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Contact Farmer Selection and Extension Visits

The Training and Visit Extension System in Haryana, India

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Contact Farmer Selection and Extension Visits: The Training and Visit Extension System in Haryana, India

*by Gershon Feder and Roger Slade**

Introduction

With dwindling unexploited land and water resources in many less developed countries, there is a growing realization that the major potential for increasing agricultural output and improving the lot of the rural population lies in increasing the productivity of existing land and water endowments. A significant gap exists in many countries between known and feasible agricultural technologies, and what is actually practiced by the majority of farmers. Attempts to close this gap have included programs that focus primarily on the delivery of physical inputs – fertilizer, water, seeds – as well as those aimed at improving farming practices. It has been asserted by some that even when equipment and material-dependent techniques are excluded, there are still substantial gains to be realized if cultivation practices are improved in accordance with the results of well directed agronomic research tailored to specific agro-climatic and local situations.

A major channel for the dissemination of information on known feasible technologies is the agricultural extension system. Extension agents are an important link between agricultural research institutions and the ultimate clients of agricultural know-how, the farmers. Accordingly, improving the efficiency and quality of extension services is considered by many to be an indispensable element in any agricultural development strategy (4, 6, 12).

The present paper deals with some aspects of the interaction between extension agents and farmers within a specific system of extension, commonly known as the Training and Visit (T & V) method. This system has been adopted in many less developed countries, often with the support of the World Bank, and it incorporates several features designed to enhance the effectiveness of the extension service. One particular aspect of this system is the selection of individual farmers to act as regular contact men with extension workers. The analysis in this paper focuses on the selection of these farmers and on the extent of their interaction with extension agents.

The paper is organized as follows. The next two sections describe the T & V system and the area of the study respectively. An analysis of the characteristics and selection of contact farmers and their exposure to extension is followed by a discussion of the overall coverage achieved by extension agents through their visits. The last section provides a summary and some conclusions.

1. The Training and Visit Extension System

The T & V extension system is designed to overcome some of the major problems afflicting earlier forms of extension organization. Its structure and objectives, which are fully elaborated in several published sources (1, 2, 3, 6), are briefly summarized below.

Under the T & V system the extension organization deals exclusively with extension work, eschewing all other activities (for example, direct involvement with agricultural research or input supply). Personnel are organized in a unique line of command, such that each officer at each hierarchical level has a sufficiently small number of staff under him to allow him to provide effective and personal guidance, supervision and training. At the bottom of the hierarchy are village level extension agents, who cover areas typically containing 700 – 800 farming families, divided into about eight groups¹. In each group, about 10 percent of the farmers are selected as "contact farmers" and their names are recorded at local extension headquarters. The extension agent visits each of the eight farmers' groups once every two weeks, on a prespecified and fixed date. These visits mostly take place in the fields of contact farmers, but other farmers are expected to participate.

Obviously, since non-contact farmers can freely join in extension agent visits, they can become de-facto contact farmers if they persist in attending visits in a relatively regular manner, and if they experiment with the practices recommended by the extension worker. Over time the composition of the formal contact farmer group may be changed, and it is likely that farmers who have shown interest in extension visits will actually become formal contact farmers while others will be dropped. During the visit, the agent passes on information regarding improved practices which are relevant at the particular stage in the season. Occasionally, the extension worker may organize a large group meeting, but as will be shown later, in the area covered by the present study, most farmer-extension contacts take place in small groups or individually. The fixed schedule of visits is advantageous both for the effective supervision of agents' activities by their superiors and for maintaining farmers' interest and confidence in the extension agent.

In order to have a significant impact, the T & V system, when operating properly, focuses advice on the main crops grown and on the most important practices. Simple, non-cash requiring practices are promoted first, so that all classes of farmers are able to benefit. Contact farmers are expected to adopt recommended practices (or at least try them out) and transmit them to other farmers. Accordingly, the selection of contact farmers should not be arbitrary, as they are an important link between the primary source of knowledge and the farming community as a whole.

