, Peddavoora."

**Sri Keema Naik is confident: "We have succeeded in mobilizing almost one lakh rupees. This is because GCS and the Project staff showed us simple methods of contribution collection. We can take good care of our tank when the restoration work is complete."**

## Proactive Water Management

**Vemalur** is a remote village in Atlur mandal of Kadapa district. *Patha Cheruvu* with 198 acres ayacut has been selected for restoration. As part of capacity building for WUA, the SO (PAID) staff and the Project conducted several trainings and workshops. As part of these sessions, the WUA vice chairman, Sri P Venkata Subba Reddy visited Kamasamudram tank nearby already restored under APCBTMP.

After his exposure visit, Sri Venkata Subba Reddy was a man with a mission. He narrated the Kamasamudram experience to his fellow WUA members. He was eloquent in his appreciation for the wise decisions taken by Kamasamudram WUA members. He narrated his experience to fellow members:

"I wanted to find out their secret in bringing gap ayacut into irrigation. So I asked some WUA members. This is what they told me. 'The WUA of Kamasamudram got Rs.4.99 lakhs under WUA works component and Rs.4.86 under tender component. They spent the tender works amount for Bund strengthening. They used the WUA amount for jungle clearance and supply channel construction".

Mr Pulliah had said: 'I used to cultivate my two acres of land with great difficulty by using a borewell. Now I am happy that I am getting tank water for my land'. Mr Chenniah had a bigger story: 'Now, I am able to cultivate Sunflower in 5 acres of my land, located at the tail-end of the ayacut. I cannot ask for more'. **After listening to Sri Venkata Reddy, Vemalur WUA members are now resolute: "If Kempasamudram WUA can do it, why not us?"**

## Wise Water Management

The State Project Director of APCTMP, Mr. Vinay Kumar, IFS interacted with WUA Water Management and Finance Sub-committee members of Oora Cheruvu, Nagapur village of Medak mandal. He expressed satisfaction on WUA management and women participation. After inspecting the quality of civil works he appreciated the works sub committee members for their active involvement in monitoring civil works execution.

**He exhorted them to manage their precious water resources wisely.**



**SPD interacting with WUA Finance Sub-committee**

## Effective Warabandi System by Hotha WUA

Endless discussions on the need for implementation of *Warabandi* system for effective water distribution management and improvement in water use efficiency are common. WUAs have been given much training under various irrigation development schemes. But mobilizing WUAs towards preparation and effective implementation of *Warabandi* system is rare.

This is where the Hotha WUA of Binnalakotturu, Kanchili Mandal of Srikakulam District stands out as a shining example in *Warabandi* implementation under APCBTMP. This remote village on Orissa border has achieved it under the inspiring leadership of WUA President, Mr. Guliseti Lakshmanamurthy. Hotha tank with an ayacut of 131 acres had been irrigating only 98 acres.

After start of the project the WUA used to meet two or three times a year. Members were hardly aware about O&M and water management practices. Neither did they know about Management Committee's roles and responsibilities. But they used to regulate their water distribution by traditional methods.

After the tank restoration was taken up under APCBTMP, social mobilisation and capacity building of the WUA has been ably facilitated by the Support Organisation (SO), GUEST. The WUA, its Sub-committees, and Para Workers were provided with the necessary trainings on their respective Roles and Responsibilities.

Most importantly, the WUA has prepared a *Warabandi* plan and is implementing it effectively. The WUA President motivates fellow WUA members in all activities.

Water budget and crop plan were prepared by the WUA Water Management Sub committee along with Management Committee. Then *Warabandi* schedule was prepared, recorded in Minutes Book, and displayed in the WUA Office.

**Now the WUA is able to maintain water distribution up to the tailend lands strictly following *Warabandi* schedule. Satisfied members participate regularly in meetings and trainings. The District Project Director, Srikakulam has instructed all WUAs to follow the *Warabandi* system followed by Hotha WUA.**

## Participatory Groundwater Management

### Increasing groundwater productivity: Sri. Murkhanappa's success mantra

Groundwater is the lifeline for farmers in areas devoid of any surface irrigation sources. Lakhs of farmers depend on groundwater for sustaining their livelihood even in arid areas such as Anantapur. In Anantapur, farmers extract groundwater from deep bore wells. Amarapuram bordering Karnataka state, is a classic example where farmers survive solely on groundwater based irrigation.

