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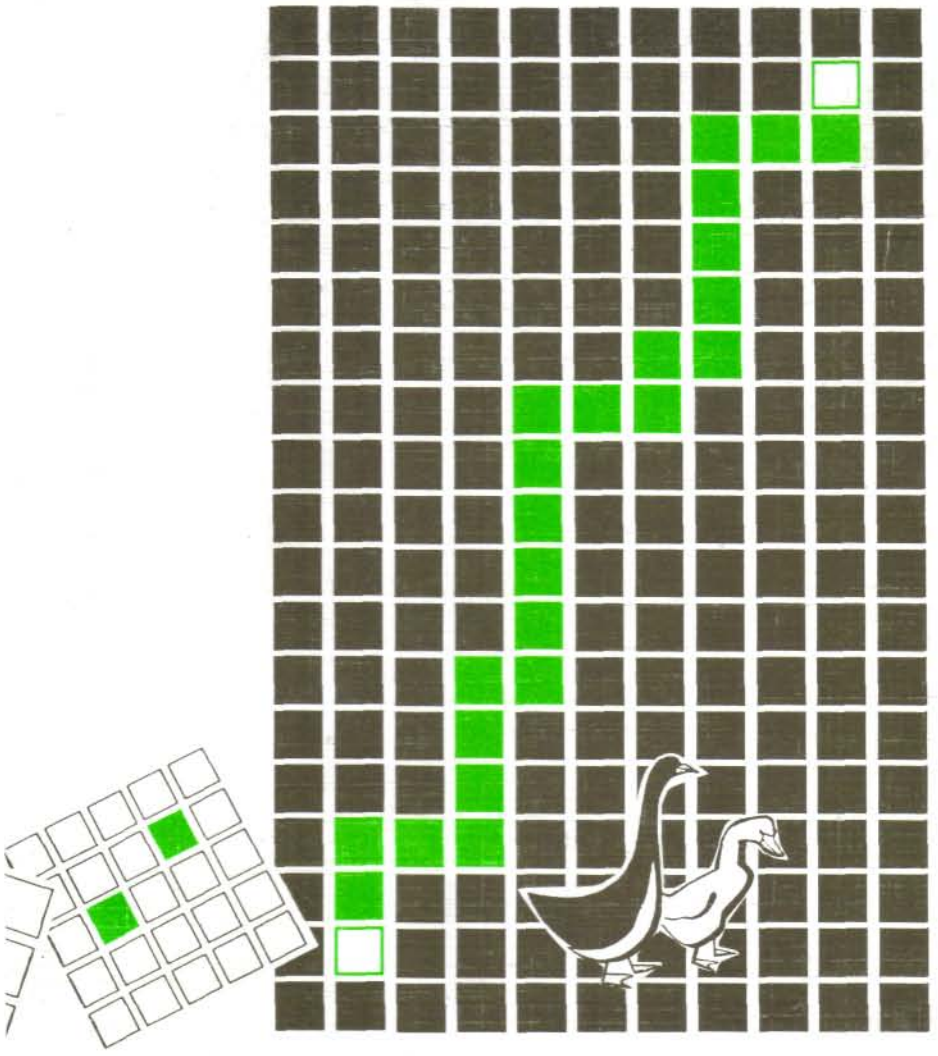

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Assessing the Performance and Impact of Agricultural Information Products and Services: Development of a Methodology

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Abstract

Effective farm management requires a range of information available on a timely basis for decision-making with respect to planning, investments and operations. Farmers throughout the globe operate in environments of imperfect information with respect to both availability and timeliness. The problem is more acute in the developing world where the farming community generally has limited access to information. Constraints include the limited sources of supply, the quantum and type of information available and the lack of resources and technology of the farmers themselves for accessing information from various sources such as the World Wide Web.

Developing countries attempt to bridge the information gap for their farmers using a range of mechanisms/ institutions. While much resources and emphasis has traditionally been place on the National Extension Service, research has shown that impact has generally been low.

The real challenge to agricultural information dissemination is therefore to develop instruments/ mechanism that are low cot but with high impact in terms of the number of farmers benefiting and/or the level of benefit from the use of such information.

This paper reports on the development of a methodology for evaluating the impact of agricultural information products and services. To validate the methodology and demonstrate its applicability two case studies were conducted. One of these being a mass communication instrument, and a newsletter, produced and disseminated by the National Agricultural Marketing and Development Company of Trinidad and Tobago (NAMDEVCO). The other is a training workshop for farmers and entrepreneurs conducted by the same organization.

