

IMPORTANT CHARACTERISTICS OF THE PADDY FARMING SECTOR IN SRI LANKA AND THEIR IMPLICATIONS ON AGRICULTURAL EXTENSION WORK

By

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Introduction

The generally accepted role of agricultural extension is to help farmers to make best possible use of resources and services already available to them by making them knowledgeable and skillful. From this point of view extension is basically an educational activity.¹ For this purpose the extension service is dependent on information it gathers (mostly from research) on what is 'good' for the farmers.

The above definition of the role of extension implies that what extension can achieve is governed by two important conditions (1) The resources available to the farmer, both quality and quantity and (2) The other agri-support services other than extension. Although not directly implied in the definition, the same way as what extension can achieve is conditioned by these outside factors, it also depends on the people that extension attempts to help and the resources and abilities of the extension service itself.

The purpose of this paper is to highlight some of these human and environmental variables which influence the effectiveness of extension as they apply to paddy cultivation in Sri Lanka and to suggest certain ways of adjusting the extension strategies to suit these conditions.

Literacy and Education

One of the important variables that will determine the success of an educational programme is the potential of the recipients of the educational programme itself. By potential is meant their ability of understanding and absorbing the information to which they are exposed, and not the capacity of utilising this information.

Literacy and education levels are two measures which can be used to determine the information processing potential of people. Sri Lanka enjoys a high literacy rate (Department of Census and Statistics, 1971 — 82.6 percent for the island and 84.3 percent for the rural sector) which is high for a developing country, while at the same time the percentage of the population with no schooling is relatively small (Table 1). The other important message that emerges from the table is that

1. Agricultural extension could largely concentrate on education when all other agri-support services are available through other organisations.

although the school attendance rate is high nearly 50 percent of the population have had only Primary Education, which means that their level of ability in reading and information processing, is relatively low.

Table 1: Population by Level of Education

Level of Education	All Sectors%	Rural Sector%
No Schooling ..	17.5 ..	15.8
Primary ..	44.6 ..	45.4
Middle School ..	30.4 ..	31.7
Passed GCE (OL) ..	6.6 ..	6.3
Passed GCE (AL) and over ..	0.9 ..	0.8

Source : Department of Census and Statistics (1971), *Socio Economic Survey of Ceylon* (1969-70).

The high literacy rate suggests an intense use of printed matter in farmer education work. However considering the low educational attainment of the majority, the messages should be simple and well illustrated. It does not mean however, that printed matter can replace or substitute to a appreciable degree, the person to person contact. They only complement each other.

In a literate society, printed matter should be more effective in communicating messages on development, compared to other media, such as radio or film. It has the advantage of low cost, ability to decentralise the production and distribution of the material, possibility of ensuring repeated exposure to the message, ability to be used as reference material and possibilities of incorporating numerical and graphic illustrations. Printed matter may be given out in a number of forms i.e. books, booklets, magazines, pamphlets, handouts, etc., and the ownership to the farmer could be achieved relatively easily, compared to other media which are more expensive.

Exposure to Media

Radio, television, newspapers, magazines and pamphlets are classed as mass media in education work. They may be used as channels of communication of development messages. Most of the messages that are communicated through these media except those appearing in newspapers, originate with the extension agencies.

Studies have indicated that exposure to mass media (particularly to the radio) is high. The table presented below extracted from one of recent studies illustrates this point. (Gunawaradane A. M. T. *et al*, 1980).

Table 2: Extent of Media Penetration in Selected Study Locations ; Percentage of Total Sample by Ownership and Exposure

Media	Ownership	At least some exposure	Daily or weekly exposure	Never exposed
	%	%	%	%
Newspapers ..	41 ..	90 ..	40 ..	7 ..
Weekly newspapers ..	47 ..	67 ..	54* ..	9 ..
Radio ..	75 ..	94 ..	54 ..	6 ..