2. The Study Area

Haryana is part of one of the relatively more advanced agricultural regions in India and benefitted substantially from the Green Revolution of the late sixties and seventies. The Training and Visit extension system was introduced in Haryana in 1979 and by

August 1981 (two months prior to our survey) about 95 percent of village level extension agents and 80 percent of subject-matter specialists were in position. However, about 25 percent of the positions for officers directly in charge of supervising and guiding village level agents had been vacant since project inception, thus diminishing the effectiveness of supervision and the quality of the extensive lower level coverage. Additionally, District Technical Committees, Zonal Workshops and the State Technical Committee had either not been convened or had not functioned properly over the same period. These institutions were expected to play an important role in generating locally-specific and timely recommendations and useful adaptive research work. These problems continue to hinder the development of the reorganized extension system.

The two districts covered by the study are geographically adjacent, but there are some agro-climatic differences between them. Jind district, with average annual rainfall of 592 mm, is dryer than Karnal district (803 mm), and has less irrigation facilities (58 percent of net cropped area irrigated compared with 74 percent in Karnal). Karnal is somewhat larger in area (3,766 square km versus 3,224 for Jind) and has a larger population (about one million compared to 750,000 in Jind). The differences in population density are not substantial (267 persons per square km in Karnal versus 233 in Jind).

The present analysis is based on data from a recent sample survey of 972 farmers in the two districts. Random samples of contact and non-contact farmers were selected. While contact farmers constitute approximately 10 percent of the farming community, samples of approximately equal size were chosen (430 contact farmers and 542 non-contact farmers) in order to generate reliable statistics for each group.

3. Characteristics of Contact Farmers

As stated in Section 1, one of the basic principles of the T & V extension method is the reliance on the "Two-Step-Flow" of communications (11, p. 219) whereby new ideas and innovations spread first to opinion leaders, and from them to their followers. Contact farmers are expected to act as opinion leaders. They receive new and timely agricultural information through the regular two-weekly visits of extension agents. This information is then communicated to other farmers, either through the initiative of the contact farmers, or in response to inquiries from other farmers who may have observed the new practices being used by contact farmers.

The T & V method stresses that extension agents should not exclude non-contact farmers from direct interaction with them. Such farmers should be made aware of the extension agents' regular visits to the group (or the village) and of their freedom to attend. They should be encouraged to attend visits by extension agents in contact farmers' fields, and their queries should be answered (*Benor*, personal communication). Indeed (see section 5), non-contact farmers do report significant direct exposure to extension².

Contact farmers receive a continuous and regular flow of information from extension agents, and it follows that the way in which they are selected is a matter of considerable importance. While their potential for opinion leadership on matters of crop husbandry

is the key criterion, there are additional considerations which should be kept in mind. For instance:

"Contact farmers must be willing to try out practices recommended by the extension workers and be prepared to have other farmers visit their fields. But they should not be the community's more progressive farmers who are usually regarded as exceptional and their neighbors tend not to follow them. On the other hand, very weak farmers tend to be slow in adopting new methods. Furthermore, the contact farmers must be of good standing in their community so that their views on new practices will be respected by other farmers." (1, pp. 13, 14).

Evidence suggests that there is a considerable overlap between the attributes which characterize individuals who tend to be opinion leaders and the characteristics of innovators, or fast adopters (8, pp. 155 – 160). If, however, the contact farmers are mostly wealthy individuals with greater resources than other farmers, the diffusion of innovations may be hampered. Smaller and poorer farmers may not be convinced that the new practices are better, perceiving a better performance by contact farmers to be a result of their advantageous resource position. In practice, overcoming this problem may prove difficult.

