

RESEARCH NOTE

How do Farmers get Information about Drip Irrigation: A Case of Rajasthan

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Paper Received on December 03, 2019, Accepted on December 26, 2019 and Published Online on January 01, 2020

ABSTRACT

“How do farmers get information about drip irrigation?” is the central research question that this study enquires. The results are based on purposively selected 80 farmers from two villages of Rajasthan. The empirical data collected using structured questionnaire suggest that information reaches to farmers through four sources, namely (1) retailer and salesmen, (2) fellow farmers, (3) television (T.V.), and (4) newspapers. Also, the study uncovers a strong nexus between caste and information diffusion. Furthermore, while carrying out field survey, we found dominant caste farmers manoeuvring subsidy money meant for the SC/ST farmers. The study concludes that policy level efforts are required to ensure uniform dissemination of information to all, particularly the marginalised caste farmers so that they not only acquire precise details about an agrarian technology but also avail the benefit of a government scheme meant for them.

Key words: Caste; Drip irrigation; Farmer; Information; Subsidy scheme;

Drip irrigation, an efficient technique of watering the crop emerged in Israel at the beginning of the 1970s and 1980s (Garb and Friedlander, 2014). It is considered as a tool having potential to convert green revolution into an evergreen revolution. A number of studies (Sivanappan, 1994; Dhawan, 2002; Narayanamoorthy, 1996; 2001; 2005) have highlighted multiple advantages of drip irrigation system.

To promote this effective but capital-intensive irrigation method among Indian farmers, Government of India initiated a drip irrigation subsidy scheme in 1991 which continues even today. Although the scheme has remained functional for all these years, its name has often changed. Under the scheme, the government bears a part of the cost, to make drip irrigation purchase and use economic and attractive for the farmers. Surprisingly, despite the multiple benefits of drip irrigation and the subsidy scheme, the uptake of drip in India is quite low against the potential area. More importantly, drip uptake is even more abysmal in water scarce state of Rajasthan, where there is a dire need to use water

conserving method like drip (Palanisami, Mohan, Kakumanu, and Raman, 2011). Such contrasting real-world situation raises question that are farmers even aware of drip irrigation method? If yes, then who informs them about the existence of the drip irrigation method? Given this backdrop, the study aims to fathom out the sources through which farmers get information about drip irrigation and drip irrigation subsidy scheme.

Existing literature indicates that there has hardly been an attempt made to understand information sources orienting farmers about drip technology, although there are studies about information sources of other agrarian technology undertaken by Dasgupta (1965), Shetty (1969) and Wilkening (1956). Consequent to the above-stated studies, several changes have come in the economy. In particular, the advancement in information technology and penetration of internet and mobile in recent two decades has led to a significant overhaul of communication processes making it essential to identify new sources that may have emerged. In this backdrop, the study seeks to answer the following two

research questions. First, what are the sources through which information reach to farmers about drip irrigation technology and drip irrigation subsidy scheme? Second, what is their level of reach among the farming community? In this study, we define the information sources as a person, thing or system that passes on a specific message to the farmer.

METHODOLOGY

The study is based on a field survey conducted from July to August 2014. Eighty farmers (40 drip users and 40 non-drip users) were selected using purposive sampling method from two adjoining villages, namely Khorabeesal and Govindpura in Jaipur district of Rajasthan state. During the pilot study, we found that all the farmers in the study area had adopted drip irrigation only upon getting a subsidy. So, the criterion of an area ahead in closed-spaced drip irrigation via subsidy scheme in 2013-14 was used to select the district, block and within that the study villages (*Directorate of Horticulture 2014a*). An area where there has been high adoption of drip irrigation via drip subsidy scheme implies that drip information had sufficiently diffused thereby making identification of information sources possible. The data obtained using a structured questionnaire is analysed in a comparative framework using simple statistical method to assess the information sources of the two groups of farmers - drip users and non-users. Characteristics of the surveyed farmers are presented in Table 1.