*weekly

Although the reach and penetration of the radio is satisfactory, the exposure to newspapers is somewhat inadequate. Further according to available research in information, the reach of agricultural information, particularly information of an educational nature through mass media is low. Though the literacy rate is high, there may be an appreciable number who find it difficult to read and comprehend newspaper articles due to their low educational level, even though they are considered to be literate. Further at present agricultural features of an educational nature appearing in the newspapers are few. Although there are constraining factors, the potential exists for using radio and newspapers to carry agricultural messages, particularly as their reach is high.

Newspapers although accepted as a means of creating awareness could be very useful as an educational medium. The highly popular weekly newspapers, which are specialised newspapers, adds evidence to this view. These tend to carry more and more educational material.

The habit of reading magazines is not widespread, particularly in the older age groups. The reasons may be due to difficulties in comprehension, cost, unavailability of magazines to suit different age groups according to their interests, or may be related to the reading habits of individuals. As was stated earlier, although the exposure to magazines is low the exposure to weekly newspapers is high. These weeklies specialise in various subjects. At present there are weekly periodicals specialising in religion, traditional medicine, astrology, cinema, cartoons and short stories, and womens weeklies. It seems that there is room for an agricultural weekly as well.

Regional Variations in Paddy Farming

In addition to characteristics, literacy, educational levels and mass media exposure of the paddy farming sector, which has certain implications on extension work in all areas, there is considerable regional variation within the paddy farming sector itself which demand different extension strategies in different areas of the country.

The task of demarcating regions is however a difficult exercise. A common way of classifying paddylands is according to the water supply situation, into major and minor tank command areas and rainfed rice growing areas. The distinction between major and minor irrigation areas is made according to the acreage with 200 acres as the limit of a minor scheme. Each of these categories occupy about 1/3 rd of the total paddy acres in the country. For the purpose of this paper in addition to these three categories a fourth is identified, namely the paddy growing areas of the mid and up country (areas above 1000 ft from sea level). Although this area is dominantly minor irrigation it is identified separately due to its distinct features.

This categorisation into major, minor, rainfed and to mid and upcountry paddy areas seems to be a suitable way of describing the regional variation within the paddy farming sector.

The task of this part of the paper is to highlight this regional variation and to identify its implications for agricultural extension work in Sri Lanka.

As a demarcation into major, minor, rainfed and to mid and up country areas could only be made on a map, for purposes of presenting this regional variation administrative districts have been chosen and classified accordingly. Such a classification is adopted in Table 3 which gives certain important characteristics of these districts.

Table 3: Grouping of Districts as Proposed in the Text, With Irrigation Conditions, Average Size of Paddy Parcel, Extent of Adoption of New High Yielding Varieties and Paddy Yields in Individual Districts.

Group	Districts	%Extent irrigated (Based on Extent Sown in 79/80 Maha) ¹		Average Size of Paddy Parcel ² (Acres)	Percentage Extent sown with Bu. New High Yielding Varieties 1976/77 Maha ³	Yield Per Acre in ¹ (79/80 Maha)
		Major Irrigation	Minor Irrigation			
Major Irrigation Dominant Districts	Polonnaruwa	87	06	2.56	89.3	72.69
	Ampara	75	02	3.43	79.4	69.76
	Mannar	74	20	2.94	84.2	76.14
	Hambantota	66	25	1.63	78.8	68.61
	Trincomalee	49	12	3.08	32.7	46.48
	Anuradhpura	47	46	1.51	73.8	72.61
	Uda-Walawe	100	—	—	71.4	83.83
Mid and Up-country Districts	Matale	27	53	0.78	33.8	59.83
	Kandy	20	46	0.63	52.9	60.91
	Kegalle	—	21	0.45	79.8	58.24
	Badulla	34	52	0.64	50.6	62.83
	Nuwara-Eliya	08	84	0.57	23.2	72.15
Minor Irrigation Dominant Districts	Vavuniya	33	51	3.27	26.7	47.89
	Puttalam	24	57	1.33	55.1	36.32
	Monaragala	30	35	1.32	53.1	55.85
	Kurunegala	17	42	0.73	73.3	58.66
	Ratnapura	12	52	0.80	31.9	44.66
Predominantly Rainfed Districts	Mullativu	35	21	—	—	50.22
	Jaffna	32	—	1.31	11.5	39.90
	Batticaloa	28	02	4.65	15.1	42.11
	Gampaha	12	07	—	—	47.97
	Matara	16	16	0.69	33.1	44.19
	Kalutara	—	06	0.66	22.6	34.96
	Colombo	—	02	0.65	54.9	52.62
	Galle	—	01	0.68	16.9	34.43

