

On-farm demonstration and exchange visits: women demonstrating the system to visitors (Madhav Dhakal)

Participatory action research on drip irrigation (Nepal)

DESCRIPTION

Conducting participatory action research with farmers and line agencies for demonstrating, disseminating and scaling up drip irrigation.

Most farming in the uplands of Nepal's midhills is rainfed with many fi elds remaining fallow during the dry season due to lack of irrigation water. The People and Resource Dynamics Project (PARDYP) water demand and supply survey identified scarcity of irrigation water as a major issue in Nepal's midhills. To assess the potential of drip irrigation to address this problem, the University of British Columbia (UBC) in 2000/2001, in collaboration with PARDYP, tested a low cost irrigation drip set and a more costly set in the Jhikhu Khola watershed; and PARDYP and Tribhuvan University's Institute of Engineering (Nepal) tested the low cost set with farmers at another site at Kubinde village, Kavre.

PARDYP started research on drip irrigation at an agricultural research station (the Spices Crop Development Centre at Tamaghat, Kabhrepalanchok) and brought different stakeholders, principally farmers, to the station to learn. After seeing the trials some farmers, especially those living near the research station, started testing drip irrigation on their farms. From 2001 to 2004, PARDYP subsidised 50% of the cost of the drip sets to most adopting farmers. PARDYP organised several farm visits for stakeholders to the research station and farmers' fi elds. The number of interested farmers increased and many started testing and demonstrating the technology on their farms. PARDYP provided technical support during installation, advice about water application, and trouble shooting training to user farmers. Soon, many farmers started using drip irrigation with little or no technical support from PARDYP. Some collected quantitative and qualitative information on the performance of their systems. Results and experiences were shared regularly after cropping seasons through interaction meetings. Users' experiences convinced many others to adopt the technology. Interaction meetings were organised to communicate farmers' feedback to the organisation and businesses involved in making the drip sets. Farmers from the watershed were taken to the drip set manufacturers to establish a direct link between them and to allow the project to phase out its support.

This approach emphasised on-station to on-farm research and demonstration to facilitate ongoing monitoring and evaluation of the performance of locally made drip sets.

LOCATION



Location: Kavrepalanchowk/ Jhikhu Khola watershed, Nepal

Geo-reference of selected sites

• 85.518, 27.75

Initiation date: n.a.

Year of termination: 2005

Type of Approach

- traditional/ indigenous
- recent local initiative/ innovative
- project/ programme based



Farmer interaction programme: results and experiences were shared regularly. through interaction meetings where drip users and nonusers discussed the technology. (Madhav Dhakal)

APPROACH AIMS AND ENABLING ENVIRONMENT

Main aims / objectives of the approach

The Approach focused mainly on SLM with other activities (income generating activities, vegetable farming with micro irrigation system) To test, demonstrate, and evaluate drip irrigation systems under local conditions with multiple stakeholders. To share results and experiences with communities to scale up the technology

The SLM Approach addressed the following problems: - Lack of systematic on-farm research on drip irrigation. - Weak institutional collaboration for developing, disseminating and scaling up drip technology. - Inadequate water available for agriculture alongside strong seasonality and poor irrigation facilities

Conditions enabling the implementation of the Technology/ ies applied under the Approach

• Legal framework (land tenure, land and water use rights): The existing land ownership, land use rights / water rights greatly helped the approach implementation: Because of private land owners there were no conflicts on land to implement the technology and for it's dissemination. and scaling up.

Conditions hindering the implementation of the Technology/ ies applied under the Approach

- Availability/ access to financial resources and services: Insufficient government incentives Treatment through the SLM Approach: A Costeffective technology and implementing approach
- Institutional setting: Weak institutional collaboration among line agencies Treatment through the SLM Approach: Participatory action research with several institutions universities, local research centres, and farmers
- **Knowledge about SLM, access to technical support**: Promotion of micro irrigation was not a priority of line agencies in the study area Treatment through the SLM Approach: Technology implemented with multiple stakeholders' participation
- Other: Lack of awareness on potential water-saving options Treatment through the SLM Approach: Community-based training, discussions and field visits