Education: It is measured as whether the farmer is illiterate or literate and the codes given are 0= illiterate and 1= literate.

Caste-wise land ownership: How is land distributed among farmers of different caste group is classified by enquiring size of land holding with each farmer. Land size is measured in terms of hectare.

Table 1. Characteristic of the Surveyed Farmers

Variable	No.	%	
Education	Illiterate	18	23
	Literate	62	77
Caste-wise land ownership	Jat (OBC)	32	40
	Bagda Brahmin (Gen)	16	20
	Meena (ST)	16	20
	Kumar (OBC)	8	10
	Yadav (OBC)	8	10

Caste-wise distribution of farmers in adaptor and non-adaptor category is given in Table 2.

Table 2. Caste-wise Farmer Distribution

Caste (Category)	Adaptor Farmers (in %)	Non-Adaptor Farmers (in %)
Jat (OBC)	70	40
Bagda Brahmin (Gen)	30	20
Yadav (OBC)	0	10
Kumar (OBC)	0	10
Meena (ST)	0	20

RESULTS AND DISCUSSION

How does information about an efficient agrarian technique and a government-sponsored scheme reach to farmers in rural Rajasthan? Broadly speaking, the information reaches through two types of sources: interpersonal and mass media. Direct face to face interaction involving a personal touch differentiates interpersonal sources with mass media sources which are one-way. The interpersonal source comprises (1) retailers and salesmen; and (2) fellow farmers, while the media includes (3) television (T.V.); and (4) newspaper (figure 1). Each of these sources is delineated in detail in the following section.

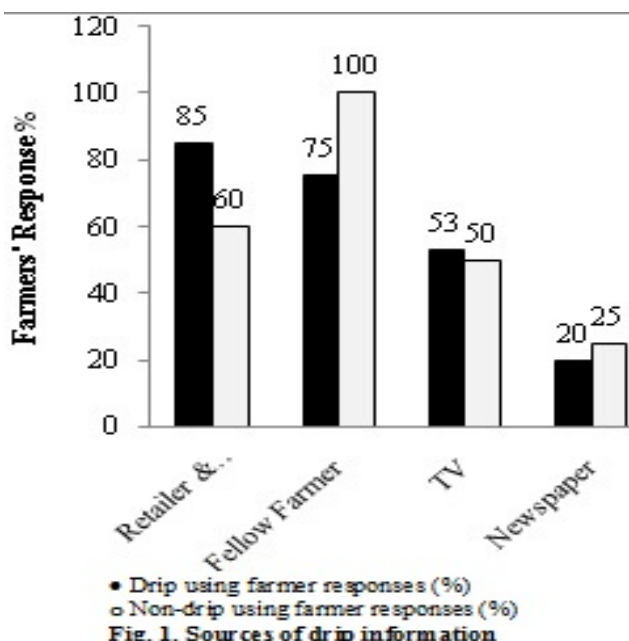
Retailers and Salesmen: The retailers and the salesmen were reported as one of the predominant sources which provided drip information to 85 and 60 per cent of non-drip using farmers (*figure 1*). They developed farmers' understanding about the functioning of drip, crops that can be irrigated with drip, positive aspects of drip over flood irrigation, maintenance of drip set, and procedure of availing subsidy. Our finding is consistent with *Ryan and Gross (1943)* study of diffusion and adoption of hybrid corn in two communities of Iowa, USA wherein retailers and salesmen act as an agent of technology transfer between the company producing technology and the farmers in distant areas.

Retailers are the ones who sell agriculture input such as seeds, fertilisers and also drip set to the farmers from their retail shop in the village. A company's salesman works along with the retailer to give drip information to the farmers. Since the salesmen and the retailers work together for selling one specific company's drip set, these two have been treated jointly.