Generally, farmers grow paddy and other water intensive crops, expending the precious resource. The input cost is high and the return from outputs very meagre. Free power supply for groundwater extraction is probably the main reason for this alarming trend. Farmers have been advised time and again about the need to change from water intensive crops such as paddy to irrigated dry crops such as floriculture and horticulture where the impact is minimal.

In this scenario, the remote village of Uduguru, in Amarapuram mandal of Anantapur stands out as majestic example of the scope for very high productivity per unit of

groundwater consumed. The productivity obtained by the farmers of Uduguru highlight the key performance indicator of PGM in shining colours.

The surplus weir overflows only once in five years. Local farmers depend on groundwater for their irrigation needs.

Having a large number of groundwater users in the ayacut and influence zone of the tank, PGM was initiated under the Project. The tank ayacut is 46.8 ha and the groundwater Zone of Influence (Zol) of the tank is 54 ha. A total of 35 bore wells are located in the Zol. Of these, 34 bore wells irrigate commercial crops such as betel leaves and betel nut in 16.5 ha.

Other regular staple crops like Paddy and Ragi, Cotton and Chillies are grown in 20 ha. PHM equipment has already been installed in 5 representative borewells and trainings have been conducted. PHM volunteers are collecting groundwater data regularly.

Uduguru is about 90 km from the Revenue Divisional Office HQ of Penugonda. The minor irrigation tank is being renovated under APCBTMP. The area receives scanty rainfall ranging from 450 to 470 mm in a hydrologic year. With no surface water sources in the area, the tanks receive water as and when it rains.



Murkhanappa's betel plantation

Crop	Input cost/Ha	Output/ ha/ quintals (Rs)	Net Benefit / ha (Rs)	Increase in net benefit compared to paddy /ha
Paddy	30,000	60	24,000	
Betel leaves	120,000	150	180,000	> 6 times
Betel nuts	120,000	150	150,000	> 5 times

Groundwater productivity increases 5-6 times more when it is used wisely. An analysis of the crops grown and incomes derived by Uduguru farmers gives a clear picture of the contrast between traditional crops such as paddy and commercial crops such as betel leaves and nuts.

The total income generated from the 16.5 ha of betel leaves and the betel nuts amounts to Rs. 46.5 lakhs whereas the income generated from the 20 ha area under the conventional crops is only about Rs. 10.8 lakhs. There is possibility of a phenomenal difference in productivity enhancement and lifestyle change for wise farmers. Groundwater productivity 5-6 times higher from commercial crops: Lesson in wise water use.

Eighty year old, Sri M S Murkhanappa, tells his inspirational story: "I have 6 acres of land. I am 80 year old, and my sons and daughters help me in farming. Way back in 1986, I was the first person in Uduguru to drill a borewell for irrigation. We drilled to a depth of 210 feet. The borewell is high yielding with a 12-stage 10HP motor, lowered upto 200 feet below ground level. Another borewell I drilled yields much less.

"I will invest my money if I see scope for substantial returns. I invested over two lakh Rupees to link my two borewells with pipelines to irrigate two patches of land half km apart. I

grow betel leaves and betel nuts in 1.5 acres next to my house. I also bought a tractor."

"About 20 years ago, I realized that investing and going in for commercial crops would fetch me good returns. Betel leaves and betel nuts have good market and high returns. I also grow some paddy in my half acre tank ayacut land for my family needs. After seeing me earn substantial amounts through the betel leaves and nuts crop, many a farmer in my village has adopted the same and grow in 1-2 acres and reap rich income."

Murkhanappa well understood the economics of groundwater irrigation. "Betel crop needs water every day. No doubt it is highly water intensive. But the very high returns justify it."