Traditionally, extension agents have tended to focus attention on the well-to-do farmers, because this ensured an immediate and visible impact and because wealthier farmers could offer them personal rewards (meals, accomodation, produce). This bias has been frequently noted in the literature (2, p. 8; 3, p. 233; 4, p. 7). Moreover, it has been argued that efficiency considerations require that scarce extension resources should be used to achieve maximum impact, implying a bias toward larger, and usually richer, farmers (13). Thus, there is a trade-off between choosing those farmers who will adopt innovations most speedily and those who are somewhat less suitable (from the point of view of potential for fast adoption), but whose resource position is more typical of the majority of farmers and hence, their behavior more readily imitated.

A further complication is introduced by the fact that the extension agent is sometimes obliged to nominate influential individuals as contact farmers even if they are not suitable as communicators of innovations. This is prompted by the need to avoid hostility from such powerful individuals, who may otherwise make extension work difficult to carry out³.

The discussion above has highlighted some of the considerations involved in selecting contact farmers. It is not, therefore, surprising (see below) that in some respects contact farmers as a group are representative of the farming community as a whole, while in other ways they are significantly different⁴.

The *area of land owned* is an indicator of wealth, which, in turn, is related to both opinion leadership and the propensity to adopt innovations (8, p. 160). The data, as presented in Table 1, indicates clearly that contact farmers (who comprise approximately 10 percent of the population) include a significantly higher proportion of larger land owners than the rest of the population⁵. Such a pattern has been observed elsewhere in India⁶, but as indicated above, this element in the set of trade-offs is complex and we have not attempted to determine whether the bias in favor of larger farmers observed in our sample is counter-productive. However, the proportion of very small farmers (less than 5 acres of owned land) in the contact group is not negligible.

Table 1. Distribution of Contact and Non-Contact Farmers by Size of Owned Holding

Size Class Acres of Owned Land	Contact Farmers (N = 430)	Non-Contact Farmers (N = 542)
	(%)	(%)
Less than 5.0	13	27
5.0 – 9.9	22	28
10.0 – 19.9	36	31
20.0 plus	29	14

Another characteristic of contact farmers, which is of obvious relevance in the Indian context, is *caste*. Traditionally, leadership in Indian villages has been monopolized by higher castes (8, p. 73). If this pattern is repeated in the choice of contact farmers it may hamper communications between contact and non-contact farmers. Table 2 presents the caste composition of both groups of farmers, and shows that there is practically no difference between contact and non-contact farmers.

Table 2: Caste Composition of Contact and Non-Contact Farmer Groups

Caste	Contact Farmers (N = 436)	Non-Contact Farmers (N = 545)
	(%)	(%)
Brahmin	7	8
Rajput	6	6
Jat	58	55
Sikh	11	10
Harijan	1	2
Others	17	19

Additional characteristics of contact farmers are described in Table 3, which enumerates several indicators relevant to farmers' socio-economic status and their potential as opinion leaders and fast adopters.

It has been argued, for instance, that *education* is an important factor in explaining willingness to adopt innovations (7, p. 195). Our data confirm that the contact farmer group is characterized by higher education levels compared to the rest of the population. The difference is statistically significant and is observed even when contact and non-contact farmers are compared across size of holding.

Table 3: Socio-Economic Characteristics of Contact and Non-Contact Farmers

Criteria	Contact Farmers (%)			Non-Contact Farmers (%)		
	Smaller Farmers ^a (N = 151)	Larger Farmers ^b (N = 279)	All (N = 430)	Smaller Farmers ^a (N = 298)	Larger Farmers ^b (N = 244)	All (N = 542)
No formal education	70	56	61	74	69	72
Membership in village institutions	21	25	24	9	18	13
Participation in short-term agricultural training	7	12	10	5	3	4

^aLess than 10 acres owned.
^bTen or more acres owned.

Membership in village institutions is an indicator of status, and is hypothesized to characterize innovativeness (9, pp. 101 – 102). Status is clearly related to wealth, and it is not surprising that the percentage of contact farmers who are members of village institutions is almost double that of the rest of the population. This also holds across farm size classes, suggesting that status in the community is a selection criterion independent of wealth when the latter is measured by the area of land owned.

