PROSPECTS FOR DISTANCE EDUCATION TRAINING AMONG VEGETABLE PRODUCERS IN TRINIDAD AND TOBAGO

David Dolly
Lecturer
Department of Agricultural Economics and Extension
University of the West Indies
Saint Augustine Campus
Trinidad and Tobago
Telephone: 1-868-662-2002 Ext 3206 Fax: 1-868-662-8355
farmdavid42@hotmail.com

Wilhelmina Kissoonsingh
Ministry of Agriculture, Lands and Marine Resources

Abstract

This study enquired of the option of Distance Education as a mode for delivering agricultural information and training within the Extension services of Trinidad and Tobago. The researchers selected each member of the total population of frontline Extension workers in Trinidad and Tobago for a structured interview. Similarly the researchers selected a population of vegetable producers from the major vegetable growing areas in the country. There were respective response rates of 83% and 80%. There was a significant association between years of Extension agent service and interest in using the facility. Agents revealed interest in a range of topics appropriate for Vegetable production. Both agents and their clients felt that the tool will be useful in their training. Agents identified several support factors which would hinder implementation and which could be alleviated by Extension leadership and management. The first four factors were Funding, Support Service, Availability of resource material and administrative policy. Current sources of information, ownership of information sources, access to information communication technologies and willingness to become involved were attributes which both clients and their agents possess. These are essential first elements for the successful delivery of Distance Education programmes. The assessment provided adequate evidence to suggest that Distant Education can be used among vegetable producers in Trinidad and Tobago. Extension agents can be trained via the method and they can train their clients. In so doing the sources and type of information available to the Agricultural community can be suitably enhanced.

Introduction

This study enquires of the option of Distance Education as a departure from traditional modes of delivering agricultural information and training within the Extension services of Trinidad and Tobago. Distance education has not been widely used to train Extension agents and farmers in Trinidad and Tobago. Yet studies have shown that countries which regularly use Distance Education in agricultural training programmes experience consequent increases in the quantity and quality of farm product.

Since 1992, the agricultural sector's contribution to GDP has steadily declined from 2.5% to a 0.7% contribution in 2005 (Central Statistical Office (CSO), 2005) There are national Food Security objectives which attempt to maintain growth within the agricultural sector more so,

vegetable production for the domestic market. There is a fledgling yet diverse farming and food crop base in the country. Over the past fifteen years food imports continue to exceed exports as farmers are unable to meet the needs of consumers.

In delivering Extension services to meet the need for improved production, distance education may be an effective mode of delivery in order to increase competence, knowledge and awareness.

Purpose of Paper

- To investigate what capacities reside among vegetable producers in Trinidad and Tobago to support the use of Distance Education?
- To determine whether Distance Education can be used to deliver programmes within the Agricultural Community.
- To assess the resources within the existing Extension agent environment which support the use of Distance Education.

Theoretical Base

Distance Education strategies have been a mode of teaching and learning for at least the past one hundred years (Moore & Keasley, 1996). However in recent times there has been a resurgence of international interest in distance education as a potentially useful strategy for addressing human development issues.

Many of the problems with previous distance education programmes in developing countries are related to a lack of participation, on the part of those individuals and communities who were supposedly the beneficiaries in the design and delivery of the programmes (McLean, 2001). An appropriate conception of distance education requires a focus on programs in which participants have control over not only what is taught, but also how and where distance education takes place. For distance education strategies to be used successfully in agriculture in Trinidad and Tobago, the perception, interest and available resources needs to be known. This study seeks to determine these.

There is a significant amount of distance education activity successfully occurring in developing countries with situations similar to Trinidad and Tobago. As seen in these countries, distance education can be a promising response to certain educational challenges faced by farmers and extension agents within the agricultural sector.

For instance since the 1960's "INADES Formation" (Institut African pour le development economique et souat) has provided non-formal distance education opportunities to tens of thousands of farmers, extension agents and other agents of rural development in Africa (Peraton, 2000). Courses for farmers include those on agricultural production and animal husbandry, as well as those on communication, extension methods, management and the rural economy for extension agents. The delivery strategy for "INADES – Formation" courses is a combination of print-based correspondence packages with local study groups and tutorial support.

