ICT Mediated Agricultural Extension : a Case Study

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Introduction

Recurrent droughts in the semi-arid parts of Andhra Pradesh affect the livelihoods of the poor and marginal farmers. Besides, recurrent droughts often cause large-scale water and food deficits, hunger, famine, exodus of people and animals, diseases, deaths, and many other severe, chronic socio-economic problems. Many of the rural communities appear to forget the miseries of one drought season with the onset of good rains; and those miseries usually continue from one drought to the next. This is due to the lack of awareness and non-availability of the relevant information. There is an urgent need for a sustained information, communication, education and social mobilization among strategic sectors, especially the most vulnerable rural communities and their intermediaries, to improve the agriculture and to mitigate the effects of drought. Drought preparedness is preferable to relief, and information is the backbone of drought preparedness (UNSO, 2000).

The Virtual Academy for the Semi-Arid Tropics (VASAT) was initiated in 2002 with a view to leveraging Information and Communication Technologies (ICT) mediated Open Distance Learning (ODL) methods to reach drought information to a large section of communities in a short period of time. Its objective is to create demand-driven content that can be localized to suit the rural communities and their intermediaries, to convert the scientific know-how to field-level do-how. VASAT is a strategic coalition of national and international organizations that deals with information, communication and non-formal distance education. The coalition is led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and is jointly implemented by the International Livestock Research Institute (ILRI) and the International Water Management Institute (IWMI) and leaders among the national agricultural

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research systems (Balaji, 2004). In this paper, we report the results of a pilot study on the role of information in enhancing awareness on drought issues. This study was conducted under the VASAT project in South India with a rural partner organization.

Profile of the Study Area

The *Addakal* cluster of villages, a highly drought prone area, is a part of Mahabubnagar district located in Andhra Pradesh (AP), India. It has 37 villages, spread over in an area of 19,397 ha; 15% of this area is covered by irrigated land and 60% of the area is rain-fed, and the remaining 25% is considered as 'waste land.' The annual rainfall here varies from 391 mm to 542.6 mm. Most of the tube-wells, open wells and tanks in this area are dried up. The literacy rate is 35%. Over 75% workers are engaged in agricultural, dairy farming and allied activities. High risk associated with low investment capacity of farmers often results in higher rate of out migration, school dropouts, food insecurity and poverty. Some more information describing the profile of Addakal is presented in Table 1.

Table 1 : Profile of Addakal

Total population	46380 (Male : 23456, Female : 22784)
Total number of houses	8639 houses
Literacy rate	35 % (Male : 66 %, Female : 34 %)
Government hospital	1
Veterinary hospitals	8 (one doctor is available for all the hospitals)
Post Offices	10
Telephone Connections	998
Government Junior College	1
Government High Schools	9
Government Elementary schools	21
Anganvaadi Kendras (Govt. Baby care center)	1
Women dairies	10
Library	1
Banks	2 (Sangameswara graameena bank (moosapet) and Aadarsha Mahila Bank

(Source: Population census data 2001)

The *Aadarsha* Welfare Society (AWS) located in Addakal is a federation of all-women micro-credit societies. It has a membership of 5,225 rural women (AWS records, 2005 data), and has been functional in all the 37 villages since 1994. AWS accepted VASAT's invitation to partner a pilot study on the use of information to enhance drought preparedness.

The partners in the study have decided to apply a hub-and-spokes model for facilitating information flow into the study area. (Balaji 2000, Punthambekar 2004, Dileepkumar 2005). The hub is generally a set up with reasonable computing facility and Internet access. This is where the value addition to generic information derived from the networks is carried out, and locality-specific information is generated. Trained individuals with college-level education operate the hub. Rural access points are linked to this hub by telephone. Volunteers at the rural access points receive locality-specific information from the hub and deliver it to rural families in a variety of ways (blackboards, public speakers etc). The hub for VASAT activities is hosted in the AWS building.

We selected three villages: Jaanampeta, Vemula and Kommireddypalli located within 5 km radius from the central hub, as pilot for rural access points. These are the Village Information Centers (VIC) which serve as spokes to the central hub. Existing village community buildings were used for organizing the activities of VASAT in these villages. The Village Network Assistants (VNA) of Aadarsha NGO acted as information collectors for the project. A project of this kind cannot succeed unless the community has a sense of ownership and participation right from the beginning. The bottom-up exercise involved local volunteers collecting information from different sources, such as the nearby markets, government departments and traders. Blackboards were put up outside the VIC to disseminate the information. At the initial stages, no computers were provided. With the help of the AWS, a participatory rural communication appraisal was organized, and the results are presented diagrammatically in Figure 1. It shows that most of the information needs of a typical rural resident are met by approaching family members, neighbors or friends (who themselves are not well informed in most cases). At a secondary level, the farm input suppliers; local shops and markets act as important and credible sources of

information. Technical information on agriculture, available with a range of agencies is not easy to access by most rural families. This compounds the problem of information poverty in particular. As a first step, we decided to strengthen the access to crop-related information, which is the core of a drought information system.

