TRAINING AND VISIT SYSTEM OF EXTENSION

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THE TRAINING AND VISIT SYSTEM OF EXTENSION

A Paper based on experiences in the Training and Visit System of Extension under the Kurunegala Rural Development Project

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FOREWARD

At the request of the Ministry of Plan Implementation and the World Bank, the Agrarian Research & Training Institute agreed to undertake the evaluation of the Kurunegala Integrated Rural Development Project. The Evaluation Plan consists of a base line survey to analyse the pre-project situation and several indepth and management oriented studies. Some of these studies are meant to examine the implementation of important project components with a view to assess their performance from time to time. This study on Training and Visits System of Extension is one of them. It attempts to study the operational aspects of the system. As the extension activities in the district under the new system would take time to show results, it was decided to limit the study to an assessment of the operational aspects which will show the extension 'inputs' in the first instance.

Another reason for selecting this component of the project for early study was that this subject has some national significance. The T & V system of extension is now being experimented in all parts of the country by the Agriculture Department as a national undertaking. Hence, the results of this study are bound to have wider application in addition to its immediate impact on the Kurunegala Project.

M/s. A.M.T.Gunawardena and A.Chandrasiri, Research & Training Officers, were responsible for this study. Mr.A.S.Ranatunga who was with the ARTI as a R & TO till the end of 1980 also associated himself in the initial phase of the study. He participated at the discussion held with the I D A Team and later took part in the field work particularly, at the interviews held with the Extension Management.

My thanks are due to all officers who contributed to this study and made this publication possible. I also hope that this study will help to develop a methodology for the evaluation or rural development projects in a simpler and less expensive manner.

T.B.Subasinghe
DIRECTOR.

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The project staff at Kurunegala, headed by Mr. P. Thevarayan, the Project Director, helped in the organisation of field work in the district. In addition, the authors benefitted much from discussions with the project staff.

The extension staff of the district, in particular the Assistant Director, Mr. R. Wijesooriya and later Mr. T.M.A. Tennakoon, helped in various ways in carrying out this study. We are grateful to the extension staff for providing us with the information, both at discussions and in response to questionnaire surveys, on which this study is largely based. The staff at the Regional Research Station, Makandura, headed by the Deputy Director, Dr. N. Vignaraja also provided valuable information.

The authors also wish to acknowledge the services of Development Officers and Statistical Investigators of the district who helped in the questionnaire surveys. Four casual statistical investigators from the ARTI Messrs. D. Mallawarachchi, E.A. Gunapala, S. Abeysundara and B.F. Wijeratne undertook part of this work. Mr. N.N.A. de Silva of the ARTI assisted by Miss P.M. Seelawathie Menike handled the tabulation of data. The many contact farmers and the 'other' farmers who responded to our inquiries deserve a special word of thanks.

Mrs. W.P.S. Wijewardena of the ARTI handled the typing of both the drafts and the final document in connection with the study.

Professor Norman Uphoff of the Cornell University and Dr. J. Black Michaud, C'Plan Advisor attached to ARTI examined the draft reports and offered valuable comments. Similar comments were also received from Mr. P. Abeywardena, Deputy Director (Extension) Department of Agriculture, Mr. S. Arasasingham, Deputy Director, Department of Agriculture, Dr. C. Prasad, FAO Advisor, the Project Director, Kurunegala Rural Development Project, and the Assistant Director Director, Department of Agriculture, Kurunegala. However, the authors themselves are responsible for any remaining errors.

AUTHORS

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STUDY OF THE OPERATIONAL ASPECTS OF THE TRAINING AND VISIT (T & V) SYSTEM OF EXTENSION

1 INTRODUCTION

1.1 THE T & V SYSTEM OF EXTENSION

In developing country situations, farmer numbers served by a village level extension worker (VLW) are too large, and hence frequent visits to these farmers individually by the VLW are not possible. T & V system attempts to solve this difficulty by dividing the farmers into small groups. Each group is led by a contact farmer. The village level extension worker is expected to meet with this group every fortnight. Around 15 - 20 farmers are considered a realistic group size under the leadership of a contact farmer.[1] Contact farmers' functions are, to provide a forum for discussion, to transmit extension messages to other farmers in their group, and to provide examples of adoption of new technology for other farmers to follow. In practice, the fields of contact farmers are expected to serve as demonstration plots.

In the adoption of the T & V extension system in Sri Lanka, greater emphasis is paid to the idea of meeting the 'group of farmers', than the contact with the contact farmer per se. The contact farmer functions as the leader of the group and provides the venue for the meeting. The contact farmer's role as an extension agent is therefore considered secondary.

In order to make fortnightly visits possible, the work of the VLW is scheduled so that he spends 6 days a fortnight on these visits. The other important organisational innovations introduced in this system are (a) Systematic training of extension workers where VLWs attend training sessions every fortnight at which the relevant extension messages for the next two weeks are communicated to them for conveying to the farmers, (b) A unified extension service dealing with all crops and livestock with a single line of command, (c) An emphasis on extension personnel devoting their

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1 Around 6-8 these groups, are meant to form a larger group called the cluster.

full time to professional agricultural extension work, (d) A concentration of efforts on certain selected crops, and for these, on a few practices, initially those involving little cash outlay but quick results.[1 & 2]

1.2 AN OVERVIEW OF THE EXTENSION ACTIVITIES IN THE DISTRICT

The training and visit system of extension was first adopted in Sri Lanka on a pilot basis in one of the administrative districts, the Anuradhapura district. This system has now been adopted on a national scale under the Agricultural Extension and Adoptive Research Project.[3] The primary objective of this project is the strengthening of extension services by the establishment of a unified T & V extension system for all crops (except tea and rubber) for the entire country.

The Kurunegala Rural Development Project has adopted this system and is strengthening the extension system in the district.[4] The important organisational changes envisaged under this system of extension in the district are as follows:

a) The farmer:Krushikarma Viyapthi Sevaka (KVS) ratio is to be adjusted to around 600 farm families per KVS from existing levels of 1200 farm families per KVS. Additional staff of other ranks, subject matter officers (SMOO) and supervisory staff such as Agricultural Officers (AOO) and Agricultural Instructors (AII) too will be assigned.[5]

b) Village level extension of all crops other than tea and rubber (hence including coconut) will come under the purview of the Department of Agriculture.

c) The district is to be divided into a number of divisions, each supervised by an AO.

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1 Benor, Daniel and James Q Harrision; Agricultural Extension : The Training and Visit System, Washington DC, The World Bank, May 1977.

2 Agricultural Extension and Rural Development Centre, University of Reading; Reading Rural Development Communication Bulletins 9 & 10, Training and Visit : What Is It.

3 World Bank Staff Appraisal Report, Agricultural Extension and Adoptive Research Project (1979).

4 World Bank Staff Appraisal Report, Kurunegala Rural Development Project (1979).

5 Please see Annex 1.

d) One-day training sessions for AII and KVSS, in the AO divisions by rotation, will be held every fortnight (bi-weekly training). The SMOO will be providing the technical input at these training sessions where the extension messages to be conveyed to the farmers in the following fortnight will be communicated to the KVSS.

e) The farm families covered by each KVS (around 600) would be divided into about six clusters, each cluster containing around 100 farmers. From each cluster about 6 farmers will be identified as contact farmers, each representating around 20 follower farmers.

f) The work of the KVSS will be organised in such a way that they will be spending six days a fortnight on scheduled visits to groups of farmers by turn, 2 days for other group activities such as farmer training, demonstrations and field days, one day for fortnightly training, one day attending discussions/reviews at the office of the AI, 2 days on other work such as visits to other farmers and making up lost days due to holiday/leave, etc.[1]
The work of the AII too will be so organised that they will be spending 6 days checking the scheduled visits of KVSS to contact farmers, 2 days participating in other group activities, one day attending fortnightly training together with KVSS and the remaining 2 days on other necessary work.

g) The contact farmer and associated farmer group will be the focal point in the information dissemination process. Field demonstrations will be held mainly on the selected contact farmers' fields.

With the organisational changes undertaken for implementation of the T & V system of extension, the district is divided into 5 divisions (called segments) each headed by an AO. Table 1 gives the staff position, number of farmers, paddy acreage, and number of Agrarian Service Centres in the five segments.

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1 Source : Department of Agriculture.

Table 1 : Staff Positions, Farmer Numbers, Paddy Acreage and Agrarian Service Centres in Different Segments

Segment No. and Name	Number of Officer	Extension ranges[a]	Farm Families	Paddy Acreage	Agrarian Service Centres
	AI	KVS			
1. Kurunegala	8	37	27,872	19,700	8
2. Mawathagama	12	60	49,027	30,669	12
3. Kuliyapitiya	8	41	32,164	19,892	8
4. Hettipola	9	52	37,069	33,071	9
5. Maho	14	84	58,841	75,019	13
District	51	274	204,973	178,288	50

a - At present one AI range and 18 KVS ranges remain vacant.
Source - District Agricultural Extension Office, Kurunegala

As evident in the table, segment 5 has a larger paddy acreage and correspondingly larger farm population and extension staff. What is probably more important is its physical extent, as it occupies the entire dry and semidry zones which constitute about half the district. A possible reason for this unequal distribution may be the demarcation of divisions (segments) according to farmer numbers; as a result, segments in the drier areas where farmer densities are lesser, will tend to be larger in area.

Fortnightly training is conducted in 10 training centres in the district, 3 in segment 5, 2 each in segments 2,3 and 4 and one in segment 1. The strength of subject matter officers in the district is 16 and their specialities include paddy (3), plant protection (3), other food crops and horticulture (3), water management (1), extension methodology (1), Young Farmer Clubs (1), coconut (1), minor export crops (1). The other two SMOO attend to administrative work at the head office. In addition there are 6 AII attending to farm women's extension work. The SMOO operate in three teams.