Since 1973 to presently, the G.B. Pant University of Agriculture and Technology has offered a correspondence course programme to farmers and rural youth in Utter Pradesh, India (Singh, 1992, 1999). Five hundred learners selected four courses on selected crop cultivations, dairy production, insecticide use and fertilizer use. The programme's delivery strategy is print-based correspondence, written in elementary Hindi. Courses are scheduled to coincide with the

seasonal production of the various crops under study. The University has twenty District Extension Centres which students can contact for personalized guidance and study support.

The College of the North Atlantic and Ottawa's International Development Research Center (IDRC) piloted the use of Information Communication Technology (ICT) to deliver courses to fish farmers in rural areas of Vietnam (CAN 2003). The project aimed to train farmers using a combination of face-to-face field-based training and ICT-based academic information and learning materials supplemented by tutor-learner interaction via e-mail. The Distance Education on the main campus is used by College instructors to create distance education materials for Internet supported delivery, respond to student inquiries and also conduct research to help them develop courses with the latest scientific and technical information. The Community Education Center (CEC) allows farmers to attend classroom and field sessions, receive training in computer and internet skills and have access to supplementary materials.

According to McLean 2001, there are a range of benefits or strengths of distance education in developing countries. These are as follows:

- Distance education offers learners greater flexibility with regard to the time, place and pace of learning.
- Distance education is less disruptive to work & family obligations.
- Conventional education in developing countries is plagued with money problems and cannot fulfill the needs of educational systems.
- Distance education can reach groups such as rural learners and women not adequately served by conventional education.
- Information Communication Technologies (ICT) offer distance education clear advantages with regard to the quality of course material delivery, interaction with learners and student support.
- Telecentres are seen as an appropriate strategy to overcome many barriers to ICT use in distance education.
- Distance education can be more cost effective than conventional education. The range of factors that contribute to very substantial cost differences between different distance education initiatives are numbers of learners enrolled, mixture of communications technologies, media and learning materials, degree of learner support and interaction and salaries.

These strengths make distance education an ideal option for the agricultural sector in Trinidad and Tobago. Table 1 postulates the possibility of distance education according to Mc Lean, given the circumstances of agricultural producers and extension agents.

Table 1. Potential use of Distance Education among agricultural clients in Trinidad and Tobago.

Circumstance	Extension Agent	Producer	Distance Education (DE)Advantage
Geographically dispersed users	Yes	Yes	Networks Learners in distant locations
Gender Sensitivity	Yes	Yes	Networks women more adequately
Varied Educational Background	Yes	Yes	More easily overcomes educational barriers
Limited time	Yes	Yes	Greater flexibility with regard to time, place

			and pace
Family commitments	Yes	Yes	Less disruptive to work and family obligations
Limited finance	Yes	Yes	Can be more cost effective
Information changes	Yes	Yes	Beneficial contact with updated information
Exchange of Ideas	Yes	Yes	Facilitating environment for quick and routine exchange of ideas
Links with specialist	Yes	Yes	Affords more appropriate links with specialist

Several circumstances presently obtain within the Extension services of Trinidad and Tobago and give rise to considering the use of Distant Education. These are as follows:

- There is a shortage of Extension Officers reflected in a high ratio of farmers to an extension agent. This figure computes to an average of 568 farmers to one Extension officer in an environment where there exist limited support facilities with which to conduct Extension work. (Kissonsingh 2005).
- There is need for improved delivery of decision-making information which can help Extension agents and their clients to be competitive on the world market.
- Since 1993 there is a low budget for Development Expenditure (CSO 2004) which cannot support delivery methods which incur greater cost than Distance Education.
- The Ministry of Agriculture Lands and Marine Resources (MALMR) of Trinidad and Tobago still seek input from an agricultural sector to maintain livelihoods. In so doing there are likely to be new producers who wish to produce food and yet have very little or no idea about new farming techniques and practices. These new entrants will need the information and training to do so.
- Food Security is increasingly threatened as there are high incoming food imports at the expense of decreasing local production.

For the purposes of this study distance education covers the various forms of learning and information transfer, which are not under continuous, immediate supervision of tutors and trainers. It will involve the use of media in conjunction with face-to-face communication to facilitate the exchange of learning. Types of media that will be recommended will be a combination of Print, Educational Radio, Educational television and Electronic Technology, e.g. computer networks, CD-ROMs, W.W.W., e-mail, video and telephone.