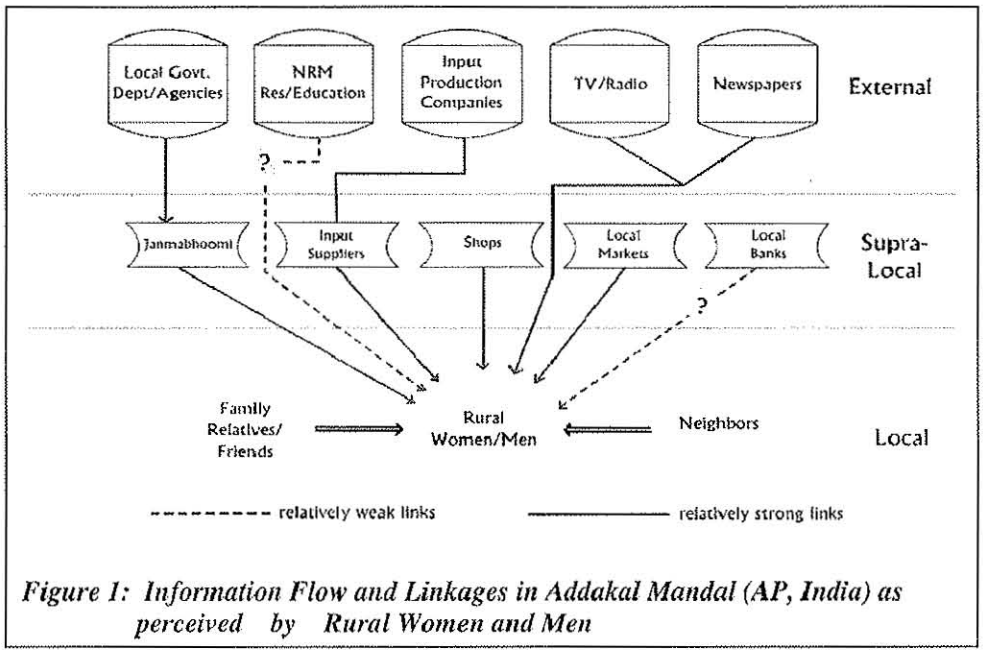

Figure 1: Information Flow and Linkages in Addakal Mandal (AP, India) as perceived by Rural Women and Men

Process of Information Empowerment

The state Agricultural Officer (AO) is a pivot in the agricultural extension system and acts like a mediator between the farmers and the experts. It is a difficult task for an individual to provide solutions to the 37 villages at the same time. After several interactions in the three villages, we observed that the farming communities in these villages were not getting timely information for their farm related problems. VASAT introduced a Question and Answer (Q & A) service in the VICs and the hub acted as a central station for these activities. The VICs are open to everyone, irrespective of age, sex, religion, caste and level of literacy and education. The VNAs and the local volunteers distributed the pamphlets in Telugu (local language) about the availability of agro advisory service at the VIC. No predefined methodology was available to start this. We agreed to provide traveling allowance to two Para Extension

Workers (PEW) of AWS for operating this service. ICRISAT experts agreed to answer (provide solutions to a farm problem) the questions raised by the farmers in distance mode. VASAT technical experts configured a web-enabled Content Management System (CMS)[1], which acted like an information communication tool between the ICRISAT experts and PEWs.

VASAT received the first set of questions (transliterated from Telugu to English) on 1 October 2004 and provided answers on 7 October 2004 (Table 2). The data revealed that the questions were not clear and the ICRISAT experts were forced to seek several clarifications from the PEWs over phone for problem diagnosis. Consequently the whole process was delayed. After analyzing these details, the project team decided to train the PEWs and the VNAs on agro advisory in distant mode. Young experts, with both IT skills and agricultural knowledge, available with VASAT, agreed to spend three days in the villages for providing the informal training on agro-advisory in distant mode.