Participation in a short-term agricultural training course (a service provided by the Haryana Agricultural University) is an additional indicator of agricultural knowledge and, therefore, the farmer's potential for opinion-leadership on agricultural matters. It may also be characteristic of innovativeness, suggesting that the farmer is willing to make extra efforts to gain new knowledge. The data shows that a significantly higher proportion of contact farmers, when compared with non-contact farmers, have undertaken such training.

Access to reliable irrigation is an important factor affecting farmers' crop and technology choices. In the two districts covered by this study, canal irrigation is available to most farmers. However, investment in tubewells is much more common in Karnal district. Access to tubewell irrigation enables better control of irrigation timing and tends to increase yields. Tubewells also reduce yield variability and thus diminish the risks faced by the farmer. Farmers with tubewells may, therefore, be more receptive to innovations and thus may be suitable for selection as contact farmers. However, if contact farmers are characterized by a pattern of tubewell ownership which is substantially different from that of other farmers, their pedagogic role may be diminished. For instance, if only a small fraction of the population owns tubewells while most

contact farmers are tubewell owners, non-contact-farmers may see the achievements of contact farmers as an outcome of their favorable situation (rather than be impressed by the benefits of adopting improved practices) and the diffusion of innovations may be adversely affected.

Table 4 shows the distribution of tubewell ownership in the sample. In both districts access to a tubewell is clearly related to wealth (approximated by land owned). In Jind district the selection of contact farmers is biased in favor of tubewell owners within each size class (the differences are statistically significant for each sub-sample). In Karnal district practically all large farmers have access to tubewells, and there is little difference between large contact and non-contact farmers. But the selection of small contact farmers is significantly biased in favor of those owning tubewells.

Table 4: Ownership of Tubewells

District	Farm Size	Contact Farmers		Non-Contact Farmers	
		Sample Size	Owning Tubewell ^a (%)	Sample Size	Owning Tubewell ^a (%)
Jind	Small ^b	90	28	189	15
	Large	169	48	155	37
	All	259	41	344	25
Karnal	Small	61	92	109	72
	Large	110	97	89	99
	All	171	95	198	84

^aOutright or shared ownership.
^bFarmers owning less than 10 acres are defined as small farmers

In the discussion above, each socio-economic characteristic of contact farmers was considered independently, except for some classifications by farm size⁸. While the correlations between the different variables are quite low (see appendix), it is appropriate to consider their relevance to the selection of contact farmers within a framework where all elements enter simultaneously. Multiple regression is not an appropriate methodology in the present case because the dependent variable is dichotomous (contact or non-contact), thus violating the normality assumption required for statistical test. We have, therefore, chosen to use logit analysis, which is well suited to problems involving qualitative response variables (10). The Logit model posits that the probability of a farmer being selected as a contact farmer is a function of the socio-economic explanatory variables with the following specific formulation:

$$(1) \quad P(C) = \frac{e^{B'x}}{1 + e^{B'x}}$$

where

- P(C) = probability of being selected as contact farmer
- e = the exponential operator
- x = a vector of explanatory variables
- B = a vector of parameters

The probabilities P(C) are not observable. The estimation procedure requires that all observations of contact farmers are assigned a probability of 1, while the other observations are assigned a probability of zero. The estimated parameters (B) are asymptotically normally distributed, and tests of statistical significance can be performed.

In order to avoid bias which may result from the differences in irrigation infrastructure in the two districts covered by the study, separate estimates were obtained for each district and are reported in columns 2 and 3 of Table 5. The results corroborate the

Table 5: Logit Analysis of Factors Affecting the Selection Probabilities of Contact Farmers