Research Question

Given the theoretical bases which are advanced, the following research questions are presented:

- Can distance education be used to deliver programs in the agricultural community?
- How prepared are Agricultural Producers and Extension Officers to receive agricultural programs via Distance Education.

Methods and data sources

The researchers selected each member of the total population of frontline Extension workers in Trinidad and Tobago for a structured interview. Of these, fifty nine public sector agents and twelve from the private sector responded. This is a response rate of eighty three

percent. Similarly the researchers selected a population of vegetable producers from the major vegetable growing areas in the country. One hundred and forty one producers responded, representing a response rate of eighty percent.

Both sets of structured interviews established respective profiles of Extension agents and their clients. The interviews also established the needs of educators in regard to developing and implementing distance education training programs in Agriculture and perceptions of producers to the perceived importance and needs of distant education.

The study then assessed the existing resources within the environment of the Extension agents which can support Distance Education programmes and likewise those resources of the vegetable producers.

Results and Findings

Extension Agent Profile

The majority of extension agents (greater than 50%) were within the twenty six to thirty five (26 – 35) years age group. These agents have approximately thirty (30) years of service left before they retired. Thus distance education methodology is potentially useful during this potentially long period of tenure.

Approximately seventy (70) percent of Extension agents only had diploma level training. These cohorts of people have potential for further training in higher degrees and other specialized diplomas which can be done through Distance Education. They can upgrade themselves in the local environment through Distance Education rather than more expensive overseas endeavours.

Approximately sixty six percent (66%) of the Extension agents reported to have received some form of in-service training in Natural Resource Management and Extension Methodology within the two years prior to the survey. However, the study reveals Extension Officers' interest in training via distance education for a range of topic areas related to vegetable production as follows: Pest and Disease Identification, Marketing, Agronomy and Skills courses.

Vegetable producer profile

Approximately fifty percent of the farmers fell within the 31 – 45 year age group. Therein lies the potential to utilise distance education training among younger clients. The study showed that the majority of respondents (78.7%) owned and managed the holdings where vegetables are cultivated. Where there is ownership, farmers are usually more willing to invest resources into training and gathering more information to make it more successful. Distance education programs could be appealing to this group. Farming was the only source of income for the majority of the vegetable producers (69.5%). A significant amount (30%) of vegetable producers had other sources of income. For the latter distance education training would also be useful, to meet the convenience of alternative schedules regarding managing both farm and other occupation.

A greater percentage of vegetable producers (51%) had no higher than a primary school education. This information is important when designing distance education teaching materials for farmers. The program content must be aware of this pre-condition for continuing education. There was also a significant percentage (37.6%) of the vegetable producers attaining secondary school education. Likewise the practitioner will need to be aware of this precondition. When training farmers of varying educational background it is advisable to utilize computer and other technologically advanced media.

A succeeding discussion describes farmer access to information communication technologies and is supported by Table 5 which indicates popular access to radio. This further informs the methodology for Distance Education Programs among the vegetable producers.

A large percentage (66%) of the vegetable producers was married. Distance education programs can meet the convenience of the vegetable producers who have family commitments.

Reported Factors Limiting Current Extension Services and Sources of Information

Extension agents identified a variety of factors which they thought limited the effectiveness of the present services they offered farmers. Table 2 indicates that all limiting factors mentioned were related to a lack of support which could be alleviated by the initiatives of the leadership of the Extension service.

Table 2. Reported factors among Extension agents which limit the effectiveness of present services offered.

Factor	Respondents n (%)
Funding	41 (57.7)
Support service	34 (47.9)
Availability of resource material	34 (47.9)
Administrative policy	33 (46.5)
Farmer logistics	30 (42.2)
Audio visual support	28 (39.5)
Availability of training information	23 (32.4)
Availability of resource personnel	22 (31.0)
Inadequate training	5 (7.0)

Table 3 indicates that 'Discussions with professional colleagues and farmers' were the most popular source of information, followed by seminars, then discussion with agricultural input supply companies. Internet sources fell midway among the selections at 62% (n=44) popularity and cable television was the least popular at 25.4% (n=18).

Table 3. Most popular sources of information about current farm matters among extension agents.