PARTICIPATION AND ROLES OF STAKEHOLDERS INVOLVED

Stakeholders involved in the Approach and their roles				
What stakeholders / implementing bodies were involved in the Approach?	Specify stakeholders	Describe roles of stakeholders		
local land users/ local communities		On farm research and demonstration men and women worked equally		
community-based organizations		existing groups of land users; community forest user group and terrace improvement committee		
SLM specialists/ agricultural advisers	Field technicians			
NGO		On station research		
national government (planners, decision-makers)		On station research		
international organization		On station research		

Involvement of local land users/ local communities in the different phases of the Approach



A water demand and supply survey identified problem of lack of water in the dry season for irrigating crops. The concept of drip irrigation was shared at public meetings and a demonstration plot established at a local agricultural research centre. Several farmer visits organised to the research cent

Public meetings; farmers showed interest in drip irrigation. The project supported them by transporting drip sets to the nearest roadhead and subsidising the purchase costs

Farmers implemented the technology and the project provided technical support

Mainly: measurements/observations, public meetings; partly: reporting; Farmers monitored the technology with project support. Evaluation was usually done at meetings and exchange visits.

On-farm; The technology was tested at the local research centre during the first few years followed by on-farm research with farmers. Farmers collected and analysed quantitative and qualitative information themselves.

Flow chart

PARDYP project donors and implementing partners: SDC (Swiss Agency for Development and Cooperation); IDRC (International Development Research Centre); ICIMOD



Decision-making on the selection of SLM Technology

Decisions were taken by

- land users alone (self-initiative)
- mainly land users, supported by SLM specialists
- all relevant actors, as part of a participatory approach
- mainly SLM specialists, following consultation with land users SLM specialists alone
- politicians/ leaders

Decisions were made based on

- evaluation of well-documented SLM knowledge (evidence-based decision-making)
- research findings
- personal experience and opinions (undocumented)

TECHNICAL SUPPORT, CAPACITY BUILDING, AND KNOWLEDGE MANAGEMENT

The following activities or services have been part of the approach

- Capacity building/ training
- Advisory service
- Institution strengthening (organizational development)
- Monitoring and evaluation
- Research

Capacity building/ training

Training was provided to the

following stakeholders
Iand users

field staff/ advisers

extensionists/trainers

Advisory service

Advisory service was provided

on land users' fields at permanent centres

Form of training on-the-job

farmer-to-farmer
 demonstration areas
 public meetings
 courses

Subjects covered

Training programmes were organised on how to install and maintain the drip systems. Likewise farmers were trained on record keeping for water application, production, and cost-benefit analysis.

Name of method used for advisory service: Farmer to farmer dissemination; Key elements: Interactive meeting, on-station and on-farm visits, workshops; 1) Mainly: projects own extension structure and agents, Partly: non-governmental agency; Extension staff: specifically hired project employees 2) Target groups for extension: land users, technicians/SLM specialists; Activities: interactive meeting, farm visits, workshops Advisory service is quite adequate to ensure the continuation of land conservation activities; Government , NGOs and CBOs still continuing the activities.

Institution strengthening

Institutions have been strengthened / established no yes, a little yes, moderately ves, greatly	at the following level local regional national	Describe institution, roles and responsibilities, members, etc.
Type of support financial capacity building/ training equipment		Further details On-site training during drip installation provided to a local NGO (Ranipani Gram Sewa Kendra) with vegetable seedling support.

bio-physical aspects were ad hoc monitored through observations; indicators: land use change, crop rotation, soil surveys technical aspects were regular monitored through measurements; indicators: water requirements socio-cultural aspects were ad hoc monitored through observations; indicators: socioeconomic surveys economic / production aspects were ad hoc monitored through measurements; indicators: costbenefit production area treated aspects were regular monitored through measurements; indicators: area under drip irrigation land users involved aspects were regular monitored through observations; indicators: number of drip users There were few changes in the Approach as a result of monitoring and evaluation: The subsidy system was withdrawn and work with groups rather than single households was started. In addition, interaction programmes were organised at different locations in the watershed. There were no changes in the Technology as a result of monitoring and evaluation.