1.3 ORIGIN OF THE STUDY AND ITS OBJECTIVES

During June 1980, an IDA mission that visited Sri Lanka held extensive discussions with the staff of the Agrarian Research and Training Institute (ARTI) concerning ARTI's role as an evaluating agency for the Kurunegala Rural Development Project. Among other things, discussions focussed on evaluation of the T & V extension system as an important component under the project.

Since the T & V extension system is a recent innovation in the Kurunegala district,it was agreed that launching a study for impact assessment of the T & V system would be premature. Instead it was felt that the priority at this stage was for a short-term study to determine the following:

1) The extent to which organisational innovations and their expected input envisaged under the T & V system are being realised. (Objective I).

2) The adequacy and suitability of the recommendations being propagated by the extension service. (objective II).

Part I of this study is concerned with extension organisation and its inputs (objective I) and includes an assessment of the following :

a) Regularity and perceived quality of KVS visits to farmers.
b) Extent of information flow between contact and follower farmers.
c) Regularity and perceived quality of fortnightly training sessions.
d) Assessment of the farmer perception of the practices recommended by the extension service.
e) Non-extension workload of extension staff.
f) Mobility of extension staff.
g) Composition and suitability of contact farmer group.
h) Adequacy of supervision within the extension organisation.
i) Regularity and perceived quality of dialogue between extension and research staff.
j) Effectiveness of upward information flow from field to research staff.

Part II of the study, concerned with recommended practices (objective II), consists of the following components:

a) Comparison of extension system recommended practices with those followed by 'progressive' farmers.
b) Review of mechanisms through which research station recommendations are screened and selected by the extension service.
c) Enumeration of the recommended practices and packages as well as their suitability for various categories of farmers.

1.4 INFORMATION SOURCES

Information required for Part I of the study was obtained through a questionnaire survey of AII, KVSS, contact farmers and follower farmers, and through discussions with extension management. Four different questionnaires were used for the four groups. The selection of respondents for the investigation was based on a stratified random sample design. The agro-climatic zones identifiable in the district were treated as the sampling strata.

The selection procedure as outlined in the study proposal was as follows:

a) To select 30 AIs randomly in proportion to their distribution over the three agroclimatic zones (wet, intermediate and dry zones).

b) To select 60 or more KVSS randomly in proportion to the actual distribution of KVSS over the three agroclimatic zones. The number selected from any particular agroclimatic zone to be not less than 20.

c) For each of KVSS in the sample, two contact farmers and two follower farmers to be selected at random.

Certain deviations from the original plan were subsequently made. It was found that the intermediate zone which consisted of around 2/3rd of the district in area, included a very large proportion of AII and KVSS of the district. Hence it was decided to break up the Intermediate zone further into semi-dry and semi-wet zones. Even after this break up, these two zones even individually included a larger number of extension staff than the other two zones, which made it less meaningful to select the sample in proportion to the actual distribution. Hence the following method of selection of AII and KVSS was adopted. The plan of having a minimum of 20 KVSS from any particular agroclimatic zone was maintained.

Zone	AII (total)	AII (sample)	Selection Procedure	KVSS (total)	KVSS (sample)	Selection Procedure
Dry zone	4	4	100%	32	20	
Wet zone	7	7	100%	40	20	1/3rd
Semi-dry zone	13	7	50%	76	26	with a
Semi-wet zone	26	13	50%	133	41	minimum
						of 20
Total	50	31		281	107	

Contact farmers were selected randomly at the ratio of two contact farmers per KVS using lists of contact farmers available at the district extension office.

Drawing a random sample of follower farmers was difficult because all farmers in the district are considered to be follower farmers of some contact farmer. Follower farmers were therefore selected at a ratio of one follower farmer per contact farmer, adopting the following criteria:

a) Follower farmers were selected from among paddy farmers having their fields in the same tract as the contact farmer.

b) A minimum distance of 5 houses away from the contact farmer's house was adopted to avoid close personal relationships with the contact farmer.[1]

c) Contact farmers were not consulted in the selection of the follower farmer.

The sample accordingly selected included 31 AII, 107 KVSS, 214 contact farmers and 214 follower farmers. Since in the selection of follower farmers, all farmers in the district were considered to be follower farmers of some contact farmer, the word "other farmer" was suggested as a better term than "follower farmer." Hence this term is used in the text.

The interviews of AII and KVSS were done by Research Officers and Statistical Investigators of ARTI, by visiting the training sessions of AII and KVSS. This approach of interviewing them at training sessions was adopted in order to minimise travelling and to cause least disturbance to the field extension programmes. Development Officers of the Ministry of Plan Implementation were employed for interviewing contact farmers and follower farmers. Some of the interviews of contact farmers and follower farmers were carried out by ARTI staff themselves for purposes of obtaining an in-depth understanding of the information asked for in the questionnaire, as well as for purposes of checking the accuracy of data.

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1 In the dry zone settlement pattern, homesteads are situated in a cluster close to each other (Gangoda).

The information required for Part II of the study was obtained through discussions with extension management officers and discussions with the staff of the Regional Research Station, Makandura. The specific information requirement for assessment of practices adopted by 'progressive farmers' was met through a sample survey of 28 progressive farmers. For this purpose, the second decile of the list arranged according to yield of farmers participated in the paddy crop competition of Maha 79/80 was treated as a group of progressive farmers.

PART I

2 EXTENSION ORGANISATION AND INPUT

2.1 KVS VISITS TO FARMERS

The personal contact between the VLW and the farmer is the most important link in any extension activity. As mentioned earlier, in the operation of the T & V system in Sri Lanka, emphasis is placed on KVS meeting a group of farmers - the contact farmer and his associates - at the fortnightly visit. The contact farmer functions as the contact point providing the venue for the meeting.

According to the study data, the number of contact farmers per KVS was 36 in all zones, while the number of farmer families ranged from 721 in the semi-dry zone to 843 in the wet zone with an average of 793 farm families per KVS for the district. Thus the number is close to the anticipated target of 600. On the average, there were 22 follower-farmers per contact farmer. Although the number of farmers served by a KVS was the same in all zones, the area served (i.e. the size of the KVS range) varied considerably among the four zones. The size of a KVS range averaged to 6.58 sq. miles for the district, varying from 3.22 sq. miles in the wet zone to 9.79 sq. miles in the semi dry zone, where the range size was the largest. (See section 2.5). Thus the size of the range in the semi-dry zone is three times larger as the wet zone.

Two other related features influencing KVS-farmer contact are the place of residence of the KVS and the mode of transport available. The majority of KVSS (over 80%) were living either within the range or within a mile from the range. The proportion of KVSS living within the range progressively increased from wet to dry zone. In fact, in the dry zone, 90% of KVSS lived within the range and the rest within one mile. This should considerably influence the contact between the KVS and farmers. The available mode of private transport to the KVS, was the bicycle. The availability of private transport, however, did not vary much between zones except for the wet zone where only 33% had bicycles, whereas in all other zones, over 90% possessed bicycles. Kurunegala

district has a total road network of about 8000 miles (1000 miles of metalled and tarred roads and 7000 miles of gravelled roads). This would mean a road network of around 30 miles per KVS area of 6.58 sq. miles in size. A crude estimate of the distance that a KVS has to travel within his range to get to a point and back should be in the range of 2-10 miles. The subject of mobility of extension staff is further discussed in section 2.5.

According to the study data, KVS-contact farmer links appeared to be sound in all zones of the district. A majority of contact farmers reported being visited the expected number of times (2 visits) during the reference period of one month, and around two-thirds of the contact farmers reported regular visits on a certain day of the week. Although the quality of interaction cannot be judged, it appears from the data that KVS visits to contact farmers are regular, and healthier links exist between KVSS and contact farmers.

Table 2 : KVS Contacts with Contact Farmers

	% of Contact Farmers Reporting the Following			
Zone	Knowing KVS	Knowing KVS by name	Two or more visits by KVS during last month	Visits on a certain day of a week
Wet	97.5	25.0	75.0	61.5
Semi-wet	100.0	36.2	80.0	62.5
Semi-dry	100.0	76.0	96.0	93.8
Dry	92.5	60.0	89.0	79.5
District	98.7	48.1	84.7	72.8

Judging from the data presented in the table, KVS-contact farmer links appeared to be stronger and visits more regular in the drier areas compared to the wetter areas.[1] The possible reason for this observation is the greater importance of paddy farming in the drier areas.[2] Hence farmers would have placed a greater importance on extension activities.

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1 The wet and semi-wet zones may be considered together as the wetter areas and the dry and semi dry zones as the drier areas.

2 According to the preproject analysis, the contribution of paddy farming to household income is higher in the dry zone and the incidence of part-time farming was less common.

Most KVS-farmer group meetings take place at the contact farmer's residence. 52% of the contact farmers identified the house as the principal point of meeting in contrast with 28% who identified the field.[1] Although no judgement can be made of the suitability of the place of meeting based on this observation, it is possible that the house may be a suitable point of contact in the off-season, while the field may be more suitable in the peak periods of the season, as the KVS will get an opportunity of meeting a larger number of farmers here. Demonstrations as far as possible may be carried out (or laid out) in fields closest to the village so that the group could move from the village to the field. The pattern of settlement (location of homesteads) varies in the drier and wetter areas. In the drier areas (dry and semi-dry zones), the cluster-like pattern of settlement prevails while in the wetter areas (wet and semi-wet), the pattern of having settlement along the roads predominates. Both settlement patterns favour this arrangement for meeting, although it suits the drier areas more.