Source	Number (n)/Percent (%) Respondents
Discussion with professional colleagues	63 (88.7%)
Discussion with farmers	63(88.7%)
Seminars	61(85.9%)
Discussion with Agri Input suppliers	57(80.3%)
Bulletins from employers	56(78.9%)
Books	52(73.2%)

Agents had access to a variety of communication technologies. Sixty-six percent (n = 47) of the agents had internet access. Approximately 42.4% of had a television at home only, while 52.1% had access both home and at work. 8.5% of the extension agents had access to computers

both at home and at work, where as 39.4 % had computer access at home only. Forty six and one half percent of the respondents had video access at home and at work.

Reported Perceptions of and interest in Distance Education by Extension agents

Ninety three percent (n = 66) of the respondents thought that distance education was a useful tool to help improve the services they offered to farmers. Chi square tests of association between interest and age, gender, level of education, number of years service revealed no significant association with age, gender education and location at the p=0.1 level. There is an association with number of year's service. Table 4 illustrates.

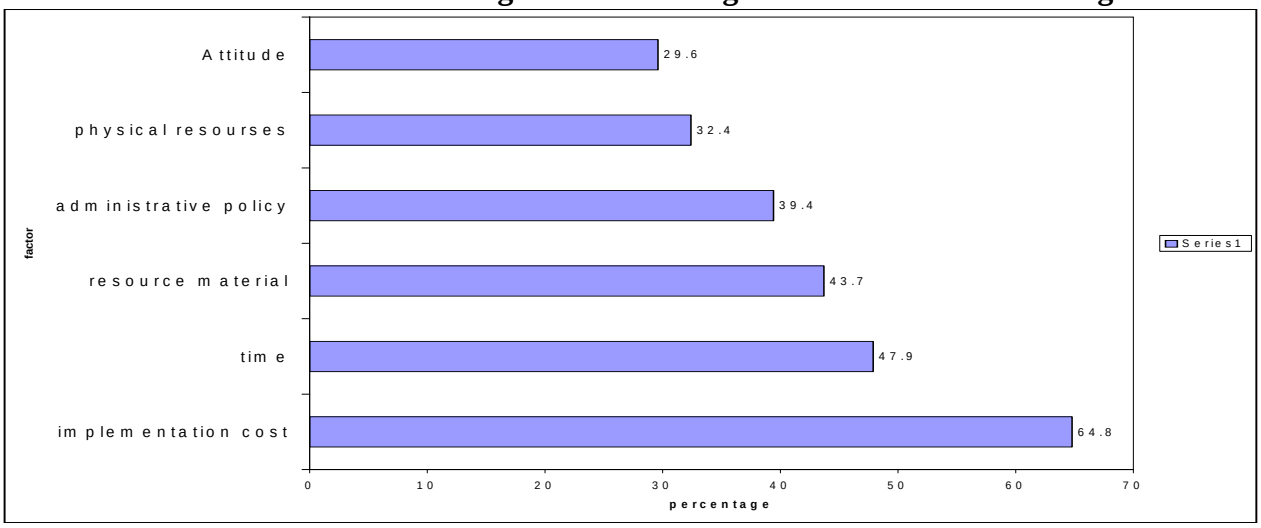
Table 4. Chi-square tests of association between four Extension agent factors with interest.

Variable	χ^2	df	P
Age	9.42	8	0.30
Gender	0.97	5	0.90
Education	0.78	3	0.85
Years service	48.6	20	0.00
Location	7.1	9	0.63

Factors hindering Distant Education Programmes

Agents identified a variety of factors they thought would hinder the successful implementation of distance education training for people in their field. The agents felt that the main factor most likely to hinder successful implementation is the cost of implementation (64.8%), followed by occupational time available (47.9%) and then availability of resource material (43.7%). Figure 1 illustrates. The hindrances still heavily reside in provisions of the leadership of the Extension services. They reflect the persistent problem regarding the ability of typical Extension systems like the one which the vegetable producers in Trinidad and Tobago must depend on.

Figure 1. Bar graph indicating factors likely to hinder successful implementation of distance education training for extension agents in Trinidad and Tobago.



Sixty three percent (n = 45) of the extension agents were willing to pay tuition for distance education programs. On the contrary seventy two percent (n = 51) of the respondents thought farmers in there districts would not be willing to pay tuition for distance education.