The Model developed identifies four time-dependent phases or levels of response to agricultural information dissemination. These include the initial reaction to the information, the learning and information internalization phase, the trial and adoption phase and the impact phase. Given that each phase represents a longer lag between the initial communication and the response, the model identifies appropriate evaluation methods for each phase. Recognizing the differences between face-to-face activities and information disseminated by distance communication (asynchronous mass media) the methodology proposed separate evaluation methods for each type of communication.

ROLE OF INFORMATION IN AGRICULTURAL DEVELOPMENT

Effective farm management requires a range of information available on a timely basis for decision-making with respect to planning, investments and operations. Farmers throughout the globe operate in environments of imperfect information availability on a timely basis. However, in the developing world the faming community generally has limited access to information due to limited sources of supply, the quantum and type of information available and the lack of resources and technology of the farmers themselves for accessing information from the World Wide Web.

Farmers in the developing world need information for a range of farm-related decisions including:

(i) Farm planning:
- choice of crops/livestock activities
- scale of operation
- markets
- investment in equipment and technology
- financing availability, cost of capital and conditions of access

(ii) Production technology
- planting material
- mechanization
- nutrient application
- pest management
- crop/livestock maintenance and management
- feeding technology and irrigation
- water resource management.

(iii) Marketing Decisions requiring market intelligence with respect to both current situation and outlook:
- available markets
- prices
- access
- cost of transport
- reliability of market
- when to sell
- market absorption capacity.

Developing countries attempt to bridge the information gap for their farmers using a range of mechanisms / institutions. As noted, however, financial and technical resources limit the provision of information. The major channels for disseminating information to farmers include the national extension service, radio broadcast, newsletters, training workshops/seminars, brochures (tech pac).

While much resource and emphasis have traditionally been placed on the National Extension Service, research has shown that impact has generally been low due to a range of factors including the high farmer/ extension staff ratio, repeat visits to a selected few farmers and the limited range of information disseminated by extension offices (mainly related production technology with little market and business information).

The real challenge to agricultural information dissemination is therefore to develop instruments/mechanism that are low cost but with high impact in terms of the number of farmers benefiting and/or the level of benefit from the use of such information.

This paper reports on the development of a methodology for evaluating the impact of

agricultural information products and services. To validate the methodology and demonstrate its applicability two case studies are conducted. One of these being a mass communication instrument, specifically a Newsletter, produced and disseminated by the National Agricultural Marketing and Development Company of Trinidad and Tobago (NAMDEVCO). The other is a training workshop for farmers and entrepreneurs conducted by the same organization.

Review of Impact Models

Organizations such as ISNAR and CARDI have published a number of works on impact evaluation. Most of this is relevant only to the evaluation of agricultural research and development projects. An exception is Odame, et al, (1999) which evaluated the results of a management training course. The length of the course is not specified in the publication but from the description of the activities it would appear to be approximately 1-2 weeks.

Another impact study and review can be found in Bellamy (2000). This publication, like that by Odame et al (1999), examines the impact of interventions that are of longer duration than the one day workshops or a short communication such as a newsletter.

A review of the literature suggests a gap in knowledge relating to impact assessment of short interventions (of duration between 30 minutes and 8 hours) that were the interest of this research.