Relating to other farmer participation at KVS-contact farmer meetings, although 60% of KVSS reported such participation, the responses of contact farmers did not quite agree with this observation, (Table 3). Even the response by KVSS means that 40% of them conceded no participation of other farmers at KVS-contact farmer meetings. This appeared to be the weaker link in the operation of the T & V extension system in the district.

The participation of other farmers seems to be higher in the drier areas compared with that of the wetter areas (Table 3). This adds further support to the observation made earlier relating to differences observed in wet and dry areas.

Table 3 : Participation of Other Farmers at Contact Farmer Meetings and Contacts between KVSS and Other Farmers.

Zone	Percentage of KVSS Reporting Attendance of Other Farmers at Contact Farmers Meetings	Contact Farmers Reporting Attendance of Other Farmers at KVS-contact Farmers Meetings	Other Farmers Reporting Contact with KVSS During Last 3 Months
Wet zone	47.6	37.5	40.0
Semi-wet zone	57.5	30.0	72.5
Semi-dry zone	65.0	40.0	74.5
Dry zone	80.0	47.5	62.5
District	60.1	35.7	67.2

1 In the supervision of the work of KVSS, farmer's house is considered as the place of meeting. This could lead to an undue emphasis to make contact at farmers'residence rather than in the field.

Although evidence of participation of other farmers at contact farmers' meetings is not encouraging, there was evidence of some links between KVSS and most of these farmers. A comparison of the last two columns of Table 3 and 4 indicates that 67% of other farmers have had contact with a KVS during the 3 months prior to the study period whereas only 46% had contact with the contact farmer. This points to the fact that, KVS-farmer meetings do takeplace, outside the contact farmer meetings, even under the operation of the system. Comparison of figures suggests that around 1/3rd of meetings do take place outside the scheduled meetings.

At present it is only the contact farmers who are identified, and other farmers are not identified according to the contact farmer. This step, may go a long way in achieving other farmer participation at KVS-contact farmer meetings. It is therefore important that this step is carefully planned. There are strong reasons to consider a village, which is both socially and economically an interlinked group, as a cluster[1], however small or large it is. There are stronger reasons to identify a village as a cluster in the drier areas, due to its cluster-like settlement pattern. Certain views about the possible size of the cluster and groups within a cluster are expressed later in this paper.

If a village is selected as a cluster, there is little reason to subdivide it into smaller groups of 15 or 20, particularly under the dry zone setup, unless there are distinct cleavages. The groups may be large, as large as 30 or 40, but it is desirable to have a common identity within the group. At this stage, location within a particular tract for cultivation (yaya) may be a suitable criterion. Identifying farmer groups according to the yaya may be somewhat difficult in the dry and semi-dry zone set-up however, as farmers in any one village may have fields under more than one tract(under more than one tank). Whatever the criteria, grouping farmers according to socio-economic characteristics and/or according to natural cleavages seems to be more appropriate, without basing on numbers alone.

As a means of enhancing the usefulness of KVS-contact farmer meetings, it may be useful to involve the Cultivation Officer (CO) to be present at these meetings. Since he is responsible for services at the village level, farmers would benefit from his involvement. As the CO's range is a Grama-Sevaka division, getting his participation should not make excessive demands on his time.

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1 A collection of contact farmer - other farmer groups.

The farmers who were exposed to contact farmer meetings although they accepted the usefulness of these discussions, were unable to indicate the specific reasons why these discussions had been useful to them. This probably indicates a lack of specificity in these discussions, although the T & V system envisaged passing of a few specific and very tangible messages to correspond with the cultivation calendar. Further evidence confirming this observation could be gotten from the responses of KVSS concerning the messages they carried to these contact farmer meetings. They were also unable to describe with sufficient clarity what messages were being conveyed.

This lack of specificity in extension messages could be related to the level of development of farming (more specifically paddy farming) in the area. Paddy farming in the area may be called 'less developed', and its development is constrained by poor water supply conditions and certain structural features such as small-sized holdings and extensive fragmentation. Furthermore, there is considerable variation among farmers, both in the technology used and in the timing of cultivation operations. Under such conditions one could not expect the extension staff to communicate successfully a small set of highly specific extension messages that synchronized with the diverse cultivation operations. Hence the extension messages are bound to be many in number and highly variable in content.

2.2 CONTACT FARMER OTHER (FOLLOWER) FARMER LINKS

As mentioned earlier, the weaker link in the T & V system appeared to be the poor participation of other farmers at contact farmer meetings (see Section 2.7 also). In addition the relationships between contact farmers and other farmers appeared to be weak. The responses from contact farmers relating to inquiries from other farmers and other farmers' responses relating to interaction with the contact farmers provide evidence to this observation (Table 4). Thus although strong links do exist between KVSS and contact farmers such bonds do not seem to exist between contact farmers and other farmers.

Table 4 : Farmers Awareness of T & V System and Links between Contact Farmers and Other Farmers

Zone	Other Farmers Reporting Awareness of the T & V System (%)	Contact Farmers Reporting Other Farmer Inquiries (%)		Other Farmers Reporting Contact with the Contact Farmer During Last 3 Months (%)
		Many Other Farmers	Few Other Farmers	
Wet zone	35.0	20.0	52.5	37.5
Semi-wet zone	52.5	40.0	30.0	50.0
Semi-dry zone	54.0	24.0	52.0	46.0
Dry zone	65.0	57.5	27.5	40.0
District	50.8	38.4	36.0	46.0

Only about half the non-contact farmers were aware of the T & V system, the proportion progressively increasing from wet and dry zone. Although a majority of contact farmers were aware of the role they were expected to perform, only about half of those other farmers who were aware of the contact farmer system knew (at least partly) the expected functions of the contact farmer under the T & V extension system.[1] Others were still dependent on the KVS for information, and the contact farmer was looked at as a 'good farmer', for whom the KVS has a greater regard, hence the frequent visits made by the KVS to these farmers. Thus it appears there is a lack of awareness of how this system is expected to operate, in particular the role and functions of the contact farmer.

One way of remedying the situation is through more publicity and education on the system. However the system cannot sustain interest unless the farmers feel that they benefit from the system. For this, the system must provide something useful to the farmers. It would be an extremely difficult task for the system to sustain interest in such a difficult farming environment as Kurunegala where farming is constrained, mostly by limitations of water. Extension education is just one input (one of many) and a need for it is felt only when most other inputs and conditions are available. Under the T & V system, the information dissemination process is dependent on positive action from the farmer, i.e. he should come to the contact farmer for information. This would mean that the farmer must derive some benefit from the interaction. Under the traditional system of extension, the KVS is expected to go to the farmer in a way we cannot expect from the contact farmer, who is unpaid and

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1 Informal discussions with contact farmers had shown that these farmers were not fully conversant with their role and functions. Certain gaps still remain to be filled.

hardly trained. This is one of the factors that needs consideration in introducing this system of extension to a diverse farming environment such as Kurunegala.

The degree of motivation of the KVS is a factor as important as the motivation of the farmers themselves. Their motivation depends on large number of factors, remuneration, prospects for personal development, and so on, an examination of which is beyond the scope of this paper. However, we could infer from discussions with KVSS, that many do consider meeting the contact farmer as the role expected of them with less regard to other farmer participation. It is crucial therefore that the driving force behind KVSS participation is not supervision but their motivation. The fortnightly training classes have an important role to play in this regard.

In an attempt to assess the important sources of information to other farmers, it was significant that extension personnel remained as the main source of information to a large majority of farmers (Table 5). Furthermore, more farmers cited 'other farmers' as a general source of agricultural information compared with the contact farmer in such a role. This further indicates that the contact farmers' position in the village as a source of information is still not established, and extension personnel remain as the principal source of information.

Table 5 : General Source of Information for Other Farmers

	Percent of Other Farmers Reporting *
Extension personnel	68.5
Other farmer	29.5
Contact farmer	20.0
Printed material	10.0
Cultivation Officer	6.2
Radio	3.8
Not dependent on any source	5.7

* Percentage total more than 100% because more than one answer could be given.

Although nearly 50% of other farmers had contact with the contact farmers within a period of three months, yet only 20% identified him as a source of agricultural information. In spite of interactions between contact farmers and other farmers (since they live and work in the same locality), contact farmers are not functioning as an important source of information.

In summary, it appears that the system of contacts and linkages in the T & V system is dependent on three main steps, namely (1) KVS visiting contact farmers (2) Other farmers participating at contact farmer meetings and (3) Contact farmer serving as an extension agent. (In the adoption of the system in Sri Lanka, the information dissemination process is dependent on steps 1 and 2 mainly) These in turn are dependent on certain requirements as illustrated below. Failure to satisfy these requirements interferes with the functioning of the system. Some of these requirements as they apply in the Kurunegala case have been discussed already, and some of the others are discussed in the forthcoming sections.

Steps	Requirements
1) KVS visiting contact farmers	- KVS should be sufficiently motivated, Supervision and Training could help, availability of transport to the KVS, proper size of range, manageable number of farmers, KVS residence within the range.
2) Other farmer participation at contact farmer meetings	- Other farmers should be aware of the system (its role and functioning), they should be sufficiently motivated to participate, (for this they should feel a need for the information), contact farmers should be acceptable.
3) Contact farmers should serve as extension agents	- Contact farmers should be sufficiently motivated; should be capable of performing this role and should be acceptable as well.

In the Kurunegala case, although step 1 is taking place satisfactorily, steps 2 and 3 appear to be weaker links.

