



REPORT ON TRAINING OF TRAINERS (TOT) FOR SELECTED TECHNICAL PERSONS TO DEVELOP PARA-HYDROLOGISTS At Alluri Seetharamaraju district

Venue: Henry Martyn Institute (HMI), Hyderabad

Date: 16-18 May 2024

CONTEXT

WASSAN has successfully implemented various irrigation projects in Alluri Seetharamaraju District and Manyam Districts of Andhra Pradesh, including gravity-based and solar lift irrigation systems. Due to community involvement from the outset, these systems are effectively managed by tribal farmers. However, there is still much work to be done, as 90% of the cultivated area remains fallow during *Rabi* and *Summer* seasons.

Many existing water harvesting structures in the district are non-functional and require assessment to determine the extent of damage. Identifying villages with potential for irrigation facility development is crucial to increase the net area sown during Rabi and Summer.

WASSAN has collaborated with ASR District Collector Mr. Sumith Kumar, IAS to emphasize the importance of community-led assessments of existing water harvesting structures. The DC organized a meeting with the Small and Minor Irrigation Department to support WASSAN's plan. SMI officials reported delays in responding to community requests for renovation due to funding and HR constraints.

WASSAN introduced the RRR (*Rejuvenation of Water Bodies, Revival of Institutions, and Regenerate Landscapes*) concept to local CSO partners, focusing on local youth involvement in water assessment and capacity building. All CSO partners accepted the approach and identified educated youth for the program.



WASSAN designed a 60-day curriculum and modules for training para-hydrologists and received expressions of interest from applicants seeking to enhance their skills.

WASSAN has invited experienced senior engineers from CSOs who have worked on water projects in tribal areas to serve as resource persons. Additionally, WASSAN has planned a Training of Trainers (TOT) program for these resource persons who have expressed interest in this initiative. This TOT program aims to equip them with the necessary skills and knowledge to support the RRR program's objectives.

Training Program Overview

As part of building a community-level cadre of para-hydrologists, WASSAN has organized a specialized Training of Trainers (TOT) program for senior engineers from CSOs who have expressed interest. This TOT program supports the Rejuvenation of Water Bodies, Renovation of Institutions, and Regeneration of Landscapes (RRR) program in ASR District, Andhra Pradesh.

This training aims to equip participants with the necessary skills and knowledge to support the RRR program's objectives.

The broad objectives of the program are to:

1. Familiarize Resource Persons (RPs) with the concept and activities of the Rejuvenation of Water Bodies, Renovation of Institutions, and Regeneration of Landscapes (RRR) program.
2. Enhance RPs' teaching and module preparation skills.
3. Introduce advanced technologies used by WASSAN in watershed projects, including Google Earth, contour map overlapping, and water line mapping.

A 3-day training cum workshop was held at HMI, Hyderabad, to:

- Engage with proposed resource persons
- Develop modules for para-hydrologists training

4. Understand RPs' areas of interest, teaching skills, and available time for RRR program involvement.
5. Assess and categorize Resource Persons based on their expertise and capabilities.
6. Develop session plans for effective knowledge-sharing and skill-building.

These objectives aim to equip Resource Persons with the necessary knowledge, skills, and tools to support the successful implementation of the RRR program.



Participants

- | | |
|---|---|
| i. Chandrasekhar, WASSAN, Hyd | viii. Koteswara Rao, LAYA, Paderu |
| ii. Bakkareddy, WASSAN, Hyd | ix. Rakesh, WASSAN, Araku |
| iii. Pavan, WASSAN, Hyd | x. Ramesh, Freelancer,
Visakhapatnam |
| iv. Venugopal, VJNNS, Narsipatnam | xi. Prasada Rao, VIKASA,
Visakhapatnam |
| v. Veeru Naidu, VJNNS, Narsipatnam | xii. Vesavila, WASSAN, Paderu |
| vi. Narasinga Rao, WASSAN,
Visakhapatnam | |
| vii. Sridhar, WASSAN, Hyd | |

Day - 1

The training program commenced with a brainstorming session, where participants identified water issues in tribal areas and the causes of soil erosion. Building on this exercise, WASSAN shared their efforts in the district, highlighting community-developed systems for managing water resources in villages. The senior team explained the collaborative process of preparing plans and estimates with local communities.