Conceptual Framework

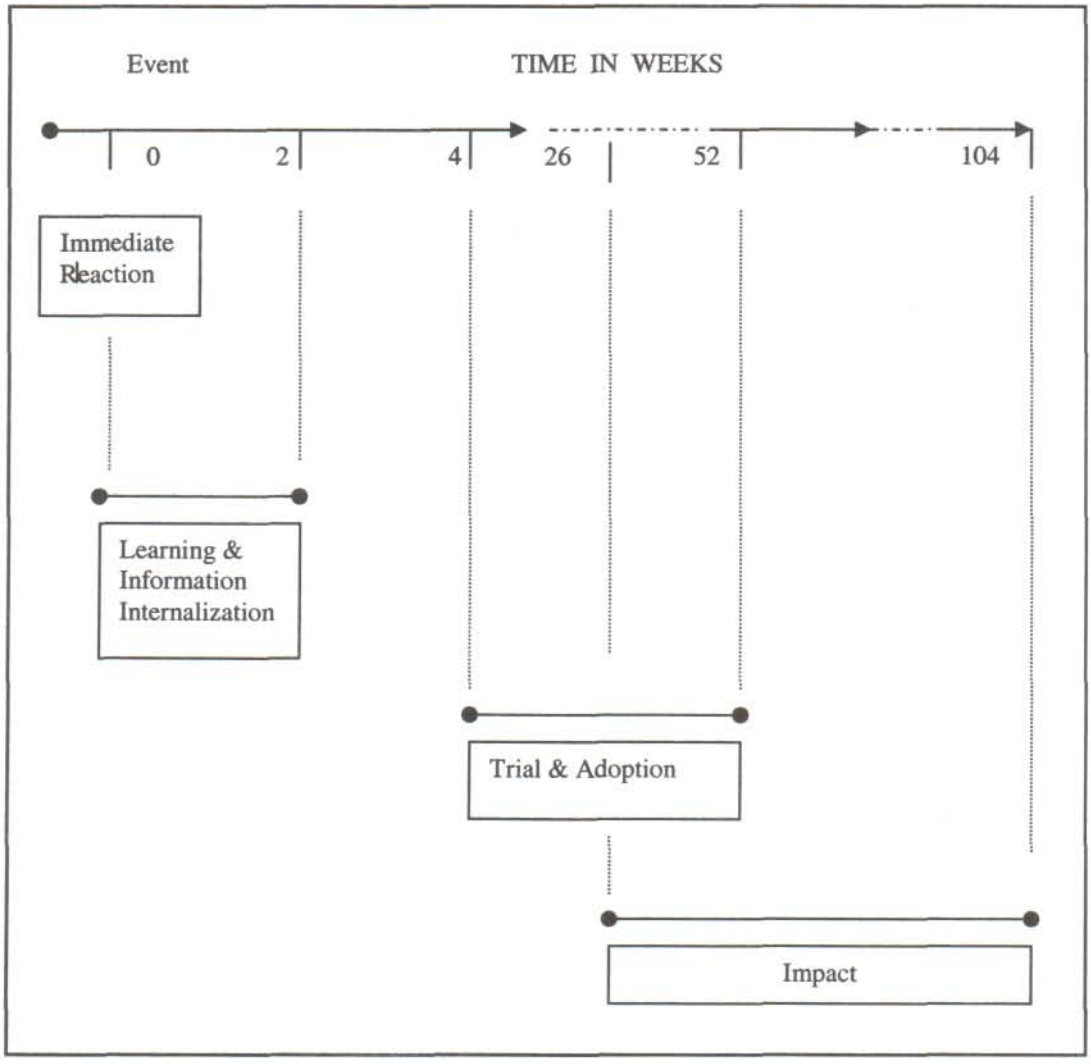
The nature of the response by target individuals to a training or information event is assumed to vary with the elapsed time after delivery of the event. In the case of a face-to-face activity, such as a training workshop, it is unlikely that the trainee would adopt a new technology or make changes in his/her management practices immediately after the event. Typically it would be expected that the individual might go through a number of phased responses eventually culminating in adoption, and only in some cases. The possible Response Phases for an information event may include all or some of the following:

- Initial Reaction Phase
- Learning and Assimilation of Information Phase
- Trial and Adoption Phase
- Impact Phase.

These phases are shown diagrammatically in Figure 1 together with the time in weeks, after the event. The first response is the Reaction, which is immediate. In the case of a training seminar this would occur at the time of delivery of the training whereas in the case of a newsletter it is the reaction of the individual at the time of reading. After the initial Reaction, the process of Learning and Assimilation of Information begins. It is hypothesized that the duration of this process ranges from a few days to two weeks.

It is envisaged that in some cases the responses in the first two phases may lead to the identification of a technology, new management information or a management system/process that may be of interest to the

Figure 1. Time Line of Responses of Target Individuals to Training & Information Events



target individual. Such a stimulus could lead to Trial before a full-scale Adoption. In the typical training and information activity it is expected that that the Trial and Adoption phase with respect to the information/ knowledge gained could occur from as early as four weeks up to the end of the first year after the event.