Fellow Farmers : Fellow farmers in their own village, other villages, and relatives doing farming were an important informal source of information dissemination

to three-fourth drip users and all the non-users. Upon field visit, the interaction between prospective farmers and farmers already using drip facilitated the development of a clear understanding of the drip, its functioning, cost-benefit, and maintenance aspects. The reason behind wide acceptance of fellow farmers as an information source is credibility associated with the knowledge received through consultation, observation and experience sharing which in-turn push farmers towards comfortably imitating a successful past behaviour of fellow farmers. Several studies have supported this argument that observation and interaction with fellow farmers is a significant source of technological information diffusion (*Griliches, 1957; Harriss, 1972; Mansfield, 1961; Shetty, 1969*).

Interestingly, retailers and salesmen and fellow farmers were significant sources of information for non-users as well, albeit in reverse order. The finding falls in line with *Dasgupta's (1965)* result that innovators (over here all the drip users who had adopted drip between four years, from 2010 to 2014, tend to utilise institutionalized sources like retailers and salesmen, while late adopters (non-users) rely more upon non-institutionalized sources such as fellow farmers.



T.V. : T.V. as the source of learning about drip irrigation was pointed out by slightly more than half of the drip users and half of the non-users. On television, particularly the 'Krishi Darshan' program aired on DD Rajasthan - a State-owned T.V. channel and similar agriculture related programs, in a mix of Hindi and the

local language, were the source of technical agrarian knowledge to farmers. Also, farmer-centric programs on ETV Rajasthan, a private commercial channel, again in a mix of Hindi and local language also provided the latest know-how to farmers. Although farmers understood the water saving aspects of drip on T.V., being a formal and impersonal medium, T.V. was not able to generate trust to go ahead with drip usage. Hence, T.V. as a medium of mass communication was able to spread the latest know-how but was unable to push the farmers towards giving up their traditional surface irrigation practice for an altogether different method of watering crops.

Newspaper : In print media, particularly the newspaper in the Hindi language is being read by farmers in the study area. Our survey shows that less than one-fourth of the drip users and one-fourth of the non-users learned about drip from the newspaper. Within the newspaper, the news regarding Israel farmers reaping enormous benefit consequent to drip usage had caught the attention of farmers and motivated them to inquire more about drip. Two reasons make newspaper as the least favourite source of information among farmers, first, the illiteracy among farmers, which in our study area was around 23 per cent makes newspaper futile for such farmers; and second, as *Dasgupta (1965)* pointed, the Indian newspapers do not give much coverage of agricultural aspects.

Others : Only one farmer in the survey reported having received information from the village-level government agriculture supervisor (*Krishi Sevak*) about drip irrigation and drip subsidy scheme. It indicates shrunk public extension machinery with no notable contribution in information dissemination to farmers. It is important to note that the budget for 'demonstration of drip irrigation' within drip irrigation subsidy scheme remained unspent by the State. For diffusing drip information among farmers through the display of drip functioning in the field, Rs 25 hundred thousand in 2010, slightly higher amount in 2011 and more than Rs 37 hundred thousand in 2012 (Table 3) were allocated (*DoH, 2012; 2013; 2014b*). Conversely, what is striking is that not a single penny was used of this allocated budget in three years. Most likely, as a consequence of the abysmal performance of fund utilisation, no further budgetary allocation was made for the demonstration in the subsequent year - 2013.

Next, radio - a commonly reported source in

information diffusion studies was found absent in the study area. It is striking to note that none of the farmers reported having listened agriculture-related program on All India Radio (AIR). To the question: 'Have you acquired any information about drip irrigation from radio?' A farmer replied sarcastically, 'who listens to radio these days.' Several other farmers also gave a similar response. The recent Census survey of India 2011 also confirms the declining popularity of radio among the rural population with radio/transistor possession limited to only 13.9 per cent of the rural Rajasthan households (*Government of India, 2011*).