**"My well has been selected for PHM. I am learning how to measure water levels and discharge from my borewell using the Water Level Indicator supplied by the Project. Sri Rangaiah, our Training Resource Person from the project, explained that this activity would help me and the village community to plan and save our crops during adverse seasons."**

## Agricultural Livelihoods Support Services

### Zero Tillage Maize

Paddy is grown during Rabi after harvesting Kharif crop in Karimnagar district requiring large quantities of water per unit production, due to the prevailing seasonal conditions sometimes even leading to crop failure. Maize is grown in an area of 13,000 - 16,000 Ha in Karimnagar District during Rabi after Paddy follows by undertaking suitable tillage operations incurring substantial expenditure, and also delaying the sowing of Maize by 2 to 3 weeks.

To reduce the cost on tillage operations as well as to reduce the number of irrigations by adopting mulching of paddy straw



**Paddy stubbles were spread in maize fields;  
[inset] Strong root formation**

which is readily available on the field, Krishi Vignana Kendra conducted "On Farm Testing" in 12 locations to assess the technology of "Zero tillage - Maize" developed by the Acharya NG R Agricultural University, Hyderabad.

Based on the assessment results of KVK, demonstration was planned in the field of Smt. Manjula, a woman lead farmer of Kothapally village, Bheema Devarapally mandal under APCBTMP during Rabi 2009-10.

A field day was conducted and feedback from the participants about the advantages of Zero tillage are as follows:

- ✦ Yield on par with normal maize growing.
- ✦ Reduced irrigations (Less by 3) due to mulching by Paddy straw, more area can be irrigated with available water under tanks during Rabi season after Paddy.
- ✦ Cost of cultivation is less
- ✦ Due to development of side roots lodging under heavy winds minimized.
- ✦ Irrigation by flooding during night time with the prevailing load shedding by electricity department.
- ✦ Complete decomposition of Paddy stubbles by the time of harvest of Maize was a rich resource of organic manure.

It is likely that more farmers will take up Zero Tillage Maize growing in Karimnagar district since it was clearly demonstrated that cultivation expenses were reduced but the yield was normal, leading to accrued savings of Rs 8,482/- per ha.

Before conducting the demonstration, orientation training was given on the package of practices and advantages of Zero Tillage. Initially Smt. Manjula and the neighbouring farmers were not enthused to take up this intervention in Maize cultivation. But the KVK and Project staff convinced the lead farmer to adopt this technology along with control farmers. KVK scientists and APD Agri-Extension guided Smt. Manjula at each cultural operation from seeding till harvesting. Each training session was well attended by fellow farmers who became convinced about the advantages of this practice of Maize cultivation.



*Demonstration plot on zero tillage maize during Rabi 2009–10*

**Smt. Manjula now appeals to all Maize growing ayacutdars using tank irrigation to try 'Zero Tillage' methodology for better returns. She is convinced that Zero Tillage is definitely a winner. She has demonstrated it.**

### Results of Zero Tillage Maize

#	Name of the parameter	Zero Tillage Maize	Normal maize
1	Land preparation cost (Rs)	-	3878
2	Land preparation time (Days)	-	15
3	Seed (Kg)/ha	40 Kg	50 Kg
4	Seed cost (Rs)	4,000	5,000
5	Spacing	60X20 cm	45x20 cm
6	Plant population/ac (N)	81,510	108,680
7	Sowing labour (N)	40	20
8	Sowing labour cost (Rs)	4000	3211
9	Herbicide cost with labour (Rs)	2740	1580
10	Fertilizer cost (Rs)	6,896	6,896
11	Intercultural operations cost (Rs)	-	3,463
12	Weeding labour cost (Rs)	-	513
13	Insecticide cost, including labour cost (Rs)	2,702	3,136
14	No. of Irrigations (N)	8	12
15	Time for each irrigation to irrigate one acre (Hrs)	17.66	23
16	Irrigation – labour cost (Rs)	-	3,949
17	Lodging	6%	22%
18	Crop duration (days)	115	118
19	Harvesting, threshing and marketing (Rs)	5,977	5,952
20	Cost of cultivation (Rs)	26,315	37,578
21	Yield per Ha (Qt)	65.45	62.49
22	Market rate (Rs/Qt)	840	840
23	Gross income (Rs)	54,978	52,491
24	Net income (Rs)	28,663	14,913

## Rangareddy Cheruvu Fishermen Community- Turnaround in their Fortunes

Rangareddy cheruvu, in Rudravaram mandal of Kurnool District, has an ayacut of 40 ha. The main sources of income are agriculture, fisheries and labour work. The effective water spread area of the tank is 62 hectares.