2.3 FORTNIGHTLY TRAINING & EXTENSION MESSAGES

Fortnightly training is conducted in the nine centres (Agrarian Service Centres) in the district. These training sessions are conducted regularly and are usually well attended. Fortnightly training appeared to be the strongest component of the T & V system. A large majority of KVSS (82%), however, felt that fortnightly training presently conducted could be improved. Nevertheless only one common suggestion was made, that is, a request for more field training. Judging from the numbers who made this request, field training in addition to lectures seems to be extremely important. The responses from AII were the same.

An attempt was made to enumerate the extension messages that the KVSS were expected to carry in the fortnight immediately before the time of the interview. The interviews were carried out at the beginning of the maha season and hence the extension messages were related to cultivation operations at that period of the season. As the list below reveals, a range of responses was obtained covering almost all operations, carried out during this period of the season.

Table 6 : Extension Messages Expected to be carried by the KVSS in a Fortnight as Reported by AII and KVSS

	KVSS	AII
Application of Fertilizer-both Basal and Top Dressing	*	*
Nursery Preparation	*	*
Dapog Nurseries		
New High Yielding Varieties		
Preparation of Seed Paddy for Planting		
Land Preparation		*
Dry Sowing		
Row Sowing		
Transplanting	*	*
Water Management		
Pest & Disease Control (including recommendations of pesticides)	*	*
Weed Control	*	*
Cultivation of Subsidiary Food Crops		*
Cultivation of Home Garden Food Crops		
Cultivation of Chena Crops		

* - Messages receiving responses from more than 10%.

This wide range of messages and their wide coverage suggest the degree of variation in information carried by the extension staff and possibly the type of demand from farmers for information. It was earlier observed in relation to contact farmer meetings that the message transfer at these meetings was non-specific (general) in quality. Our recording of extension messages being carried by KVSS tends to support this observation. It is possible that the generally underdeveloped state and the highly heterogeneous nature of cultivation (both in relation to the type of technology used and the timing of cultivation operations) result in a highly varied demand for information.

Although the T & V system of extension emphasises transmitting a few carefully selected, specific extension messages to farmers in a certain fortnight, what extension carries and what farmers want to know seems to cover a rather wide range of messages, virtually all aspects of scientific paddy cultivation. Hence it is likely that what farmers in a district like Kurunegala need is an overall improvement in knowledge, something more than packages of selected extension messages.

From this point of view, it seems more meaningful to treat both the fortnightly training and KVS-contact farmer meetings as means of qualitatively upgrading the farmers' knowledge more than as a means of transmitting extension messages.

It appears that these training sessions presently are having a substantial impact in the qualitative upgrading of extension staff. However as discussed, their role as a forum of communicating extension messages to be carried to farmers seems to be less effective and less meaningful. Under such circumstances one wonders whether an 'overdose' of training is produced in the process. However, none of the extension personnel interviewed made any remarks in this regard.

The extension messages recalled by extension staff also indicated that the emphasis in extension is largely directed towards paddy farming. Only three messages were concerned with crops other than paddy. These messages were concerned with subsidiary food crops, home garden crops, and chena crops. None of the messages were related to coconut or its intercrops (minor export crops) indicating that these activities still are not coming under the purview of general extension.

Among the messages for paddy, fertilizer use and pest and disease control stood out, demonstrating clearly their importance in the extension work in the district. Most KVSS (90%) felt that the extension messages that they carried to farmers were useful to them. Contact farmers (almost 85%) too had the same impression about these messages. The reasons given by the balance (15%) for the lack of usefulness of these messages, in order of importance were, soil and water problems, inability of obtaining inputs in time, higher cost involved, lack of faith, and complexity of these practices. On the basis of responses of both KVSS and contact farmers, the content of extension messages seems to be relevant. However, due to the smaller number of other farmers exposed to fortnightly meeting it was not possible to assess the relevancy of extension messages to them.

An attempt was made to assess changes in cultivation practices of contact farmers resulting from contact with the KVSS in the two seasons preceding the survey period. It was observed that a large number of contact farmers (as high as 50%) reported such changes. It was significant that four practices stood out among the dozen of practices reported. Those, in order of importance, were fertilizer use (61% of those reported accepting new practices), transplanting (43%), use of agrochemicals (23%), and use of short-duration, improved varieties (15%). These practices, indicate the type of changes that one could anticipate in the immediate future. They include the main component of the basic of package, excepting weed control.

2.4 'NON T & V' WORKLOAD OF EXTENSION STAFF

An attempt is made here to assess the 'non T & V' workload the KVSS since it is claimed that these activities take an appreciable part of their time. A total of 22 activities were identified by KVSS as activities on which they spent time during the last month. These are listed below for reference.

Activities connected with Extension Work	Activities not directly connected with Extension Work
1) Work connected with Young Farmers Clubs	1) Rural Development Society meetings
2) Home gardening programmes	2) Shramadana activities
3) Transplanting programmes	3) Agrarian Services Committee meetings
4) Kanna meetings	4) Death Donation Society meetings
5) Visits to demonstration sites	5) Parent-Teacher Association meetings
6) Advisory work connected with the Dapog nursery system	6) Meeting with the Member of Parliament
7) Advisory work in co-operative farms	7) Meetings convened by AGA
8) Advisory work for bee keepers	8) Issuing licence for jak trees
9) Supervision of seed paddy fields	9) Work connected with Mahapola Exhibition
10) Advisory work for school children	10) Sarvodaya activities
11) Water management advisory work	11) Unspecified
12) Overseeing work in another division	

An assessment was made of the time spent by KVSS on these activities in the month prior to the survey period. It was found that on the average, KVSS had spent 4 days during the month for the first group of activities and one day for the second group. This would mean that on the average, 2½ days a fortnight are spent on these activities. Since these activities consumed most of the time of KVSS prior to the introduction of the T & V system, and some of these activities are demands which KVS's have to comply with, it is likely that the full complement of 2½ days a fortnight will be spent on these, if not more.

According to the KVSS visiting schedule, he is expected to spent six days visiting contact farmers, two days for group farmer activities such as pre-seasonal farmer training, mid-seasonal farmer training, cottage meetings, etc., one day attending fortnightly training, one day in discussions/review with AI, and two days for other planned work and for making up any lost days due to holiday/leave etc. Activities listed earlier as 'non T & V' work consume an estimated 2½ days and fortnightly training and attending discussions/reviews

with AI would take the 2 days estimated, days lost as leave and public holidays would likely to be taken from the allocation for contact farmer meetings and group activities. It must be added that the leave entitlement and public holidays consume a substantial number of days a year (maybe as high as 2 days a fortnight on the average) and Saturdays are half days for public officers. Considering all these, it appears that the KVSS' weekly programmes are overcrowded as the following computation reveals.

Available number of days a fortnight (considering Saturday as a half day)	=	11 days
Demands -		
Fortnightly training	=	1 day
Discussion/Review Sessions	=	1 day
Public Holidays and Annual Leave	=	2 days
Other Activities (listed earlier)	=	2½ days
Total		6½
Available number of days for visits and group activities	=	4½ days

This computation perhaps represents a maximum set of other demands. However, the fact remains that a KVS is unable to spend 8 days on visits and group activities. Moreover, as the group activities are not clearly defined at present, the available time is likely to be spent on scheduled visits.

The non T & V activities of AII - activities other than training and supervision of KVSS - although less varied compared to that of KVSS, included a number of similar activities. These activities are classified below in to two groups as done earlier.

Activities connected with Extension Work	Activities not directly connected with Extension Work
1) Young Farmer Society meetings	1) Rural Development Society meetings
2) Transplanting Programmes	2) Agrarian Service Committee meetings
3) Kanna meetings	3) Meetings convened by AGA.
4) Visits to demonstration sites	4) Meetings with the Member of Parliament
5) Advisory work in co-operative farms	5) Meetings connected with other Departments
6) Water management extension work	6) Model village programmes
7) Overseeing work in other divisions	

On the average, an AI has spent 4-1/3 days in the last month, (2-1/3 days for activities listed in the column 1 and the remaining 2 days on activities listed in column 2) on non T & V work. This again works out to two days a fortnight. Thus it appears that work not directly connected with the extension activities (those listed in column 2) tends to make greater demands on the time of AII, compared to KVSS. Under the T & V system, AII are expected to spend 6 days a fortnight in the field accompanying the KVSS by turn, 2 days participating in group activities, 1 day at discussion/ review sessions with KVSS, 1 day attending fortnightly training, 2 days for other necessary work. It is seen that these 'non T & V' activities tend to occupy the two days set apart for this purpose. Considering again the entitlement of leave, public holidays and visits to the District Office which AII have to perform frequently (at least once a month) and the office work he has to attend, the programmes of the AII also seems to be somewhat overcrowded. The manner in which AII have spent their time on these activities is given in section 2.8.

2.5 MOBILITY OF EXTENSION STAFF

Mobility of extension staff seems to be of particular importance in the drier areas of the district, where farmer densities are generally lower and the ranges are larger as a consequence (see Table 7). A related issue which would probably affect the work of the AI is the poor public transport in the drier areas. Public transport facilities are generally better in the southern part of the district.

Table 7 : Variation in Size of the Range of Extension Personnel in the Four Zones

Zone	AI Range		KVS Range	
	Farmer Numbers (a)	Area (sq. miles)	Farmer Numbers (a)	Area (sq.miles)
Wet	3954	18.40	843	3.22
Semi wet	3474	27.29	830	5.33
Semi dry	4521	57.24	721	9.79
Dry	5738	66.89	749	8.36
District	3994	37.00	791	6.58

(a) - Farmer Numbers based on survey data.