Criteria	Coefficient		
	Jind District (2)	Karnal District (3)	Pooled Sample (4)
(1) Farm Size	.0275* (3.471) ^b	.0339* (3.41)	.0317 (5.154)
(2) Education (years)	.0397** (1.637)	.0573* (2.227)	.453* (2.593)
<i>Dummy Variables</i>			
(3) Ownership of tubewell	.0570* (3.016)	.8987* (1.949)	.3956* (2.250)
(4) Membership in village institutions	.3416 (1.443)	.4374** (1.524)	.4090* (2.260)
(5) Previous participation in Agric. training	1.042* (2.180)	.8262 (2.213)	.8172* (2.851)
Likelihood ratio statistic	60.55	44.96	99.23
No. of observations	599	361	960
<p>^aNo estimate of the constant is presented; the sample is not random with respect to the proportions of contact non-contact farmers, and the estimated constant is therefore biased. The other coefficients are not affected, however (McFadden, personal communication).</p> <p>^bNumbers in parentheses are asymptotic "t" values.</p> <p>*Significant at a 5 % (one tailed) level of significance</p> <p>**Significant at a 7 % (one tailed) level of significance</p>			

conclusions of the earlier discussion, as almost all the indicators which were previously found to differ among contact and non-contact farmers have a significant coefficient with the expected sign. The coefficients are quite similar across districts, with the exception of the dummy variable for ownership of a tubewell. The likelihood ratio statistic for each estimated equation has a χ^2 distribution, and it can be shown that the estimated equation is a relevant model since the critical χ^2 value for a 5 per cent test is 14.07.

Given the similarity of coefficients across districts, the model was re-estimated utilizing a pooled sample. The results (see column 4 in Table 5) indicate that all the variables are significant at the 95 percent confidence level. Parameter values are only slightly affected by the pooling of observations, except for the coefficient for tubewell ownership. The results confirm that variables such as tubewells and membership in village institutions which are usually related to wealth, play an independent role in affecting the selection of contact farmers.

4. Coverage of Extension Visits

As explained in Section 2, under the T & V extension system agents make a regular two-weekly visit to each of the farmers' groups assigned to them. They visit the contact farmers, but other interested farmers attend as well. The day of the visit is fixed throughout the year, and should be known to all farmers. The regularity of these visits is important for the effectiveness of the extension system. Farmers who are assured of continuous and regular contact with extension may be expected to demonstrate increased receptiveness to new practices. Uncertainties and doubts may be diminished by the prospect of future opportunities to discuss problems and queries with the agent. The continuity of interaction with extension also tends to strengthen farmers' confidence in the agent, provided, of course, that this advice is generally useful. If, however, visits are irregular and unpredictable, farmers may rapidly lose interest and will not make efforts to maintain their contact with extension.

Visits to contact farmers are to a large extent initiated by the extension agent but they require an interest and a willingness to listen on the part of the farmer. The situation is reversed in the case of non-contact farmers. Whilst the agent should make sure that knowledge about his visits to the village is widespread, and he is expected to encourage other farmers to be present when he visits contact farmers, it is left mostly to the non-contact farmers to take the initiative and participate in the agent's visits to the fields of contact farmers, or to approach the agent with queries.

The analysis in this section focuses on extension visits as reported by both contact and non-contact farmers. The primary hypotheses are (i) that contact farmers will report a much higher incidence of contact with extension and (ii) that the pattern of their contact will be more regular than that reported by non-contact farmers. Because extension agents' visits are frequently observed to be biased in favor of larger farmers, it is also of interest to test the hypothesis (iii) that extension agents' visits to larger contact farmers are more frequent and more regular.

Table 6: Number of Visits to Farmers by Extension Agents During the Past Four Weeks

District	Farm Size	Contact Farmers			Non-Contact Farmers				
		Sample Size	No. of Visits			Sample Size	No. of Visits		
			0	1	2+		0	1	2+
		in percent							
Jind	Small ^a	90	31	18	51	189	80	11	9
	Large	169	18	11	71	155	72	15	13
	All	259	22	13	65	344	76	13	11
Karnal	Small	61	20	21	59	109	58	24	17
	Large	110	17	18	65	89	52	29	19
	All	171	18	19	63	198	56	26	18

^aFarmers owning less than 10 acres are defined as small farmers

Table 6 records the incidence of extension visits during the four weeks preceding the interview. Recall that within such a period, contact farmers are supposed to receive two visits⁹. Coverage is not expected to be perfect for a variety of reasons which may be termed "friction". Some agents may miss visits owing to illness or leave; similarly, some farmers may miss visits as a result of personal circumstances.