Table 2: Analysis of the (questions) data collected during ICT mediated agro advisory process

Date	No. of questions recieved	Repeated question	New question	Un answered	Date of answers provided	Process duration
1st Oct	8	3	-	0	7th Oct	6 days
2nd Oct	6	4	-	0	7th Oct	6 days
14th Oct	17	14	3	0	18th Oct	4 days
After training						
24th Oct	2	0	2	0	24th Oct	8 hours
4th Nov	17	12	5	0	5th Nov	31 hours
14th Nov	24	16	8	0	15th Nov	26 hours

After November VASAT didn't receive any new questions until February, as rainfed crop season ends by November. During this period answers provided on ICRISAT mandatory crops only; chickpea, pigeonpea, groundnut, castor, sorghum and pearl millet. The future plan is to provide advisory on all the cultivated crops of this region that include paddy, cotton, vegetable crops and fruit crops; to develop demand driven generic content on more drought related issues.

Observations

- Most of the farmers were not able to read and write, they were not aware of the details an expert would need to diagnose a problem.
- It was observed that, 80% of the questions were related to pest and disease problems (sometimes it reached 100%), 20% are related to information about locally suitable varieties, information of the seed selling offices, water scarcity issues etc.
- The PEWs and the VNAs redirected the same questions to the experts. For example:

Before training: ICRISAT experts received a question 'I observe flower dropping in my castor field, please advice me' from Sivaramulu, 32 years old, resident of Jaanampeta village.

Advice of ICRISAT experts: Need adequate information to understand the problem.

1. ICRISAT experts expected more details to understand the problem before providing the solution, because of their concern for reliability.
2. Most of the ICRISAT experts were not familiar with local terms (localization is a serious issue in agricultural extension, because local names vary from one location to another even within a province. Experts often used scientific names in their discussions).

After training: The same question was repeated - 'In the 3- month old castor crop in my 4- acres land, I have observed two kinds of flowers, red and green; only the red ones turned into fruit and the green flowers dropped down, please advice me' from Shantamma, 35 years old, resident of Vemula.

Advice of ICRISAT experts: Green flowers were male flowers, after fertilization male flowers dropped down, and the red female flowers turned into fruit.This is natural and there is no need for taking up any measure.

- After the training program, the confidence level of the PEWs and the VNAs has increased and farm communities started receiving solutions within 48 hours.
- The farm community expressed satisfaction with the service available at the VIC.

Satyanarayana Reddy, 45 years old literate but poorly informed farmer, resident of Jaanampeta village, says 'earlier we used to take the advice from the pesticide shop dealers on random mixing of the pesticides. Now with the help of this service we are able to figure out the accurate dosage. It saves money.'

Chandrakala, 30 years old, a resident of Kommireddypalli village, says 'we are happy with the service, I brought quinolphos for a pest problem in my field, and it worked. Earlier, I used to buy mono (monocrotophos), acephate on the advice of pesticide dealer for any problem in my field. I used to get mixed results'.

Lessons Learnt

- There is a need to promote community-based para-extension workers to help rural families combat drought more effectively. ICT mediated extension education alone cannot bring in change in the existing agricultural extension system. Human factors also play a critical role in technology adoption. There is a need for trained village workers, who are able to adopt the new technological innovations for bringing considerable changes in the current agriculture extension system for drought preparedness. These knowledge workers act like torchbearers in these drought prone areas.
- It takes time for ICT led extension to gain credibility, as farmers would like to apply the advise obtained through the ICT enabled system and test. Once farmers gain trust, more questions and answers flow through the system. Further, when farmers are facilitated to ask the questions with all the necessary information, experts will have the right cues for diagnosis. This will also help increase transactions and reduce time gap as was observed in the study.
- ICT4D projects cannot succeed unless the community has a sense of ownership and participation right from the beginning.

Conclusion

Right information given at an appropriate time can empower the poor rural communities that struggle to live amidst recurrent droughts. But the process of arriving at what information is 'right' and when it needs to be delivered to the communities is very important. It is also necessary to understand how the individuals are seeking information, processing it and disseminating the same

to their fellow members in their communities. The present study reinforces the necessity of trained knowledge workers in the villages to bridge the knowledge gap between the research laboratories and the farms. The study also shows that it is possible to build the capacity of the local women and youth to act as para-extenison workers who can effectively mediate between experts and the farm communities.

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End Note

[1]Content Managment System

Web enabled Content Management System provides a virtual kind of school environment. It tracks each and every activity of the users, which in turn is useful to assess their performance. This provides a distance learning methodology to educate the selected rural individuals on drought, agriculture and livestock issues with the help of innovative course modules developed on the basis of analyzed local needs.