As mentioned earlier, the availability of transport for the extension personnel was generally poor. Among the AII, about a sixth owned motorbicycles and another third had their own bicycles, while the others (half) had to depend on public transport. A larger majority of KVSS (over 80%) had their own bicycles. It was mostly the women KVSS who did not travel on bicycles. As commented earlier, a majority of KVSS were living either in or within 1 mile from their ranges and therefore a bicycle should be adequate to meet their travel needs. KVSS unlike AII were people from the same area. Mostly they were from one of the villages within the range or from a nearby village.

The number of KVSS per AI too increased in the same manner, from 5 and 4 KVSS per AI in the semi-wet and wet zones, to 7 in the semi-dry and dry zones. Accordingly the number of contact farmers too increased from 150 per AI in the semi-wet to 243 in the dry with the other two zones falling in between. All these point to AII's need of transport, particularly those serving in the drier areas. Even in the provision of housing, AII should receive priority over KVSS and those serving in drier areas over others.

These two factors, the mobility and the physical size of extension ranges in the semi-dry and dry zones, seem to need the attention of extension management. It may be desirable to redemarcate extension ranges considering all these influencing factors in addition to farmer numbers. There is another factor that needs to be considered in making any changes or adjustments to the present situation. That is the pattern of settlement in clusters in this part of the district. Due to this settlement pattern, farmers in any one village (cluster) live close together, but the villages may be far apart. A KVS range would be a multiple of such villages and an AI range a multiple of KVS ranges. The distance between villages may be taken into account in demarcating ranges.

2.6 COMPOSITION AND SUITABILITY OF CONTACT FARMGROUP

The characteristics of contact farmers are important since they are expected to function as an important link in the extension information dissemination process. Their closeness or distance from other farmers economically, socially as well as agriculturally is likely to affect the role they are expected to perform.

Contact farmers did not appear to be different from other farmers economically, judging from the criteria of size of paddy holdings and tenancy status. For instance, the average size of paddy holding of contact farmers worked out to be 2.42 ac., ranging from 1.65 ac. in the wet to 2.96 ac. in the dry area. 60% of contact farmers from the sample operated holdings below 2.00 acres. In the same way there was an appreciable number of tenant farmers as well. 13% of contact farmers were pure tenants and another 22% cultivated tenanted land in addition to land owned and operated by them.

There however seems to be a qualitative difference in the contact farmer groups. For instance, one-third of the contact farmers reported operating land under major irrigation alone and another 17% operated lands under major irrigation along with minor irrigation or rainfed lands. The proportion of contact farmers who operated exclusively under minor irrigation amounted to 8%. The reliability of these figures is however doubtful as only 13% of the paddy acreage in the district is under major irrigation and that too is concentrated in certain pockets where the reserviors are located. These figures however indicate the farmers' perception of the irrigation conditions under which they are farming, since they are based on farmer's responses. Farmer perception of major irrigation may be different from the definition of major irrigation that we adopt. What we could infer here is that the majority of contact farmers do farm under assured water conditions, and hence they are farmers who are productive (good farmers from an extension point of view).

There was no evidence of contact farmers being above average in their education. However, a majority belongs to the older age groups, as less than a quarter were below 40 years. For 90% of the farmers, farming was the primary occupation while 5% owned tractors.

An attempt is made here to examine relationships between characteristics of contact farmers and their degree of interaction with other farmers. Contact farmer -- other farmer interactions as reported by contact farmers was examined in relation to certain characteristics of contact farmers, such as tenure status, size of operational paddy holding, irrigation conditions, level of education, age, and innovativeness. Those contact farmers who reported adopting farming practices as a result of their contacts with KVSS were considered to be innovative. The results of this analysis is presented in Table 8.

Table 8 : Comparison of Characteristics of Contact Farmers with their Levels of Interaction with Other Farmers.

	Characteristics of contact farmers	No. of farmers in each category	Levels of interaction with other farmers (percentage of contact farmers reporting contact) No contact	Contact with few	Contact with many
Tenure status	Owner operators	132	23	39	39
	Tenant farmers	29	34	38	28
Size of operational paddy holding _/	1.00 Ac.	62	37	35	29
	1.00 to 2.00 Ac.	60	28	42	30
	2.00 to 3.00 Ac.	38	16	45	39
	3.00 Ac.	38	18	31	50
Irrigation conditions	Major irrigation	66	21	44	35
	Minor irrigation	18	28	39	33
	Rainfed	81	26	35	40
Level of education	No schooling	8	25	50	25
	Up to grade 5	68	25	40	35
	Grade 6 to 8	80	23	41	36
	Above grade 8	46	33	26	41
Age	20 - 39 years	46	33	26	40
	40 - 59 years	57	20	38	41
	Over 60 years	94	27	49	23
Innovativeness	Innovative	107	19	42	39
	Non innovative	85	29	35	35

The analysis suggests certain possible relationships between these characteristics of contact farmers and their levels of interaction. For instance both owner operators and larger farmers seem to have more interaction. This suggests a possibility that status - both social status and economic status - plays a part in the role performed by the contact farmers. It is possible that other farmers prefer to have interaction with contact farmers who have higher social and economic status in the village.

Irrigation conditions did not seem to have an influence on the level of interaction. Since in the selection of contact farmers, quality of farming has been considered as a criterion, most farmers irrespective of their irrigatio

grouping (major, minor and rainfed) would have enjoyed good water conditions. Hence the lack of influence of irrigation grouping on levels of interaction of contact farmers with the other farmers.

Among other conditions, education of contact farmers seems to have little influence. Farmers in the age group 40 - 59 years reported a higher degree of contact, than the more elderly and the younger groups. Similarly the more innovative farmers seem to have had more contact..

2.7 TRANSMISSION OF EXTENSION MESSAGES UNDER THE T & V SYSTEM

The most important step in the T & V extension system is the transmission of relevant extension messages to the farming population. The introduction of the system itself is to accelerate this process of information transfer. The degree of contact between KVSS and contact farmers, as well as between contact farmers and other farmers and participation at contact farmer meetings was discussed earlier. Certain ideas were expressed about quality of interactions at fortnightly meetings.

Under present circumstances, the fortnightly programme of the KVS appears to be somewhat overloaded and there seems to be a need for relieving the KVS of his workload while enhancing the output expected of the system. Some ideas on ways in which this objective may be achieved are discussed here.

There are three factors which govern the outcome (O) that one could expect from KVS-contact farmer-other farmer meetings. These are :

a) Frequency of KVS visits (f); at present fortnightly.
b) Proportion of other farmers participating, $\frac{n}{N}$, where n - number of other farmers participating and N is the size of the group.
c) Degree of interaction (i), which depends on quality of interaction and time spent at each meeting.

Thus (O) is a function of $f \times \frac{n}{N} \times i$. We could increase (O) through increasing f, $\frac{n}{N}$ and i. Assuming f (frequency) remains the same, $\frac{n}{N}$ and i are the two variables which could be changed. The task is to increase O without affecting the tot workload of the KVS. One way of increasing O is by increasing n, i.e. achieving greater participation of other farmers. But it will not help to relieve the

workload of the KVS. Increasing i by increasing the time spent at contact farmer meetings means further strains on the VLW's time which is already heavily taxed. One possible solution therefore is to increase the size of the contact farmer-other farmer groups (i.e. increasing N) and at the same time trying to achieve greater participation of other farmers (increasing n). By such means, the total number of contact farmers may be reduced thereby making it possible to reduce the strain on the VLW even while increasing the time spent at contact farmer meetings. At present, the number of follower farmers participating (n) is small, and having a small N seems to be a waste of KVS's time.

Present position	Suggestions	Hypothetical situation (after adjusting to half
No. of contact farmers 36 per KVS	Reducing the no. of contact farmers	18
No. of other farmers per contact farmer 22	Increasing the no. of other farmers per contact farmer but achieving greater participation	44
Time spent per group 1/6th of a day	Increasing time spent at a meeting	1/3rd a day
No. of days spent on scheduled visits 6	Reduction possible with the above mentioned changes	An adjustment in either or both may be possible

There is an important reason for not changing f, that is adhering to the system of fortnightly visits. This is because the KVSS appear to perform a curative role (ways of overcoming farming problems - pest problems in particula in addition to their role as educators. For this purpose, the KVS should visit his farmers more, not less frequently.

In order to increase participation (increasing n), more publicity seems to be necessary. However, sustaining interest depends on the usefulness of these discussions to farmers. Provision of some incentives may also be considered. Material inputs like packeted seed,printed material on aspects of farming could be some of the incentives. As mentioned earlier, it can be done by increasing time spent at these meetings or through upgrading the quality of interaction. Therefore while increasing the time spent at these meetings, every effort should be made to increase quality of interaction. In doing so, emphasising the qualitative upgrading discussed earlier seems to be necessary.

The contact farmer is expected to perform an important function as an extension agent to his followers in addition to his role as a contact point. (This function may not be very important in the Sri Lankan context at present) This would depend on how motivated he is to perform this role. After some period of time, the KVS visits may become a burden to the contact farmer. Initially he may learn from the KVS, but thereafter he is not benefitted. It may be worthwhile examining the possibility of providing some incentives to the contact farmer. Incentives need not be financial but may be material (such as farm inputs for demonstrations or agricultural reading material). Preferably contact farmers may be rotated annually or biannually so as to avoid one getting preferential treatment, and election by farmers may be preferable to selection by KVS.

The degree of participation of other farmers in the system (through attendance at fortnightly meetings, and through obtaining information from contact farmers) depends on many factors. Primarily it depends on the utility value of information, which in turn depend on the information content and on farmers ability to make use of the information. Farmers perceptions of the utility value of information depends on these. Secondarily the degree of participation expected will depend on such factors as the acceptability of contact farmers, distances involved in travel, committments both agricultural and non agricultural which would demand farmers' time and acceptance or non acceptance of other farmers in the group individually or as a group.