The data, classified by district, reveal that approximately 80 percent of the contact farmers were visited at least once during the reference period and about two-thirds received two or more visits. These data also indicate that in Jind district, unlike Karnal, there is a (statistically) significant bias in favor of visits to contact farmers with large farms. This may reflect the tendency of extension agents to associate with larger farmers, a feature frequently noted in the literature. However, it is also possible that some of the smaller contact farmers are less interested in participating in visits because they perceive the information delivered to be irrelevant to their needs.

As expected, non-contact farmers report a substantially (and statistically significant) lower rate of direct interaction with extension. But it is quite remarkable that 44 percent of the non-contact farmers in Karnal district have had, during the reference period, at least one direct contact with extension. The rate of direct exposure, at 24 percent, is much lower in Jind district but is not negligible. The reasons for the differences between the two districts cannot be analyzed with the available data. A later survey in a neighboring state not covered by the Training and Visit extension system revealed a much lower rate of direct extension contact (only 11 percent of the sampled farmers met an extension agent in the reference period). Although the data indicate a possible farm-size bias in the participation of non-contact farmers in extension visits, the differences between different farm size classes are not statistically significant. Results similar to those reported above were obtained when the analysis was replicated using data pertaining to the whole agricultural season (*Kharif*, 1981) but excluding the month before the interview.

Table 7: Regularity of Extension Visits to Contact and Non-Contact Farmers

Farm Size Class	Contact Farmers		Non-Contact Farmers	
	Sample Size	Reporting Regular Visit (%)	Sample Size	Reporting Regular Visit (%)
Small Farmers ^a	110	62	82	28
Large Farmers	228	73	87	25
All	338	69	169	27

^aFarmers owning less than ten acres are defined as small farmers.

The majority (about 70 percent) of contact farmers who received at least one visit during the reference period reported that the visit always took place on the same day of the week¹⁰. A comparison of the responses across farm size classes (see Table 7) reveals a statistically significant difference between larger and smaller farmers. This is consistent with the farm-size related bias in visits discussed in the preceding section. Such bias may reduce the effectiveness of extension work, since an undue focus on larger contact farmers could limit the possibility of imitation by small farmers.

As hypothesized, non-contact farmers in both districts report a much higher incidence of visit irregularity (about 73 percent of those who had any visit during the reference period). This may reflect their lack of knowledge regarding the availability of regular extension visits in the village as well as the actual irregularities in visit schedules which can be inferred from the responses of contact farmers. Unlike the case of contact farmers, there is no evidence of significant farm-size related bias in the reported incidence of these less regular visits.

An issue of some interest is whether extension workers' interaction with farmers is mostly through individual (or small group) meetings, or through large group meetings. It is reasonable to expect higher effectiveness in small group meetings, but then the coverage of farmers is not as extensive. Our data suggest that the extent of large group meetings in the area covered by our study is fairly limited. As Table 8 shows, only a miniscule proportion (less than 4 %) of non-contact farmers surveyed recently (May 1983) indicated that they have participated in group meetings. The proportion of contact farmers reporting attendance in group meetings is much higher (about one-third in Jind district and 15 percent in Karnal district), but given the responses of non-contact farmers, the implication is that the "groups" in the meetings are rather small, and composed mostly of contact farmers. Corroborating evidence is contained in farmers' response to a question regarding the primary sources of agricultural information, where less than 5 percent of non-contact farmers in Jind and less than 12 percent in Karnal mentioned group meetings as an important source of information.

Table 8: Participation in Extension Group Meetings^a

Farmer Type	Farm Size	Jind District		Karnal District	
		Sample Size	% Attending Meetings	Sample Size	% Attending Meetings
Contact	Small ^b	80	29	59	7
Contact	Large	116	34	101	20
Contact	All	196	32	160	15
Non-Contact	Small	183	2	93	4
Non-Contact	Large	158	1	73	3
Non-Contact	All	341	1	166	4

^aResults are derived from a survey conducted in April 1983.