The integration of mobile applications for land surveys was also discussed. Following this, participants were tasked with listing topics relevant to training modules. This exercise enabled the senior team to assess participants' interests and capacities as trainers for developing para-hydrologists.

The program culminated in the finalization of an action plan, tentative schedule, and topics to be covered in the first phase of training. At the conclusion of the training, all five participants agreed to dedicate their time to the program. Resource Persons, Mr. C. Bakkareddy and Mr. M. Chandrasekhar expressed their enthusiasm, stating that this group will spearhead the launch of the para-hydrologists program.

Training Approach

Mr. Bakkareddy provided an overview of the program's background and highlighted its significance, emphasizing the importance of comprehensive planning at the village/panchayat level. He discussed the necessary resources and the need for a resource group in ASR District to empower local youth, selected by NGOs, as para-hydrologists.

Bakkareddy outlined the key deliverables for the para-hydrologists at the end of the training:

- Utilize Google Earth to identify points, paths, and polygons
- Collect and enter data using ODK (Open Data Kit)
- Assess existing irrigation structures, identify issues, and plan repairs
- Locate untapped water resources and develop landscape plans
- Present plans to local bodies and NGOs

WASSAN team explained how the community is involved in generation of watershed plans and estimates by using technology of ODK and google earth. The team showed plans developed through the community. During the discussion on existing irrigation practices in the area, the following systems are identified.

- Check dams / Diversion structures
- Gravity irrigation pipe network

- Lift - solar / electricity
- Tank based - canal, field/supply channel
- Wells to a limited extent.

During the discussion among the participants, it was noted that water from springs is decreasing and community suffering for drinking water during the summer and springs are the main source for streams, hence it is an urgent need to conserve springs to protect drinking water and critical irrigation systems. Bakkareddi shared his experience with the ACWDAM and CHARAGs in protection of springs. Then Mr Chandrasekhar discussed about information such as spring source, catchment status, no of families depending on the spring, total community covered, discharge from the spring in different seasons must be considered,

Mr. Pavan shared WASSAN's experience in engaging communities for watershed planning and estimation, leveraging technology. He explained how communities were trained and involved in data collection for watershed development, and how plans and estimates were refined using this data in the Jiwidaahasa program in Jharkhand. Notably, this model has been adopted by the state government.

This comprehensive approach, promoted by WASSAN, features a dashboard accessible to departments, local NGOs, and community-based organizations (CBOs). The model has received acceptance from the government, community, and NGOs/CBOs.

As part of the program, capacity-building trainings were conducted for ground-level staff. The following steps were discussed during the orientation:

- Capacity building of NGOs and selected youth from the community on concept and activities of watershed (WS) besides on the technology involved in the process like google earth, ODK etc. Understanding and potential activities to be proposed under WS by observing the resources (perceived through bird's eye view) using google earth image, land, forest, soils, crops, water resources, farmer plots, etc.
- Constraints discussion and arriving at possible options
- How the mobile applications are used for data collection and how the digitization avoided desk work.
- Website development - individual login access,
- How the farmer wise /theme wise reports displayed on the website.

Sridhar, IT department presented topo sheets, water lines, cadastral maps and over lapping maps to the participants and explained briefly about GIS. In his presentation he showed already delineated watershed boundaries and river basins. It gives a brief understanding to participants about already available information and how best technology is available to train the community as para-hydrologists. The first day session concluded with homework to participants on watershed, irrigation and drinking water.

Day - 2

Following the recap and participant presentations on their previous day's homework, sessions on content selection for the Jalmitras training continued. During the group presentations, Prasad and Narasinga discussed watershed and irrigation, focusing on tribal areas. They began by discussing irrigation in tribal areas, including types of water resources, topography, crops, and the status of structures built in the 1980s and 1990s.