Of the second group of factors acceptability of the contact farmer seems to be the most important. The question that arises in the minds of the farmers is why a particular farmer is selected as the contact farmer. Election of contact farmers could help in overcoming these feelings provided election is carried out in a manner so as not to encourage further splits. Election should be unanimous with mutual consent. Some of the officers interviewed were of the openion that common places, if it is possible to select them, may be more suitable as meeting places than contact farmers' residences.

2.8 SUPERVISION OF KVS VISITS BY AII

On the basis of responses by the AII, these officers, on the average have spent in the last month, 9 days supervising the visits of KVSS and participating in group activities, which works out to 4½ days a fortnight. This is 3½ days

less than the expected 8 days a fortnight for this work. A comparison of the actual time allocation by an AI with the expected time is illustrated below:

Fortnightly work schedule of an AI	Planned programme	Actual based on study
Fortnightly training	1 day	1 day
Discussion/review session with KVSS	1 day	1 day
Other work	2 days	2 days
Field visits, accompanying KVS and participating in group activities	8 days	4½ days
Total	12 days	8½ days

This computation leaves a gap of 3½ days a fortnight unaccounted for. Considering Saturday as a half day, narrows this gap to 2½ days. Taking into account the annual leave entitlement of 42 days and the public holidays, this gap should narrow down further. Considering these limitations one cannot expect AII to spend more than 4 days a fortnight for supervising T & V work and accompanying KVSS on scheduled visits.

Although 8 days are presently allocated for field visits and group activities, the group activities are not clearly defined yet. Two days out of the total of 8 days allocated for this work is expected to be spent on group activities.

2.9 RESEARCH EXTENSION DIALOGUE

It is indeed too early to comment about this aspect as the Regional Research centre which is intended to serve a large part of the district (the wet, semi wet, and semi dry zones) is only being set up presently. Hence it is the Maha-iluppallama research institute which still provides the technical backing to the districts extension programmes. The Batalagoda station specialises on rice breeding.

Among the district staff it is the AOO and SMOO who do communicate with researchers frequently. SMOO do interact with the research staff at the Regional Technical Working Group Meetings, the preparatory meeting and the subsequent meetings. These interactions, although not formally seem to continue even during the season. The Project has considerably improved the mobility of AOO and SMOO, and this had helped in establishing close communicatio between these officers and the research institutions.

The contacts of range AII with the research staff are mostly limited to the time they spent at the in-service training institutions for pre-season and other in-service training. KVSS, on the other hand, seem to have no contact except for occasional meetings at the in-service training institutions, district office or in the field. This aspect needs improvement. The situation would likely to improve with the establishment of the regional research centre.

2.10 UPWARD INFORMATION FLOW FROM FIELD TO RESEARCH

One of the encouraging features of the fortnightly training sessions is the two-way dialogue taking place between the field staff (field KVSS and AII) and the centre staff (SMOO and AO). It has provided a forum for the field staff to discuss technical problems with their colleagues as well as with their supervisors and subject specialists. However, to what extent these ideas are carried to research is questionable, since there is no formal arrangement for communicating these ideas until next season's work is planned.[1] It may be useful if research staff could attend these training sessions at least occasionally. This would give them a first hand analysis of field problems. Probably such a dialogue could be established with the functioning of the Regional Research Centre.

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1 A monthly meeting of SMOO with researchers has been arranged more recently.

PART II

3 ADEQUACY AND SUITABILITY OF RECOMMENDED PRACTICES

3.1 COMPARISON OF EXTENSION SYSTEM RECOMMENDED PRACTICES WITH PRACTICES FOLLOWED BY 'PROGRESSIVE' FARMERS

As a means of assessing the suitability of recommended practices, an attempt is made to compare the components of the package of recommended practices for paddy with the practices followed by a group of 'progressive' farmers. For this purpose, a group of farmers who had performed well in the paddy crop competition of 1979/80 was selected and the cultural practices followed by them were enumerated.

Of the 280 farmers who participated in the paddy crop competition of 1979/80, a group of 28 farmers who had performed well were identified as progressive farmers. In selecting this group, the second decile from the top was taken from a list of farmers arranged according to yields. This method enabled the selection of a group of good farmers leaving out the ones who had performed exceptionally well. Of the selected farmers, 6 were from the dry zone, 8 from the semi-dry zone, 13 from the semi-wet zone and the remaining one from the wet zone.

The question to be examined here is, to what extent these 'progressive' farmers implemented the recommended practices. If they deviated, at what point did they do so and why? and what was the extent of deviation? To find answers to the above questions, it is necessary to examine the cultural practices of these farmers in relation to the recommended practices (see annex 2). In doing so, the socio-economic and situational characteristics of these farmers should be considered, since these could provide explanations for deviations, apart from the very nature of the competition in which the motivation of farmers was to maximise productivity and not to maximise profits.

An assessment of the performance of these farmers reveals exceptionally high levels of adoption of recommended cultivation practices. As the table below reveals, all farmers have used the recommended improved varieties and over 90% (all but 2 farmers) have transplanted their crops. Although the use of

these varieties follows the general pattern observed in the district, transplanting of paddy is not a commonly adopted practice in the district, except in the wet zone belt in the south east of the district. According to the preproject analysis of Kurunegala district in the maha 78/79 season, although a total of 70% of the extent was under new improved varieties, the extent under transplanting was a mere 12.5%.

Table 11 : Adoption of New Improved Varieties of Paddy and Transplanting by the Group of Progressive Farmers

Variety	Number of Farmers Reporting				
	Dry	Semi-dry	Semi-wet	Wet	Total
BG 11 - 11	6	4	3	-	13
BG 34 - 8	-	3*	3	1	7
BG 94 - 1	-	-	4	-	4
BG400 - 1	-	1	1	-	2
BG 34 - 6	-	-	1*	-	1
BG 90 - 2	-	-	1	-	1
					28

(* The two farmers who adopted broadcast sowing were in these groups). Random transplanting was the method of transplanting adopted by all, and none reported transplanting in rows.

The amount of fertilizer used by the progressive farmers was more than double the recommended dosage. Although the number of dressings was the same as the recommended number, higher quantities had been used. The average amounts used in the district, according to the preproject analysis are 117 lbs. and 135 lbs. respectively, in the intermediate and dry zones. This is around two thirds of the recommended dosage. Considerably higher quantities have been used in the wetter areas compared to the drier areas. The actual deviation from the recommended levels of application in the four zones is expressed below :

Dry zone 54% above recommended levels
Semi-dry zone 34% above recommended levels
Semi-wet zone 64% above recommended levels
Wet zone 151% above recommended levels

In terms of productivity, 'progressive' farmers have obtained impressive yields when compared with the average figures for the District for the same season. But their efficiency given the high levels of inputs, is not certain.

Table 12 : A Comparison of Yields of 'Progressive' farmers with Average Figures for Kurunegala District (Maha 1979/80) and Targets Set by Kurunegala Rural Development Project (yields in bushels per acre)

A : 'Progressive' farmers

	Dry	Semi-dry	Semi-wet	Wet	Average
Maha 1979/80	88.9	112.6	110.7	115.0	104.0

B : Average yield of the district

	Major schemes	Minor schemes	Rainfed	Average
Maha 1979/80	63.9	61.6	53.4	58.7

C : Project targets

Major irrigation			Minor irrigation			Rainfed			District total		
P	$\bar{W}$	W	P	$\bar{W}$	W	P	$\bar{W}$	W	P	$\bar{W}$	W
65	68	75	46	50	57	43	47	53	48	52	58

P = Present
$\bar{W}$ = Future without project
W = Future with project

Sources A = Field survey
B = Dept. of Census & Statistics (Agric. Division)
C = Staff Appraisal Report, Kurunegala Rural Development Project, World Bank, March 1979.

In making a judgement about the performances of these farmers, one should consider the socio-economic and situational characteristics which would affect their performances. The main ways by which these farmers deviated from the average conditions in the district are as follow:

a) These farmers were privileged to have assured water conditions, which the majority of farmers in the district do not enjoy.

b) The paddy holdings were above average in size. Of this, only a ½ acre plot was cultivated for the purposes of the competition.
c) These farmers were purposively selected by extension personnel. Thus it is likely that they represent a group of highly skilled farmers.

This analysis however indicates that with sufficient water, higher fertilizer application along with the other components of the package, there is much potential to increase paddy production. However, the objective of the farmers who participated in the competition was to maximise productivity and not to maximise profit. Thus the levels of use of inputs would have exceeded the optimum levels. Hence their performance should be treated only as an indicator of the productivity potential of the presently available package of practices. The motive behind the effort, i.e., to win a prize or to get personal publicity, must have carried these farmers towards the goal. The conclusion one could arrive at is that, at least under assured water supply conditions and especially during maha season, the possibility of achieving a higher productivity through the application of the available package is there. Under such conditions even exceeding the presently recommended levels may be possible.

3.2 THE MECHANISM BY WHICH THE RESEARCH STATION RECOMMENDATIONS PASS ON TO THE EXTENSION SERVICE.

With the introduction of the Agricultural Extension and Adaptive Research Project, a distinct change is being found in the system of carrying messages from research to extension. A committee called Regional Technical Working Group (R.T.W.G.) has been set up to decide on the Research Extension and Training Programmes for the region. It is comprised of Staff of the Regional Research Centre, Regional Training Centre, Assistant Directors, AOO and SMOO of districts in the region.