- Source : 1. Department of Census and Statistics, *Paddy Statistics*, 1980.
 2. Department of Census and Statistics ; *Census of Agriculture 1973, Small Holdings Preliminary Release No. 1*.
 3. Medagama W.B., Charles S.H. (1980). *Seed Paddy Production; Highlights Over the Last One and Half Decades*, Paper presented at the Rice Symposium, Colombo, Sri Lanka.

Note: *Parcel* = a piece of land operated as a individual unit.
 Prior to 1979 Gampaha and Mullativu were parts of Colombo and Vavuniya districts respectively.

Characteristics of Major Irrigation Areas Compared to Others

The characteristics of major irrigation areas which would help to distinguish these from minor and rainfed areas are enumerated below. Some of the characteristics discussed could be identified in Table 3. It must be stressed that conditions within major irrigation areas could vary much. Hence the description below should be treated as a broad generalisation of conditions that prevail in major schemes. The ideas expressed later for adjusting extension strategies need not be applied to all major irrigation areas uniformly or for that matter to all parts in any particular major scheme. It is expected that these ideas be applied to even smaller areas exhibiting homogenous conditions. It is for purposes of discussion only that these broad groupings are identified and generalisations made.

(a) *Level of Production and Level of Technology Adoption*

Productivity in these areas is substantially higher compared to the others and same could be said of the level of adoption of improved technology. Improved varieties of paddy have spread throughout Sri Lanka (however distinction can be made on the basis of the spread of new high yielding varieties between major irrigation and other areas (Table 3) and fertilizer use for paddy is common although, not up to the levels recommended by research. However taken as a package there is a distinct difference in the level of adoption of improved practices between the major irrigation areas and the rest of the paddy areas in the country.

(b) *Constraints to Farming*

Major irrigation areas generally exhibit favourable farming conditions.² The size of the paddy holding is relatively large, fragmentation is not common, favourable land tenure conditions prevail and above all water supply conditions are rather favourable. There are however exceptions to this, for instance water supply positions in some of the major schemes (or parts of major schemes) are rather poor, land mortgages and concentration of land among certain groups have been reported. Although such exceptions are there one could assume that these areas possess fewer constraints compared to the other categories.

(c) *Homogeneity and Heterogeneity in Farming*

Major irrigation areas in addition to having favourable farming conditions exhibit more homogeneous conditions. There is not much variation among individual farmers in the size of holding, degree of fragmentation, water supply position, soil conditions and so forth. When farming conditions become

2. Farming conditions: The totality of the environment in which farming is carried out.

homogeneous farming methods too tend to become relatively more homogeneous, meaning less individual variations among farmers in the way farming activities are carried out.

(d) Knowledge Levels and Experience in Farming

The other important characteristic is the level of knowledge and experience possessed by farmers. Farmers in major irrigation areas could be expected to be more knowledgeable in farming techniques and more experienced. Although it is customary to measure experience in terms of number of years engaged in farming, experience also depends on the degree of intensiveness of farming. Higher the intensity smaller the number of years required to gain sufficient experience. From this point of view farmers in the major irrigation areas could be considered to be more knowledgeable and more experienced.