The presenters showed a drawing of a diversion structure, highlighting its components and common issues. They emphasized the need for spring-based land treatment to sustain springs, which are the primary source of drinking water and contribute to hill streams that feed irrigation crops. However, community involvement in maintaining and managing irrigation structures is often lacking.

The presentation also highlighted issues such as:

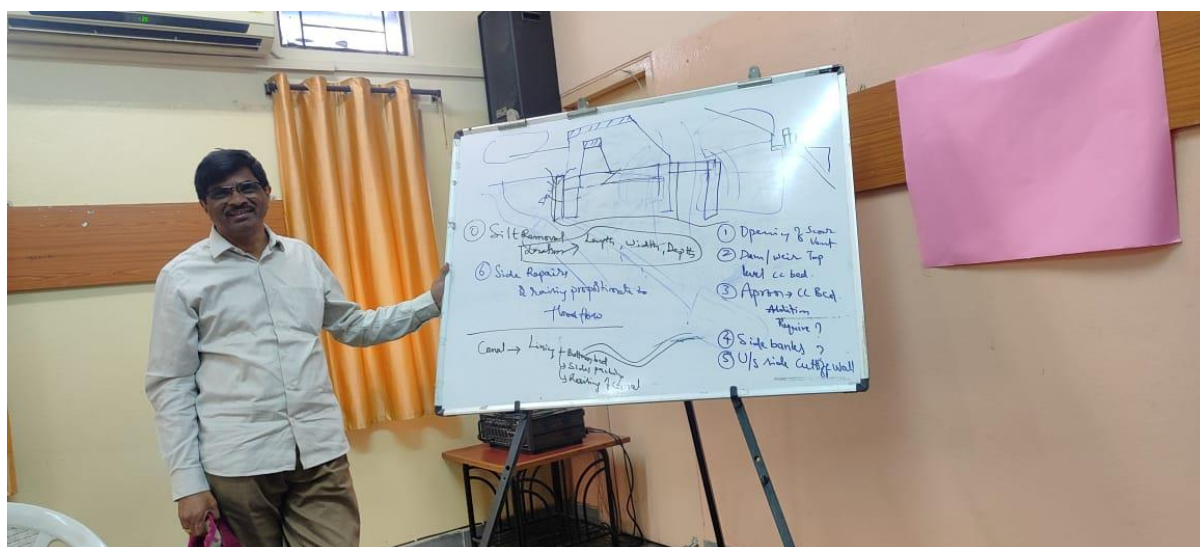
- Inequitable water distribution, with farmers at the head reaches using more water than needed, while those at the tail end suffer from water scarcity
- Significant water loss (over 50%) due to leaks in the canals

This presentation underscored the urgent need for para-hydrologists to optimize natural resource utilization and highlighted the capacities that need to be instilled in selected youth as para-hydrologists. The same team presented on watershed, they talked about the concept as watershed will address adverse conditions of draught and flood on crops. In this process, more water will be recharged into the ground and minimize the runoff besides controlling soil erosion. Watershed delineation, ridge to valley concept, identification of drainage lines and planning of structures based on the stream order, planning of plantation in commons, gully treatment and survey number wise net plan in commons as well as in the individual lands are discussed. They also explained about the issue in the context of tribal areas, particularly soil erosion and dwindling of water resources.

Discussed treatment measures such as farm ponds, SCTs, CCTs, WAT, RFB, NFB, Rockfill dams, Gabian structures, plantation etc. The presentation is concluded with the urgent need of soil and water conservation, inclusion of livelihood activities for landless families.