At the first stage, subject matter officers (SMOO) are expected to prepare a 'working paper' for the Regional Technical Working Group. Their proposals would include:

a) Extension targets and messages to farmers
b) Subjects to be dealt with by adaptive research
c) Training subject matter

As far as the extension part is concerned, this can be considered as the 'gross plan'for the season under reference (yala/maha). In preparing this

plan, SMOO should take into account the problems that they have faced in the previous season (if it is for the next yala, problems of the previous yala) and experiences gained. The proposals are prepared for the major crops and livestock. This preparatory meeting is expected to be held 175 days before the season.[1]

At the second stage, 150 days before season, the R.T.W.G. decides on the seasonal programme for extension, adaptive research and training for the region based on the material prepared by the SMOO.

At the third stage, each district would take up the extension package and work out the more specific programmes relevant to the district varying them according to the agro-ecological regions within the district. This work is expected to be completed 120 days prior to the season. Within 120 and 60 days, the Deputy Director (Extension) or his representative will visit the district and finalise the extension programme.

At the fourth stage, 60 days before the season,the Regional Training Centre will begin to hold pre-season training courses for all AII and KVSS. Training will be held in batches according to zonal and crop variations. For AII, trainers will be research staff of the centre, and for KVSS, training is conducted by the SMOO.

The salient features of the above approach for the preparation of the District extension programme are the following:

a) A close working relationship between research and extension in deciding on the district extension programmes is promoted.
b) A longer time period is made available for the preparation and finalisation of a comprehensive programme.
c) Specific jobs have been entrusted to officers of different grades.
d) More responsibility is given to middle grade technical officers (SMOO) who have close contact with farmers and with field staff in the preparation of the programme.
e) Pre-season training for the entire field staff is included in the programme.
f) In considering subject matter, sufficient attention is being given to practical field level problems.

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1 'Before the season' refers to the day farmers begin to prepare their land for the season's crops.

g) Repetition of this exercise season after season will provide an opportunity of modifying and improving the planning process itself.

The new system appears to be a considerable improvement from the previously prevailing one. However one cannot comment on the functioning of the system as the regional research centre is not fully established yet.

3.3 THE SUITABILITY OF THE RECOMMENDED PRACTICES AND PACKAGES TO VARIOUS CATEGORIES OF FARMERS

An enumeration of the recommended practices and packages has been given late in this paper (see annex 2). It is intended here to examine their relevance to different categories of farmers. However as the major decisive factor concerning paddy cultivation in the district is water, it was felt that consideration of the following two categories of farmers is sufficient for this analysis, i.e., farmers with assured water conditions and farmers with less assured water conditions.

Analysis of the performance of a group of progressive farmers indicated that under conditions of assured water, very high levels of productivity could be achieved with the (over) application of the existing package. However there is no clear evidence of the application of this package to difficult water situation.

As mentioned in section 2.3 in relation to extension messages, most KVSS felt that the messages they carried to farmers were useful to them. Contact farmers too had the same impression about these messages. Furthermore, in an attempt to assess changes in cultivation practices of contact farmers resulting from contacts with KVSS, a substantial number of contact farmers (as high as 50%) reported such changes in a period of two seasons. All these add evidence to the general applicability of the recommendations. However, it must be stated that contact farmers were a special group as discussed in the text.

As discussed earlier, two extension messages, i.e. fertilizer use and pest and disease control, stood out in all instances clearly demonstrating their relevancy in extension work.

As far as the less privileged farmers are concerned, i.e. those farmers farming under less assured water conditions, the applicability of the presently

recommended package is questionable. The problems of these farmers are receiving increasing attention in research, and this tendency should intensify with the establishment of the Regional Research Centre. Concerning the presently made recommendations, the following three subjects seem to be the most promising areas for development. However in relation to this, the available knowledge is not complete and certain gaps remain to be filled.

a) Development and popularisation of short-aged improved varieties and varieties tolerant to drought. As pointed out in the preproject analysis, there is a tendency among farmers to shift from 4-4½ month varieties to 3-3½ month varieties. Short-aged varieties help to minimise the risk involved.

b) Popularisation of the practice of dry sowing early in the season. This practice too is still not popular and farmers usually confine dry sowing to small and medium sized tanks. Farmers tend to minimise risk in two ways, either by early dry sowing adopting a low input technology (in small and medium sized tanks) or by late sowing adopting a relatively high input technology but assuring water availability for maha by waiting till the tanks are full (in large tanks). Due to this reason and due to the fact that traditionally dry sown crops are low yielding (due to the low input technology that is associated with them), there are strong limitations to the popularisation of this practice. Furthermore, the technology of dry sowing is still far from perfect.

c) The popularisation of subsidiary crops in paddy fields in the yala season. This practice is still in its infancy. Experiences under major irrigation schemes in the past have indicated considerable problems (Inputs, technology and marketing) connected with the cultivation of these crops.

SUMMARY AND CONCLUSIONS

1. The farmer:KVS ratios are close to the anticipated target of 600 farm families, and this number did not vary much between zones. However, the size of the KVS range was considerably larger in the drier areas, with the range in the semi-dry zone about three times the size as the wet zone. The AI ranges also varied in the same manner, with an increase in farmer numbers as well.
2. The transport available to the field extension staff (range AII and KVSS) was generally poor. However, over 80% of the KVSS possessed bicycles which should be adequate to meet their travel needs within ranges since most of them were residing either within or very close to their range. Mobility of range AII and KVSS seems to be of particular importance in the drier areas of the district where farmer densities are generally lower, and ranges are larger as a consequence. AII may receive priority over KVSS in provision of transport as well as housing, and those serving in drier areas over others. The project has considerably improved the mobility of central staff (AOO and SMOO).
3. The information dissemination process under the T & V system is dependant on three main steps, namely (1) KVS visiting contact farmers, (2) other farmers participating at contact farmer meetings and (3) contact farmer serving as an extension agent. These in turn are dependent on certain requirements as is illustrated below. Weaknesses connected with these requirements interfere with the functioning of the system.
In the operation of the T & V system in Sri Lanka emphasis is paid to KVSS meeting the farmer group (contact farmer and the associated group) rather than contact farmer serving as an extension agent. This would mean an emphasis to steps 1 and 2, more than to step three.

Steps	Requirements
1. KVS visiting contact farmers.	KVS should be sufficiently motivated: supervision and training could help: availability of transport to the KVS; proper size of the range; manageable farmer numbers.

Steps	Requirements
2. Other farmer participation at contact farmer meetings	Other farmers should be aware of the system (its role and functioning); they should be sufficiently motivated to participate; for this they should feel a need for information; contact farmers should be acceptable.
3. Contact farmer should serve as extension agents.	Contact farmers should be sufficiently motivated; should be capable of performing this role; and should be acceptable as well.

The extent to which these requirements influence performance of extension in the Kurunegala case is discussed in the text.

4. According to the study, KVS-contact farmer links appeared to be strong and visits to contact farmers were regular. The weaker links in the T & V system appeared to be the participation of other farmers (follower farmers) at contact farmer meetings, and links between these farmers and contact farmers (steps 2 and 3 above). Most other farmers were unaware of the system or its manner of operation. It could be estimated that about 30 - 40% of other farmers have attended contact farmer meetings. The regular participation may be even less.
5. Under the T & V system, the information dissemination process is dependent on positive action from the non contact farmer, which is not so under the traditional system of extension. Under the T & V system, the non-contact farmer is expected to attend the contact farmer meetings or go to the contact farmer for information. If not, the contact farmer should be sufficiently motivated to function as an extension agent. This is one of the questions that arises in introducing this system to a difficult farming situation such as that found in the Kurunegala district.
   In areas where no cultivation is undertaken in Yala, operation of the system in this season, poses further questions.
6. The study clearly shows that the contact farmers' position as a source for extension information in the village is still not established, and the KVS remains the principal source of information. It must be added that this is not anticipated in the operation of the system in Sri Lanka. Instead, what is emphasised here is for the KVS to meet farmers in groups, groups lead by contact farmers. Contact farmers operating as extension agents subsequently is considered secondary.

7. Fortnightly training appeared to be the strongest component of the operation of the T & V system in the district. These training sessions are conducted regularly and usually well attended. It appears that these training sessions are having a substantial impact in the qualitative upgrading of extension staff. However their role as a forum for communicating a specific set of extension messages seems to be less effective and less meaningful. Extension staff has suggested more field training as a means of further improving fortnightly training. During discussions, it has been revealed that presently available number of SMOO is inadequate to meet the district's needs effectively.

8. It was observed that extension personnel tend to carry a wide range of extension messages to contact farmer meetings, even though the system is supposed to be more selective and focussed. It has also been observed that message transfer at contact farmer meetings is non-specific (general) in quality. It is possible that the general underdeveloped state and the highly heterogeneous nature of cultivation (both in relation to the type of technology used and the timing of cultivation of operations) do result in a type of demand which is highly variable. It also further leads to the observation that what farmers in a district like Kurunegala need is an overall improvement in knowledge, something more than a package of extension messages.

9. The extension messages recalled by extension staff also indicated that the emphasis in extension is largely directed towards paddy farming. None of the messages were related to coconut or minor export crops, indicating that these activities still are not coming under the purview of general extension.

10. An assessment was made of the non T & V workload of AII and KVSS. It was found that on the average these officers spent 2-2½ days a fortnight on these activities. Of the non T & V activities, work not directly connected with extension tends to make greater demands on the time of AI than on KVSS. Condisering the non T & V workload, the days allocated for training and discussion sessions, the allocation for scheduled visits and group activities, the public holidays and entitlement of leave, the weekly programme of these officers appear to be overcrowded.

11. It may be desirable to redraw extension ranges in the dry and semi-dry zones considering not only the farmer numbers but also the physical features, in particular the size of the range.