Adoption of a new or improved technology or improved management

practice as a result of a training or information activity would be expected to have an impact on the respective business unit. Given that typically we could expect such adoption to take place as early as four weeks after the event and as much as one year after, it is hypothesized that the Impact could be discernable from as early as six months up to two years after the event. It should be noted that not all activities are likely to have all the responses shown in Figure 1. In fact it is anticipated that in the case of the newsletter only the first two responses are likely since information

METHODOLOGY

The benchmarks against which an activity must be evaluated comprise the objectives and goals that the proponents have set for such an activity. Since each type of activity has its own set of objectives and goals, the starting point in the evaluation of the impact of any activity is the identification of the benchmark set of criteria.

Since activities may have impacts that may not have been anticipated, either positive or negative or both, then the evaluation methodology must necessarily be more encompassing than is suggested by the foregoing.

Given the nature of the response to training or information activities as conceptualized above, an evaluation of effectiveness and benefits of such activities must necessarily comprise a series of evaluations corresponding to each level or response phase. The type of analysis to be conducted depends on the nature of the response. The typical analyses for the various response phases are presented in Table 1. These are given with respect to the two types of activities to be investigated in this study: Face-to-Face activities, such as a training workshop and an Information Dissemination (Distance Communication) type activity such as a newsletter contained in the Newsletter, is unlikely to be sufficiently detailed or comprehensive to facilitate adoption. Accordingly any interest created by the Newsletter may require the target individual to seek out further information and /or training prior to adoption or implementation.

Primary data were collected using questionnaires. The questionnaires first ascertained that the respondent had in fact received the information (i.e., attended seminar/Training Workshop or received newsletter). In the case of the newsletter the respondent was asked whether he/she had read the product.

In the surveys, respondents were asked to name the most interesting sessions from the workshop or most interesting articles from the newsletter. The enumerators were instructed not to do any prompting here, so that the sessions or articles named were really those that had impacted on the memory of the respondent. If several topics or articles were mentioned two or three of greatest interest were identified.

For the articles of greatest interest specific questions were asked as to what was learnt and whether the information which was learnt was or will be used. More detail of this was sought for the seminar than for the newsletter.

Table 1: Types of Evaluation Proposed for the Various Response Phases With Respect to a Training and an Information Activity

Response Phase / Level	Type of Evaluation	
	Face to Face Type Activity	**Information Dissemination (Distance Communication) Type Activity**
1. Reaction	1. Course evaluation at the end of activity. 2. Individual action plan during and at the end of course. *(This represents the intended initiative as a result of training and will serve as a benchmark for the evaluation of the activity at subsequent phases).*	Any of the following or combination to ascertain reaction: 1. Tear-off questionnaire in the case of the newsletter to be returned via the mail. 2. Telephone Survey (brief). 3. Face to face interview.
2. Learning & Information Internalization	1. Quiz before and after training activity to determine the gains from the activity with respect to: ▪ Information ▪ Knowledge ▪ Skills ▪ Attitude	Use of the questionnaire referred to above to also ascertain benefit with respect to: ▪ Information ▪ Knowledge ▪ Attitude
3. Trial & Adoption	1. An evaluation questionnaire conducted after 6 months to ascertain whether there has been trial and adoption with respect to: ▪ Techniques/technology ▪ Management processes ▪ Systems ▪ Investments *(The benchmark for the above evaluation would be the action prepared during the activity)* 2. Repeat of the above evaluation after one year. *(Note: The choice of medium for the proposed survey would be informed by nature of the target population and the particular environment.)*	N/A
4. Impact	1. A survey conducted initially one year after the event to determine whether there were changes in: ▪ Production ▪ Yield/productivity ▪ Acreage or size of operation ▪ Volume of output ▪ Quality ▪ Unit cost ▪ Income ▪ Profitability 2. Repeat the above at the end of 2 years.	N/A

In the case of the seminar only, a section on Impact asked if the information learnt had led to any benefits and also whether benefits were expected in the future. Also the questionnaire enquired whether which sessions did not adequately cover the topic.

For both surveys a random selection of respondents was selected. NAMDEVCO provided a list of participants at the workshop and also the mailing list of newsletter recipients. In an attempt to keep cost to minimum, interviews were conducted by telephone where possible.

Data were collected by trained enumerators and entered into the computer by experienced data entry staff. SPSS software was used to generate summaries of responses; the open ended questions were examined individually.

The number of persons who attended the seminar was 138; 77 of there were surveyed. The newsletter mailing list contained over 800 names; 151 of these were surveyed. Survey was by telephone interview where possible; persons without a telephone contact were interviewed face to face.