Venugopal and Veerunaidu involved in drinking water projects of VJNNS presented on drinking water scenario and issues. They presented a PPT on activities right from the site identification, different diameters of the pipes they are using in drawing water from the source to the village and taps they are providing based on the size and population of the village, collection tank at the source and a filter and storage tank at the village were discussed in the presentation. In their presentation they emphasized the community involvement in planning, implementation, maintenance and management of the system is a must. Periodical community contribution must be ensured to attend for repairs. Venugopal explained about different ratios of concrete and different filter medias they are using for the drinking water tanks.

Ramesh presented a session on basic mathematics, He discussed basic numbers, additions, subtractions, multiplications, shapes and areas calculations and need of learning of simple math's for generating estimates. As he is new to the field of NGO sector, he didn't have experience of presentation, bit struggled to present the session. Chandrasekhar helped him in the presentation.

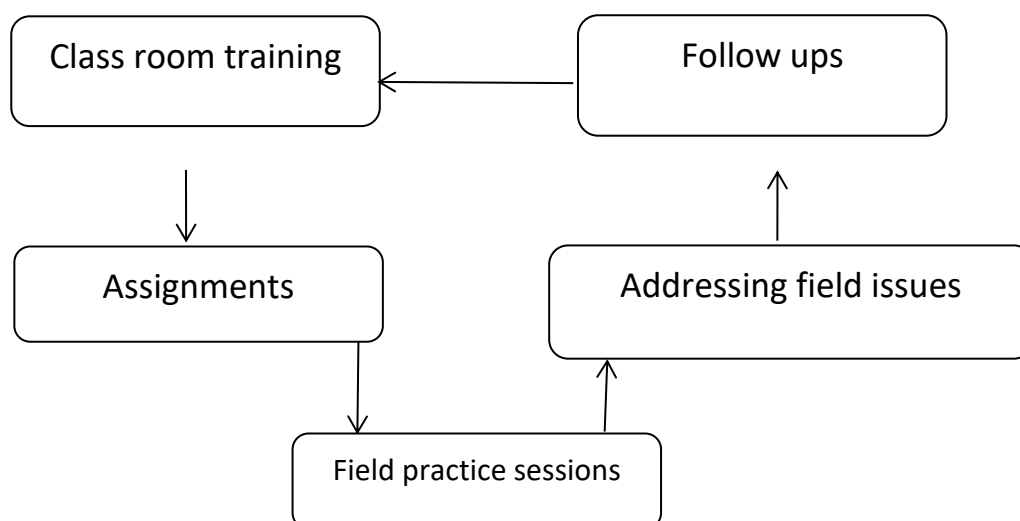


Chandrasekhar explained the importance of module preparation prior to the training. One must be clear on what skills that trainee s needed to accomplish the assigned tasks. The trainer must be clear on topics that are required to instill the skills in trainees. In this discussion, he narrated the importance of calculations to arrive estimates. Para hydrologists must be well equipped with basic mathematics. In an exercise the following topics are finalized to cover in the phase 1 training.

1. Basic mathematics
2. Technical terms & concepts
3. Google earth/maps
4. Hydrology and ODK
5. ODK

Participants are divided into teams and asked to prepare modules on the above topics. All the participants prepared modules based on the guidance of Chandrasekhar then discussed on training flow as follows...

STRUCTURE OF THE TRAINING PROGRAM



In this flow point persons from partner NGOs and WASSAN team are responsible for monitoring para-hydrologists.

In the brainstorming session, the following technical terms are finalized to include in the 1st phase training.

Sno	Technical term	Sno	Technical term	Sno	Technical term	Sno	Technical term	Sno	Technical term
1	Slope	19	Biomass	37	Isotopes	55	Scover vent	73	Micro irrigation
2	Stream	20	Berm	38	Side slope	56	Head of flow	74	GPS/GIS
3	Discharge	21	Rainfall	39	Top width	57	Abutment	75	Lat / Long
4	Runoff	22	Rainfall intensity	40	Plan	58	Gate wall	76	ODK
5	Watershed	23	Rainfall frequency	41	Cross section	59	Air valve	77	LULC
6	Spring	24	Percolation tank	42	Elevation	60	Flank	78	LWD
7	Trench	25	Mini percolation tank	43	Source tank/spring box	61	Desiltation	79	Topo sheet