(e) Availability of Research Information

Agricultural research in the past was mostly carried-out under controlled conditions as such the presently available knowledge mostly suits areas with favourable farming conditions. It is only recently that the thought is given and programmes launched for research to suit different environmental conditions.

(f) Settlement Patterns

Settlement patterns in the major irrigation areas (since they are recent settlement projects) tend to be more even with high farmer densities. On the other hand in the other areas non-farming activities tend to disturb agricultural activities, while in the villages farmers live together with non farm households.

(g) Farm Incomes

Resulting from large farm sizes and higher levels of productivity, farmers in the major irrigation areas usually receive higher farm incomes. The majority of farmers in these areas do operate towards the upper end of the subsistence-commercial scale.

The minor and rainfed areas on the other hand exhibit different features. Farming conditions are less favourable. Water supply is generally less assured, holdings are small, fragmentation is common and land tenure conditions are less favourable. There are other constraining factors as well such as poor soil conditions, poor drainage and so on. Furthermore these conditions vary considerably from farmer to farmer. Therefore the situation can be expected to be more heterogeneous. The experience of

these farmers, although it may date back to a number of years, is usually under difficult farming conditions. Hence their knowledge and experience could be conditioned by this requirement of adjusting to unkind situations.

The result of these constraints are low level of productivity, and a low level of technology adoption (according to available knowledge). The position may be that a suitable technology for these areas is still not available. The combined effect of small farm size and low levels of productivity are the low farm incomes. This would lead to a search (and a greater importance) for other avenues of income, in non agricultural employment or in other agricultural activities, although in all instances one may not be the cause of the other.

The mid country and up country paddy growing areas, while exhibiting some of the characteristics of major irrigation areas, are similar in other respects to minor irrigation and rainfed areas. Both productivity and level of adoption of technology are high. Although the physical conditions, such as water supply situation and soil conditions are favourable, holdings are small and tenurial conditions are less favourable. There is a certain degree of homogeneity in farming practices. Knowledge levels and experience could be expected to be high. Available research information too suits these areas as physical conditions are favourable. Settlement patterns resemble minor and rainfed areas and farm incomes are generally small.

Paddy areas exhibiting these desirable characteristics (enumerated earlier) may be treated as "developed" and the others as "less developed". From this point of view major irrigation areas may be called "developed" while the minor and rainfed areas as "less developed". This mid and up country paddy areas too could also be treated as "developed" but is distinct due to its structural features.

Implications For Extension

The regional variations suggest the need for different extension approaches in the "developed" and the "less developed" paddy areas. Certain views are discussed in the forthcoming sections, relating to extension strategies for different areas. As mentioned earlier these ideas need not be applied uniformly to different districts or irrigation areas or for that matter all parts of any particular irrigational scheme. It is expected that these ideas be applied to relatively smaller areas exhibiting uniform conditions.

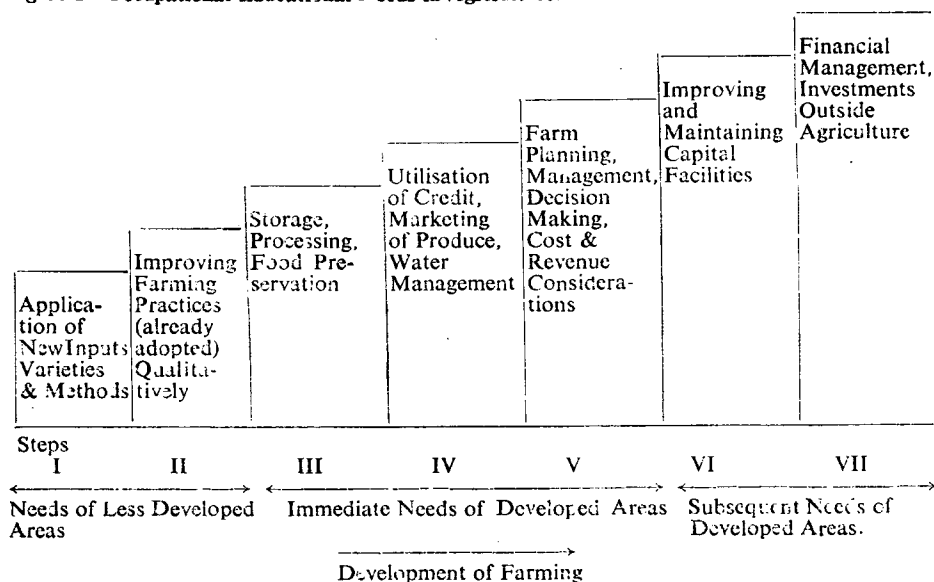
(a) *From Encouraging Technology Adoption to the Management of the Farm*