Table 3. Drip Demonstration Budget

Year	Financial (Rs)	
	Target	Achievement
2010-2011	25,00,000	0
2011-2012	25,24,000	0
2012-2013	37,18,000	0
2013-2014	0	-

Source: Directorate of Horticulture (DoH) 2012; 2013; 2014b

Furthermore, not a single non-government organisation (NGO) was found working with farmers in the study area. Even the national level survey found less than one per cent of Indian farmers accessing NGO for information on modern agrarian technology (*NSSO, 2005*). *Caste* : While conducting the survey, we observed that caste plays a crucial role in the select field. Jat and Bagda brahmin were the two dominant castes in the study area. They were more not only in population but more importantly in control over a sizeable part of village land with which they were able to command substantial power and authority. The retailer was of jat caste and so circulated message among jat farmers and also few bagda brahmin farmers who held important socio-economic status in the villages. From the early adaptors, the retailer and salesman obtained link of two prospective farmers interested in using drip. The early adaptors, in this case, 70 per cent jat and remaining 30 per cent bagda Brahmin (Table 2), mostly suggested names of their caste men, such as brother, uncle, and in-laws. At the same time, adopter farmers themselves also informed other farmers, most of which were their caste men. It resulted in a cycle wherein jat and bagda brahmin farmers kept getting linked one after the other. They were the first who obtained drip information and then kept circulating the information within their caste

circle. Interestingly, the influence of caste is not limited till here and extends even beyond.

With caste hegemony jat and bagda brahmin cornered the subsidy money benefit offered by the State for not only themselves but even that for the marginalised Schedule Caste/Schedule Tribe (SC/ST) farmers using a dubious trick. The subsidy scheme guideline had a clause that 'of the total beneficiaries, the SC/ST beneficiaries have to be in proportion to their population in the district' (*DoH 2014c*) to ensure that all farmers, especially SC/ST, get the benefit of a government programme. The jat retailer was aware of the clause and took advantage of the marginalised caste member's ignorance about the same. He along with the dominant caste farmers obtained the signature of SC people in the village over land lease deed document. In the deed document, a general/OBC farmer's land was leased out to SC person for ten years and was then used to apply for and obtain subsidy in the name of the SC person. However, in reality, the land continued to be held and tilled by its original owner. This dubious strategy used in several cases helped jat and bagda brahmin farmers to enjoy the benefit of subsidised drip irrigation set. We found that the marginalised people signed and extended favour without taking anything against it. The ongoing deceitful practice points towards a clear case of caste hegemony with which dominant caste farmers garnered undue favour from the marginalised caste people. Moreover, this practice also explains the reason behind the concentration of only two caste groups in the sample drip users.

At the same time, the non-drip using farmers which comprises of other caste farmers in the villages, namely - Yadav (OBC), Kumhar (OBC), and Meena (ST) were in minority in terms of numbers (Table 2). Although non-adaptor farmer had clues about drip irrigation and subsidy, they had several myths and misconceptions about it. Minimum land required for drip installation, drip irrigation ability in boosting production, adequacy of water application during flowering season in the crop and cost-benefit of drip are some of the issues about which they lacked clarity. The differential level of information between dominant caste farmers and those of other castes pinpoint towards caste as an important factor in circulating complete information among people of certain caste status in rural Rajasthan.

CONCLUSION

The findings of the study reveal that four sources oriented farmers about drip irrigation. Precisely, the interpersonal sources which include (1) private retailers and salesmen and (2) fellow farmers have reached out to more number of farmers than mass media sources like (3) T.V. and (4) newspaper, despite its wide reach. Anyhow, despite the differential level of reach of various sources among the farming community, it must be acknowledged that information is to be supplied to farmers through multiple sources as knowledge received through each source increases the trust and confidence

level about the utility of an agrarian technology. The contribution of the present study is that it found three new aspects while studying the farmers of Rajasthan. First, a difference that has come in farmer's information sources with time is that public agriculture extension agency which was the prime information source in the pre-liberalized era has now reduced to nil. Second, modern information sources such as the internet and mobile have not acquired popularity among farmers of Rajasthan owing to the general backwardness of the State and the type of information diffusion that we are enquiring.

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