^bFarmers owning less than 10 acres are defined as small farmers.

Summary

This paper has focused on two important aspects of the "training and visit" extension method, namely, the selection of contact farmers and the coverage of extension visits.

For the particular districts covered by the present study, the analysis shows that contact farmers manifest several characteristics which are commonly hypothesized to indicate the propensity to lead opinion and potential receptiveness to innovations. Such attributes are essential if contact farmers are to convey agricultural information to the majority of farmers. It is inevitable, however, that contact farmers, as our results show, will not be representative of the farming community in many respects. Thus farmers who are wealthier, more educated, more favorably endowed with irrigation facilities and of higher social status than the majority are more frequently selected as contact farmers. But in other respects which may be important for the ability to communicate and to induce imitation (e.g., caste) contact farmers are fairly representative of the general population.

While it is difficult to judge whether the selection of contact farmers is optimal, the evidence of significant farm-size related bias in visits to contact farmers in one of the districts studied warns that some of the traditional weaknesses afflicting extension work can occur under the training and visit system as well. The overall coverage obtained under the T & V system is quite satisfactory: most contact farmers meet extension agents at the prescribed frequency. Although visited much less frequently than contact farmers, a significant proportion of non-contact farmers report direct interaction with extension: a favorable result when compared with the much lower rate of direct farmer/agent interaction in non-T & V areas. A majority of the contact farmers also indicate that their interaction with extension is of a regular nature (as it

should be). It is not clear, however, whether most non-contact farmers are aware of the regular visits to their villages by extension agents.

The picture portrayed by the findings of this study is mixed. Some aspects of T & V extension operations in the study area still require improvement, while other aspects are broadly satisfactory. Other features of T & V extension which were not covered by the present study should be the subject of future research, including the effectiveness and reliability of agent training, the relevance of advice offered and the extent to which it is adopted. Only after these features have been reviewed can a judgement on the effectiveness of the extension system as a whole be made.

Zusammenfassung

Dieser Artikel befaßt sich mit zwei wichtigen Aspekten der Beratungsmethode "Training & Visit", nämlich mit der Auswahl von Kontakt-Bauern und der Streuungsdichte von Beratungs-Besuchen.

Die vorliegende Studie ergibt für bestimmte Distrikte, daß die Merkmale von Kontaktbauern vor allem Führungsbegabung und potentielle Übernahmbereitschaft für Neuerungen sein sollen. Die genannten Eigenschaften sind zur Weitergabe landwirtschaftlicher Informationen an die Mehrheit der Bauern wesentlich.

Wie die Ergebnisse der Untersuchung zeigen, sind die Kontaktbauern in vielen Hinsichten jedoch nicht repräsentativ für die Bauerngemeinde. Die ausgewählten Kontaktbauern sind meist wohlhabender, besser ausgebildet und mit Bewässerungseinrichtungen ausgestattet, und sie verfügen über einen höheren Sozialstatus als die Mehrheit. In anderer Hinsicht aber, z.B. der Kasten-Zugehörigkeit, die für die Fähigkeit, zu kommunizieren und Nachahmung anzuregen, wichtig zu sein scheint, sind Kontaktfarmen etwa typisch für die gesamte Bevölkerung.

Es ist schwierig zu beurteilen, ob die Auswahl der Kontaktbauern optimal ist, aber wird deutlich, daß der Besuch dieser Bauern in einem der untersuchten Distrikte eindeutig betriebsgrößenbezogen war. Dieser traditionelle Schwachpunkt scheint auch die Beratungsarbeit im T & V-System zu beeinflussen.