Rangareddy tank was selected under APCBTM Project in July 2007 and was allotted to Nava Youth Association (NYA) for facilitation. Besides tank infrastructure improvement, the project envisaged improving other tank based livelihoods, including fisheries.

Prior to implementation of APCBTM Project, the existing Fishermen Cooperative Society (FCS) members were investing their own meagre funds for fish production. Very few fishermen actually were involved in pisciculture and the remaining members went to work as farm labour. They used to harvest about 6 tons of fish.

As part of ALSS under APCBTMP, FCS members were trained on various aspects of fish production and management. They were also taken on an exposure visit to Kaikalur in West Godavari district.



*Collective marketing by fishermen*

On 31 October 2008, a total of 80,000 fingerlings, 100 mm in size of four varieties of fast growing fish were released into Rangareddy cheruvu as listed below:

#	Type of fingerlings	Size(mm)	Released(N)
1	Catla	100	30,000
2	Rohu	100	15,000
3	Jayanthi Rohu	100	20,000
4	Grace Carp	100	15,000
	<b>Total</b>		<b>80,000</b>

#### Cost-benefit of fish production in Rangareddy cheruvu, Rudravaram mandal, Kurnool district

Six months later in April 2001, the fishermen harvested 10.45 tons of fish from Rangareddy cheruvu. They got 74% increase in production. The cost-benefit ratio is also very impressive, with each rupee invested earning a profit of Rs. 3.54.

Item of expenditure and income	Rupees
<b>Expenditure on fish production</b>	
· Value of Fingerlings	30,000
· Fishing expenditure	10,000
· Transport costs	6,000
<b>Total Expenditure</b>	<b>46,000</b>
<b>Income from sale of fish</b> (@ Rs. 20000 per ton)	
· Value of 10.45 tons of fish harvested: (10.5*20,000 = Rs. 209,000)	209,000
<b>Profit (Rs. 209,000 – Rs. 46,000)</b>	<b>163,000</b>

The fishermen from other villages have been visiting and learning about the success achieved by the FCS members of Rangareddy tank. The FCS members are very happy and proud to explain the turnaround in their fortunes. Visiting fishermen go back with a strong resolve to bring about change in their fortunes as well. They have requested the Project to provide them with the necessary support and assistance to change their fortunes.

## Cross Learning through APCBTMP Experience

Eight senior members of the OCTMP management team visited APCBTMP in December 2010. They held extensive discussions with the State Project Director and the PMU members on all aspects of project implementation. They also interacted with the DPU staff and WUAs of Dabilpura and Shamirpet tanks of Rangareddy district.

**"The awareness levels of the WUAs and the scope for sustainable management of restored tanks system is impressive.** APCBTMP has also very innovative aspects such as Participatory Groundwater Management and Agricultural Livelihood Support Services. We would like our WUAs to learn from your experience," said the Leader of the visiting group.

Subsequently, 24 WUA representatives and two officers of OCTMP made a three day exposure visit to Srikakulam district from 10-12 January 2011. The farmers had lively interactions with the DPU staff and the WUA members of Budatha valasa, Sobhanapuram and Vasapa tanks.

The visitors appreciated the level of community participation in project implementation as seen in the functioning of the various sub-committees and the involvement of Paraworkers from among ayacutdars. They said while taking leave: **"We have learnt a lot from this visit. We will also get fully involved in OCTMP to make our WUAs strong and sustainable."**



OCTMP team interacting with WUA and Project staff

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