In the developed farming areas adoption of technology has reached a satisfactory level both quantitatively and qualitatively. By quantity is meant the cumulative number of farmers adopting a certain practice, while quality refers to adoption of the practice in the most desirable manner and the adoption of other complementary practices needed to reap the maximum benefits from that practice. What should be the extension approach in these areas? Since technology adoption has already been achieved the role of extension in these areas should concentrate on management of the farm with less emphasis on technology adoption.

Figure 1, is constructed using a breakdown of the occupational educational needs³ in agriculture by Coombs and Ahmed (1974). The manner in which it is presented gives an indication that the different educational needs arise with time with the development of farming.

As illustrated in the figure the educational needs of the developed and the less developed areas are different from each other. In the developed areas a shift from pure adoption of farming technology to other considerations like storage and processing of farm products, food preservation, utilization of credit, marketing of produce, farm planning and management, cost and revenue considerations seems necessary.

Figure 1 : Occupational Educational Needs in Agriculture.



The situation in the less developed areas - i.e. the non adoption or partial adoption of technology - mean one of two things. Either the technology has not reached them or it is not or only partly relevant to their needs (and hence they had rejected it or modified it to suit their conditions). Since the the extension input had been the same in all areas the second hypothesis should receive more weight. Hence the extension service in their areas has an additional task to modify and develop the available technology to suit farmers needs till such time as research information is available. This means that field experimentation should be a important function of a extension worker in these areas.

3. Educational needs for rural development may be brokendown into (a) Basic educational need's (literacy, numeracy) (b) Family life educational needs (nutrition, health, family planning, children) (c) Community life educational needs (community living, environment) and (d) Occupational educational needs within and outside agriculture.

(b) Implications for Extension Methodology

Extension work can be assumed to have two main functions, namely promotional function and the educational function. By promotional function is meant the process of encouraging adoption of improved technology while educational function refers to an improvement in knowledge and understanding. Although the two functions are closely interrelated it is possible to classify extension methods according to what they intend doing into mainly promotional activities and mainly educational activities.

Laidout Demonstrations
Posters

Farmer Training Classes
Method Demonstrations
Printed Material

Personal Contacts
Film Shows
Radio Programmes

←
Mainly Promotional
Activities

→
Mainly Educational
Activities

Assuming technology for the less developed areas available, promotional work should receive more emphasis compared to educational work. With the initial acceptance of technology emphasis could change from technology promotion to education. While on the otherhand a farm management orientation means a more emphasis to education in the developed areas.

Further, farmers of the developed farming areas could be expected to be more knowledgeable in farming techniques and more experienced. Due to this reason it is possible to pitch the educational activities at a higher level. Use of printed matter, adopting group methods of extension and use of visual aids should bring in more results in the developed areas. Further, due to the uniform farming conditions and similarities in farming methods information and education needs of farmers too tend to be the same. For this reason too group methods of extension and use of printed material could find an important place.