Research

Research treated the following topics

sociology	Action research was carried out to compare the water requirements, the cost-benefit, and the advantages
ecology	and disadvantages of traditional and drip irrigation.
technology	Research was carried out both on station and on-farm

FINANCING AND EXTERNAL MATERIAL SUPPORT

Annual budget in USD for the SLM component

	< 2,000
1	2,000-10,000
	10,000-100,000
	100,000-1,000,000
	> 1,000,000
Pr	ecise annual budget: n.a.

Approach costs were met by the following donors: international non-government (SDC, IDRC, ICIMOD): 50.0%; local community / land user(s) (labour): 50.0%

The following services or incentives have been provided to land users

- Financial/ material support provided to land users 1
- Subsidies for specific inputs 1 Credit
 - Other incentives or instruments

Financial/ material support provided to land users

Labour by land users was

- voluntary
- food-for-work
- paid in cash rewarded with other material support

IMPACT ANALYSIS AND CONCLUDING STATEMENTS

Impacts of the Approach



A few institutions and district level line agencies like Ranipani Gram Sewa Kendra, a local NGO, and the Divisional Irrigation Office Kabhrepalanchok started organising interactive meetings to discuss drip irrigation.

Main motivation of land users to implement SLM

increased production

	1
	increased profit(ability), improved cost-benefit-ratio
	reduced land degradation
	reduced risk of disasters
1	reduced workload
	payments/ subsidies
	rules and regulations (fines)/ enforcement
	prestige, social pressure/ social cohesion
	affiliation to movement/ project/ group/ networks
	environmental consciousness
	customs and beliefs, morals

enhanced SLM knowledge and skills

Sustainability of Approach activities

Can the land users sustain what hat been implemented through the Approach (without external support)?



Most of the land users continue to use drip irrigation and are maintaining the sets. A few farmers, including women, abandoned drip after using it for some time. The women who abandoned it said they did so because of 'lack of technical knowledge', 'not enough labour' and 'too far to get water'

CONCLUSIONS AND LESSONS LEARNT

Strengths: land user's view

- Regular interaction meetings provided land users with a platform to share ideas and for non-adopters to learn about drip from users. (How to sustain/ enhance this strength: Continue such meetings and involve more potential adopters)
- Farmer-to-farmer visits were helpful to build confi dence of farmers by seeing on-site results (How to sustain/ enhance this strength: Continue such meetings and involve more potential adopters)
- On-site training on drip installation and maintenance helped build confi dence in using drip sets (How to sustain/ enhance this strength: Continue such meetings and involve more potential adopters)

Strengths: compiler's or other key resource person's view

- This approach emphasises the participation of multiple stakeholders in researching, disseminating, and scaling up the use of the technology. (How to sustain/ enhance this strength: Identify and involve new interested stakeholders.)
- On-station and on-farm research was important to get results from different locations and under different conditions. (How to sustain/ enhance this strength: Continue research to acquire indepth knowledge on performance of drip irrigation under different conditions.)

REFERENCES

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Resource persons

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Full description in the WOCAT database

https://qcat.wocat.net/af/wocat/approaches/view/approaches_2350/

Linked SLM data

Technologies: Low cost drip irrigation https://qcat.wocat.net/af/wocat/technologies/view/technologies_1501/ Technologies: Low cost drip irrigation https://qcat.wocat.net/af/wocat/technologies/view/technologies_1501/

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Project

• n.a.

Key references

- Shrestha-Malla, S. (2004). Adoption of Drip Technology and its Impact on Gender: a Case Study from Jhikhu Khola Watershed, Nepal. PARDYP/ICIMOD (unpublished): ICIMOD
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Weaknesses/ disadvantages/ risks: land user's viewhow to overcome

Weaknesses/ disadvantages/ risks: compiler's or other key resource person's viewhow to overcome

Reviewer

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Laura Ebneter

- Women drip farmers' constraints were not sufficiently addressed. Women's priorities and constraints must be better understood and addressed by programmes and projects on drip irrigation.
- Many local land users remain unaware about the potential of drip irrigation technology. Make more funds available to further promote the technology.