Methodology Validation: Results of the Impact Analysis

The Training Seminar

All persons interviewed remembered attending the seminar; only 10% were unable to recall information on the workshop sessions. Three of the ten sessions (post harvest quality assurance and food processing/regulatory requirements) were found to be more interesting than the others to the sample respondents. Respondents felt that the sessions on marketing and processing did not adequately cover the topics (Table 2).

Questions relating to information learnt again led to the three sessions found to be most interesting as these were also most identified as having provided information. With regards to trial and adoption about one half had already used some knowledge obtained from the workshop (Table 3); just over half of the remainder was planning to use the knowledge in the future.

Despite the limitations of a 'one shot' survey to assess impact, NAMDEVCO can take some heart from the fact that about 35% of the respondents reported that knowledge learnt and utilized in the workshop had already yielded benefits; around 74% anticipated benefits in the future.

The Newsletter

The newsletter evaluated is circulated by mail to farmers and others on NAMDEVCO's mailing list. The survey results indicated that 70% of the sample read at least some of the newsletter (Table 4). This can be considered a fairly high readership, as the recipients do not specifically request copies.

There were 17 articles/items in the newsletter and the top six of these were identified as follows:

- Barbados reopens its market to Trinidad fresh produce
- Are we losing our congo pepper?
- Focus on papaya
- Foreign buyer corner

Table 2: List of Workshop Sessions and Participant Identification of Most Valuable Sessions

Session	Number of Participants (out of 77) StatingSessions were:		
	Valuable/ interesting	One of two most valuable	Not adequately covered
Marketing	13	7	11
Post harvest	47	30	0
Processing	13	9	23
Quality assurance	48	43	1
Soils and fertilizers	8	6	1
Pest management	27	10	0
Disease management	26	10	1
Insurance and finance	4	1	7
Trading/processing experience	7	5	0
Food processing regulatory requirements	31	26	0

Table 3: Respondents Who Have Used or Not Yet Used Information and Plans for Use in the Future (Percentages in parentheses)

	Have already Used	Have not used	Total
Plan to use in future	43 (55.8)	19 (24.7)	62 (80.5)
No plans to use in future	2 (2.6)	13 (16.9)	15 (19.5)
Total	45 (58.4)	32 (41.6)	77 (100.0)

Table 4: The Newsletter: Reading Status at the Time of the Interview (How much of the Newsletter was Read)

Amount Read	Telephone Interview	Face to face Interview	Total *(percent)*
All of it	9	1	10 (6.6)
Some of it	67	29	96 (63.6)
None of it	24	19	43 (28.5)
No response recorded	1	1	2 (1.3)
Total	101	50	151 (100.0)

- Exporting and your bottom line
- A marketing perspective.

Where an article was identified as interesting, most respondents indicated knowledge gained from the article. However, of those who found an article interesting, the percentage planning the use of the information from the article was only about one third. At the time of the survey (within a month of the release of the newsletter) trial, adoption and impact were negligible.

CONCLUSION

Evaluation of the impact of a seminar should be a continuous process starting from the time of the workshop and continuing for 2-3 years. But there was clear evidence of impact in our 'one shot' study conducted eight (8) months after the event. Whether this impact translated into increased income for those adopting the technologies described cannot be ascertained.

There was evidence that some of the newsletter recipients discarded or misplaced their copies soon after receipt. This is not surprising as many people who receive unsolicited material through the mail may choose to discard same. However the great majority of persons interviewed did read some of the newsletter and our survey methodology, of asking which articles were read without prompting article names, ensures that our assessment of copy read is accurate.

In both surveys telephone responses were used where possible. When persons selected for interviews had no telephone contact, face to face interviews were conducted. In the case of the training seminar almost all who attended had telephone contact numbers. For the newsletter, analysis of the difference between telephone and face to face responses indicated that the former appeared more likely to read and gain knowledge. This could be explained by postulating that persons without a telephone are likely to be less literate. However the possibility that the difference was due to differing interviewing technique cannot be ruled out even though one would expect 'face to face' questioning to prompt more rather than less positive responses.

The validation process suggested that the evaluation methodology was capable of generating the range and type of information that was necessary for improved cost effectiveness and impact with respect to the design and delivery of the types of instruments evaluated – that is, a Training Workshop on agricultural technology and a Newsletter for farmers and agribusiness.

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