12. Contact farmers did not appear to be different from other farmers either economically or socially. There was no evidence of contact farmers being above average in their education. However, a majority belonged to older age groups. There was a qualitative difference in the contact farmer group in that majority farmed under assured water conditions, and hence are farmers who are productive in large part due to advantaged circumstances.

13. An analysis of characteristics of these farmers with their levels of interaction indicates a possibility that status - both social and economic status - plays a part in the role performed by the contact farmers. It is possible that other farmers prefer to have interaction with contact farmers commanding higher social and economic status in the village.

14. Some views have been expressed as means of upgrading interactions at contact farmers meetings as well as for motivating contact farmers to function as extension agents. These include the following.

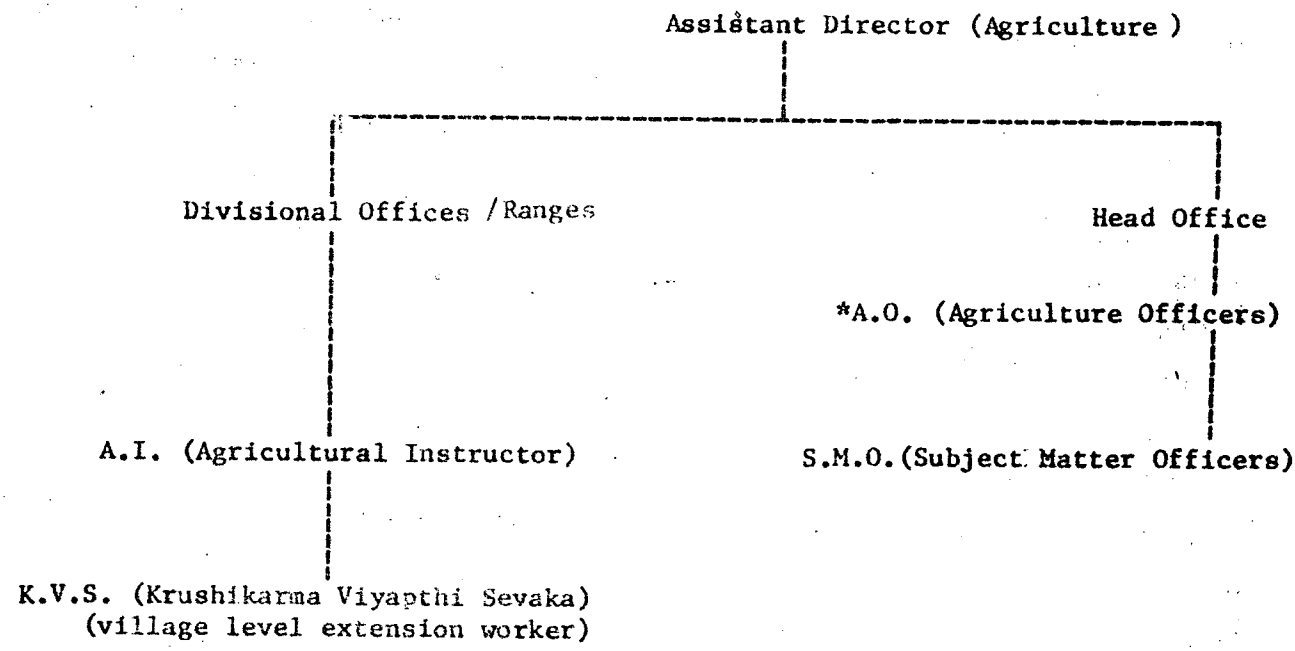
    a) Participation of Cultivation Officer at contact farmer meetings.
    b) Identifying villages as clusters, and within clusters, identifying groups having a common identity. 'Yaya' farmers (those farming in the same tract) may be a suitable group.
    c) Identifying other farmers according to their contact farmer and organising them as a group.
    d) Encouraging participation of other farmers at group meetings through publicity and incentives.
    e) Having a larger group, but devoting more time to each group meeting.
    f) Emphasising overall qualitative upgrading of farmers in addition to the dissemination of selected extension messages.
    g) Election of contact farmers rather than selection, and rotation of contact farmers either annually or biannually.
    h) Arranging occasional meetings of contact farmers.

15. The district staff (AOO and SMOO) do communicate with the research staff frequently, both formally and informally. The contacts of range AII with research staff are limited while KVSS seem to have very little contact. This situation would be likely to improve with the establishment of the regional research centre.

16. The fortnightly training has provided a forum for the field staff to discuss technical problems with their colleagues as well as with their superiors and subject specialists. It may be useful if research staff too could attend these sessions at least occasionally. Such a dialogue could be established with the functioning of the regional research centre.

17. The analysis of the performance of the progressive farmers suggests that under conditions of favourable water supply, very high levels of productivity could be achieved with the (over) application of the presently available package. The fact that the objective of farmers who participated in the competition was to maximise productivity and not to maximise profit means that the levels of usage of inputs by these farmers probably exceeded the optimum levels. Hence their performance should be treated only as an indicator of the productive potential of the presently available package of practices.

Annex 1 : The District Organisation



*Note - Although at present the agriculture officers do operate from the head office, arrangements are being made by the Department of Agriculture to station them in their respective segments.

Annex 2 : Extension Recommendations for Paddy

The recommendations for paddy applicable to the district are based largely on the work carried out at Research Stations of the Department of Agriculture, primarily the Central Rice Breeding Station at Batalagoda and the Agricultural Research Stations at Mahailuppallama and Gannoruwa. The main components of the package of improved practices for paddy include the following.

a) Improved varieties
b) Fertilizer use
c) Weed control
d) Pest control
e) Transplanting

a) Improved Varieties

A number of improved varieties of paddy have been recommended by the Department of Agriculture for Kurunegala District. All these have been developed at the Central Rice Breeding Station at Batalagoda which itself is located in Kurunegala district. The varieties that are recommended for the district are listed below. Generally a high rate of usage of these varieties by farmers has been observed.[1]

Table A : Improved Varieties of Paddy Recommended for the Kurunegala District

Name	Duration
BG 34 - 8	3 months
BG276 - 5	3 "
BG 34 - 6	3½ "
BG 94 - 1	3½ "
BG 90 - 1	4-4½"
BG 90 - 2	4-4½"
BG 11 - 11	4-4½"
BG400 - 1	4-4½"
BG 3 - 5	5-6 "

Source : Agricultural Information Division, Department of Agriculture.

b) Fertilizer

Fertilizer recommendations are made available for different soil types found in the district, and within each soil type, for different variety groups (variety x age) and for different productivity levels. The recommendations for normal soils of Kurunegala district for new improved varieties are as follows:

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1 ARTI (1981) Kurunegala Rural Development Project:An Analysis of the Pre-project Situation.

Table B : Recommended Fertilizers and Quantities for Normal Soils of Kurunegala District

Table B 1 : For new improved varieties
3½ months varieties
3 months varieties

Order of application	Fertilizer	Time of application	QUANTITY TO APPLY IN POUNDS (CWT) PER ACRE According to expected yields 40-60 bushels per acre	Over 60 bushels per acre
Basal	Mixture V_1	At 2nd ploughing or before sowing	168 lbs. (1½ Cwt) Minimum application 112 lbs. (1 Cwt.)	168 lbs. (1½ Cwt.)
First Top Dressing	Urea	2 weeks after sowing	28 lbs. (¼ Cwt.)	28 lbs. (¼ Cwt.)
Second Top Dressing	Top dressing mixture (TDM 1)	3 months Var: 6 weeks after 3½ months Var: 7 weeks after sowing	112 lbs. (1 Cwt.)	112 lbs. (1 Cwt.)
		Total	308 lbs. (2 3/4 Cwt.) or 252 lbs. (2¼ Cwt.)	308 lbs. (2 3/4 Cwt.)

Table B 2 : For new improved varieties
4 - 4½ months varieties
5 - 6 months varieties

Order of application	Fertilizer	Time of application	QUANTITY TO APPLY IN POUNDS (CWT) PER ACRE According to expected yields 40-60 bushels per acre	Over 60 bushels per acre
Basal	Mixture V_1	At 2nd ploughing or before sowing or transplanting	168 lbs. (1½ Cwt.) Minimum application 112 lbs. (1 Cwt.)	168 lbs. (1½ Cwt.)
First Top Dressing	Urea	2 weeks after sowing or transplanting	28 lbs. (¼ Cwt.)	28 lbs. (¼ Cwt.)
Second Top Dressing	Urea	6 weeks after sowing or 4 weeks after transplanting	None	28 lbs. (¼ Cwt.)
Third Top Dressing	Top dressing Mixture (TDM 1)	4 months Var: 10 weeks after sowing or 8 weeks after transplanting 5-6 months Var: 16 weeks after sowing or 14 weeks after transplanting	112 lbs. (1 Cwt.)	112 lbs. (1 Cwt.)
		Total	308 lbs. (2 3/4 Cwt.) or 252 lbs. (2¼ Cwt.)	336 lbs. (3 Cwt.)

c) Weed Control

At least two weedings are recommended, preferably just before each of the first two top dressings of fertilizer. The three ways of controlling weeds are:

i) By manual weeding

ii) Use of rotary weeder (for row sown or row transplanted crops)

iii) By use of weedicides

d) Pest Control

The following pests have been identified as commonly found in the Kurunegala District.

i) Stem borer and gall midge
ii) Leaf eating and leaf-rolling caterpillars
iii) Plant hoppers
iv) Thrips
v) Paddy bug

Pesticides recommendations for the control of these pests are available. Use of pesticides as a preventive measure is not common nor is recommended.

c) Transplanting

Whenever water supply is satisfactory, transplanting is encouraged. The advantage of transplanting results mainly from its effect on weed control.