(c) Implications for Training of Extension Personnel

Majority of farmers in the less developed farming areas are 'small farmers' and many perform near or below subsistence level. The approach to their problems should be different from that of a big commercialised farmer. Quoting A. Hofset (1975) in an article entitled 'Aspects of Advisory Roles and Advisory Problems of Small Farmers' 'what the big' successful expert farmer wants is someone who can be ready with answers to specific technical questions the moment the farmer requests them (on the telephone). The advisor's technical insight is the only important qualification- provided

that he has sufficient command of the language to transmit the answer properly. On the other hand we have the "small" background farmer - where the advisor's insight in human motives and relations may be the crucial factor.

Applying the same idea technical competence of the extension worker is more important in the developed areas while the ability to understand and handle human problems becomes an important issue in the less developed areas. Hence the emphasis in the training of extension workers could be different in the two areas.

(d) Demarcation of the Area of a Village Level Extension Worker

Location of farms and homesteads in the major irrigation areas which are mostly recent settlement schemes is fairly uniform with a high farm (or farmer) density per unit area. In the minor tank fed paddy areas even though farms are located in clusters very often there is a considerable distance between clusters. In the wetter areas although the farms are small due to the intervention of non agricultural areas there is, in many instances, a considerable distance between one paddy tract and other. The same could be said of the location of farm houses and non farm houses.

The criterion of allocating extension workers on the basis of number of farmers would be applicable to the major irrigation areas. The same criterion would be less meaningful in the other two locations, instead a demarcation of area based on physical distance would be more appropriate.

(e) Implications for the Training and Visits System of Extension

Three steps are involved in the effective functioning of the Training and Visits system of extension (Benor, D. and James, Q. H. 1977 and Reading Rural Development Communications, 1980). They are (1) close links between extension and research (2) continuous training of extension workers and (3) frequent visits by extension workers to farmers. In order to make frequent visits possible, the system attempts to organise farmers into groups led by "contact farmers". Certain characteristics of developed farming areas favour the use of T & V system of extension in comparison of other areas.

- (i) The homogenous conditions lead to a greater uniformity in the knowledge needs of farmers. Hence the relevancy of the group approach and the possibility of identifying extension messages with a common appeal. Identifying the message appropriate to a particular period becomes progressively more difficult with the complexity of farming.

- (ii) Many of these areas only grow paddy and the timing of operations is usually governed by water availability and hence cultivation calendars are more rigidly enforced.
- (iii) Most farmers on these areas perform towards the upper end of the subsistence - commercial scale. Hence it could be expected that these farmers actually are looking for information. The degree of interaction between the contact farmer and follower farmers would depend on the importance of information to the follower farmer.
- (vi) Farmer densities are higher and hence the distance to be covered by an extension worker is less
- (v) The presently available research information largely suits these areas. Hence the identification of messages would be simpler and and selected messages would more likely to be relevant.

These reasons tend to favour the use of this system in the more developed farming areas. It also implies the need for careful evaluation of the system's adoption in the less developed farming environments. Through such evaluations it is possible to modify the system to suit these areas, if found necessary.

Conclusions

The literacy rate in the island suggest the use of print medium more intensively in farmer education work. However due to the low educational attainment of the majority, messages should be simple and well illustrated. Although the penetration of mass media is high the the evidence indicates that the reach of agricultural information through mass media is low. In addition to characteristics literacy, educational levels and mass media exposure which uniformly influence the effectiveness of extension work in all part of the country there is considerable regional variation within the paddy farming sector itself which demand different extension approaches. The following extension strategies are suggested for the developed and less developed paddy farming areas.

	<i>Developed areas</i>	<i>Less Developed Areas</i>
Extension Input	Educational ; A Farm Management Orientation	Promotion of Appropriate Technology and Field Experimentation
Extension Approach	Technical — Economic	Human — Technical
Training of Extension Workers	Technology Bias	Human Problems Bias
Criterion for the Demarcation of the Area of Extension Worker	Farmer Numbers	Distance
Implications for T & V System of Extension	More Appropriate	May Need Modification

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