Sno	Technical term	Sno	Technical term	Sno	Technical term	Sno	Technical term	Sno	Technical term
8	Bund	26	Steam order	44	Distribution tank	62	NRV	80	Cadastral map
9	Contour	27	Farm pond	45	Stand post	63	Guidewall	81	Main/sub line
10	Ridge	28	check-dam	46	Velocity	64	Silt level	82	Google earth map
11	Valley	29	V-notch	47	Pressure	65	Crest level	83	Drain
12	Area	30	A-Frame	48	Seepage	66	Gate	84	Diversion
13	Volume	31	Hydro marker	49	Percolation	67	Canal bed	85	Cattle sheds
14	Depression	32	Catchment area	50	Permeability	68	Side walls	86	Hand pump
15	Stones	33	Command area	51	Body wall	69	Hunch	87	Cistern
16	Rocks	34	Apron	52	Surplus course	70	OH Tank	88	Wells
17	Soil types	35	Cut off	53	Measurement	71	GLSR	89	Mid sea level
18	Soil moisture	36	Talus	54	Sluice vent	72	Embankment	90	Infiltration

All the participants contributed to finalization of terms.



Day - 3

Action plan to conduct the phase 1 training emerged through the discussions is as follows:

sno	Topic/sub-topics	Resource Person	Timeline for session plan submission
1	Simple math's (covering- units, shapes, area, volume, perimeter, surface area, etc)	B. Ramesh	1 June 2024
2	Google earth/google maps	T. Narasing Rao	24 May 2024
3	Water (covering - hydrology, runoff, erosion, discharge, rainfall, catchment characteristics, soils, slopes and vegetation)	K. Koteswara Rao	24 May 2024
4	Drinking Water - (Gravity, feasibility, process, other devises, etc.)	Venu Gopal / Veeru Naidu	25 May 2024
5	Basics - (technical terms/concepts, ideas, basic principles, etc.)	Prasad	1 June 2024
6	Required videos, photos, ppts	Rakesh	As and when required by Resource persons
7	Mobile App, Input data sheets, ODK	Pavan & team	10 June 2024
8	Receiving session plans and send for review	Vesavila	1 June 2024
9	Module Review	Chandra Sekhar	8 June 2024
10	Reading Material	Chandra Sekhar & Bakka Reddy	7 or 8 June 2024
10	DTP - Type setting	Communication Department	10 June 2024
Resource Persons' availability		Organization	Agreed time to spare
1	K. Koteswara Rao	LAYA	One week a month
2	Venu Gopal	VJNNS	Two days a month
3	Veeru Naidu	VJNNS	Two days a month
4	Prasad	VIKASA	Whenever required but with prior intimation.
5	Ramesh	Freelancer	Available whenever we require
Training dates			
SI No	Batch Number	Module 1	Module 2
1	FIRST	15-19June 2024	2-6 July 2024

MATRIX ON RESOURCE PERSONS AGREED TO HANDLE THE TOPICS

TOPIC	PRASAD	KOTI	VGOPAL	VNAIDU	RAMESH	NARSING
Basics	✓	✓				✓
Maths	✓	✓	✓	✓	✓	
Google Earth / Maps		✓			✓	✓
Hydrology	✓	✓				✓
Drinking Water		✓	✓	✓		✓

CONCLUDED THE SESSION WITH PARTICIPANT'S FEEDBACK

- Heterogeneous group but good
- Learned how to handle the sessions in participatory manner.
- Methodology is good
- Design of the programme is good
- Value addition to my experience
- Learning many things from everyone

The Training of Trainers (ToT) program came to a close with the following remarks:

Mr. Bakka Reddy and Mr. Chandra Sekhar expressed their optimism, stating: "We wish for a successful launch of this program and are confident that our expectations will be fulfilled through the efforts of this dedicated and talented group".