Farmer access to Information Communication Technologies (ICTs)

Ninety five percent (n = 133) of owners/ managers of vegetable farms had access to radio. Other electronic resources at their disposal were Televisions (91.5%), Telephone Land Lines (73.8%), VCR (44.8%), Computer (12.7%) and Fax machines (>1%).

Seventy eight percent of those who owned a radio use it often, while less than one percent never used it. Seventy-six percent of vegetable producers surveyed (n = 98) used the television often and fifty-nine percent (n = 61)) used the telephone often. Respective figures for video and computer usage were 28% and 12%.

At present these communication resources which are available to owners/managers are used mainly for entertainment. Table 5 indicates the purposes to which these resources are put to use by producers. Approximately twenty one percent (n=28), reportedly used radio for Agriculture related activities. Approximately eighteen percent (n=24) used the television and approximately thirty four percent (n=35) used the telephone for this purpose.

These results parallels the findings of Dollisso and Martin (2001) who indicated the use of radio as a main source for agricultural information among farmers in Iowa state alongside magazines, neighbours and the Extension service. These researchers similarly found that the internet was not a frequently used source for information.

Table 5. Purposes to which communication resources are put to use by vegetable producers in Trinidad and Tobago.

Resource/ Purpose	Entertainment N %	Agriculture n %	Other n %
Radio	101 (75.9)	28 (21.1)	1 (0.8)
Television	103 (79.8)	24 (18.6)	0 (-)
Phone	26 (25.0)	35 (33.7)	37 (35.6)
Video	57 (90.5)	0 (-)	1 (1.6)
Computer	5 (27.8)	10 (55.6)	1 (5.6)
Fax Machine	0 (-)	0 (-)	1 (100)

Reported Perceptions of and Interest in Distance Education among vegetable producers

Approximately fifty percent (n=70) of the respondents never heard of distance education training prior to the survey. Approximately thirty two percent (n=20) who heard about distance education still did not know what distance education training for farmers involved; an equal percentage said they knew.

After distance education was explained to the farm owners/mangers by the enumerator one hundred and twenty-seven (90.1%) thought distance education was a useful means of getting information while six (4.2 %) thought it was not useful.

Eighty-eight percent of the respondents said they were willing to participate in distance education programs. Most (80%) were willing to pay for the training and were willing to spend

an average of 18 hours per week for training. This fact did not meet the expectations of the Extensions agent most of whom (72%) felt that the farmers would have been unwilling to pay for distance education.

This finding concurs with a study among coffee growers in Rwanda by Haba, Elbert and Larke (2005). The researchers found that farmers were willing to pay for agricultural information.

Table 6 overleaf illustrates media preferences among the farmers with regard to Distant Education. Most producers have selected the paper mode. Given the fact that more advanced ICTs are not used by the farmers, initial methods which rely on print and the television should be used for the Distance Education initiative. It is possible to use more advanced forms of ICTs as the popularity of the approach is increased.

Table 6. Media preferences among vegetable producers for Distance Education.

Media	Number of producers (n) percent (%)
Paper	90 (63.8)
Television	66(46.8)
Video	63(44.7)
Radio	38(27.0)
Internet	20(14.1)
CD ROM	19(13.4)
Telephone	6 (4.25)

Finally Chi square test of association showed no significant association between the farmers' age, education, number of years farming, having another job, location and willingness to participate in distance education

Implications and Conclusions

This assessment provides adequate evidence to suggest that Distant Education can be used among vegetable producers in Trinidad and Tobago. Extension agents can be trained via the method and they can train their clients. In so doing the sources and type of information available to the Agricultural community can be suitably enhanced. Potential users have access to several media which may be used, the print and television would facilitate the vegetable producers studied. There is a willingness to pay and this can assist in meeting the challenge of the cost factor which the agents have indicated.

The use of Distance Education to train agents and farmers is relatively new and therefore the principals of these Extension workers would need to consider in service training when introducing and using the technique.

Educational importance, implications, and applications

The resurgence of international interest in Distance Education as a potentially useful strategy for addressing human development issues is rooted in the evolution of new information and communication technologies and to the improvement of pedagogical and administrative models for facilitating learning at a distance (Mclean 2001). Given the characteristics of Extension Agents and their vegetable clients in Trinidad and Tobago, Distance Education is an option which could transfer necessary and emerging intelligence in order to improve the country's agricultural productivity.

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