Die breite Streuung, welche dieses System erreicht, ist recht zufriedenstellend: Den meisten Kontaktbauern treffen die Berater so häufig wie vorgesehen. Obwohl ein beträchtlicher Anteil der Nicht-Kontakt-Bauern weit weniger oft besucht wird, berichten auch diese von direkter Interaktion mit der Beratung. Dies ist ein günstiges Ergebnis verglichen mit dem sehr viel geringeren Bauer-Berater-Kontakt in Gebieten ohne das T & V-System. Auch zeigt die Mehrheit der Kontaktbauern, daß sie mit der Beratung wie es sein soll, regelmäßig zu tun hat. Es wird jedoch nicht klar, ob sich die meisten Nicht-Kontakt-Bauern dessen bewußt sind, daß die Berater ihre Dörfer regelmäßig besuchen.

Das Bild aus den Ergebnissen dieser Studie ist gemischt. Einige Teile der T & V Beratungsarbeit im Untersuchungsgebiet bedürfen der Verbesserung, während andere weitgehend zufriedenstellend sind. Wiederum andere Punkte der T & V-Beratung, die von dieser Studie nicht berührt wurden, sollten Gegenstand künftiger Forschung sein.

so die Effizienz und Verlässlichkeit der Berater-Ausbildung, die Bedeutung der Beratungsinhalte und der Grad ihrer Übernahme. Erst nachdem diese Dinge untersucht worden sind, ist eine Beurteilung der Leistungsfähigkeit des Beratungssystems als Ganzes möglich.

Notes

- * The views expressed in this paper are those of the authors. They do not necessarily represent the view of the World Bank or its affiliated institutions.

¹ In sparsely populated areas this ratio may fall considerably in order to keep the time extension agents spend travelling within reasonable bounds.

² Contrary to the frequently expressed view that the contact farmer system operates at the expense of the more disadvantaged: for example, see (6, p. 12).

³ For instance, in some places in India, large land owners are formally announced as contact farmers, even though they are not directly involved in cultivation. Similarly, we have been informed of instances in Sri Lanka where the village teacher (who is not a farmer) is considered a contact farmer. See also evidence cited in 5.

⁴ Farmers included in the sample survey were classified as either "contact" or "non-contact" on the basis of extension agents' written records *and* farmers' statements. In 93 percent of the cases, the results were identical. For the rest, the farmers' declared status was used.

⁵ The statistical test used here and in other sections of the paper is based on the large sample normality of the test statistic

$$Z = (p_1 - p_2) / \sqrt{\pi \cdot (1 - \pi) [(1/N_1) + (1/N_2)]}$$

where P_i is the proportion of farmers with a certain characteristic within sample i , N_i are the sample sizes, and π is the proportion of farmers possessing the characteristic under investigation within the population.

⁶ "The selection of representative contact farmers has often proved difficult resulting in an unwarranted proportion of large and progressive farmers facing very different problems from those of the majority" (14, pp. 17 - 18).

⁷ However the difference is statistically significant only for the larger farmer class (see Table 3).

⁸ One of our referees pointed out that in Haryana, the geographical dispersion of contact farmers within the village is an important criterion in the selection of contact farmers. The objective is to select contact farmers with fields widely dispersed, so as to increase the demonstration effect. We do not have empirical data on this aspect. Since no correlation is expected between this variable and other explanatory variables, the econometric work reported below is not likely to be affected by an omitted variable bias.

⁹ Some contact farmers may have reported only one visit because the interview took place just before the second visit.

¹⁰ It should be borne in mind, however, that the agent may sometimes conduct visits on weekends to make up for missed visit days. Similarly, if the agent's headquarters is located in the village, farmers may see him on days other than the visit day. Such encounters do not constitute formal visits.

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Appendix: Correlation Matrix of Socio-Economic Indicators

	Farm Size	Education	Tubewell Ownership	Membership in Village Institutions	Previous Agric. Training
Education	.101				
Tubewell Ownership	.179	.200			
Membership in Village Institutions	.150	.148	.147		
Previous Agricultural Training	.061	.145	-.002	.068	
Contact. Non-Contact	.217	.146	.160	.132	.126

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