A STUDY OF INFORMAL FARMING LEADERSHIP PATTERNS IN A TRINIDADIAN COMMUNITY

BY

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Abstract

The purpose of this report is to identify and study the characteristics of informal farming leaders in a community. Informal leaders are those members of the community, who although as individuals they hold no position of official authority, nonetheless, their actions and opinions influence the actions and opinions of several other members of the community.

The community chosen for study was the Land Settlement in the northern section of Maracas Valley, Trinidad. The survey in fact included private farmers in that area as well as farmers on government holdings.

A questionnaire survey of 35 farmers was conducted by the author. The questionnaire comprised questions on the characteristics of the farmers interviewed, and included a sociometric question to find out inter-farmer discussion of agricultural problems. Farmers mentioned by 4 or more people as being problem discussion contacts were selected as informal leaders.

The original 15 farmers were selected at random from a list supplied by the Land Settlement Officer. The rest were obtained from the answer given to the sociometric question. By this method 6 informal leaders were identified amongst the 35 farmers in the survey.

Some characteristics of these informal leaders were compared with the rest of the farmers. The main findings of this comparative study were as follows:

Informal leaders  i) tend to be younger
   ii) tend to have farms of similar size to non-leaders,
   iii) are not more likely to be formal community leaders,
   iv) are more business orientated
v) have a more favourable attitude to education
vi) are more urbanised and cosmopolite
vii) are more innovative than average.
viii) use more sources for first information about new ideas and practices.
ix) rely more on technical extra-community sources than non-leaders.
x) discuss problems with a wider variety of people.

These findings are similar to the findings of several other studies of informal leaders in other moderately progressive farming communities, but differ, in that larger farms are not associated with informal leadership, and in the high importance of local information and discussion sources.
Acknowledgements

First and foremost I should like to thank all those farmers, and in many cases wives as well who assisted me in the carrying out of this survey in Maracas Valley. Their willingness to co-operate and their hospitality made the fieldwork more of a pleasure than a task. Throughout the time that I was carrying out the survey I was continually assisted by both Mr. J. Dhanoolal the Officer, and Mr. C. Dhanoolal the Overseer, at the Government Land Settlement. Their invaluable help is sincerely appreciated.

Dr. M. Singh and Mr. E. Hamilton kindly suggested a suitable area for the survey to be carried out. I am indebted to Professor H.E. Goertz who has provided much helpful criticism and supervision during the writing of this report. I should also like to thank Miss J. Saunders who helped me with the diagrams, and Miss P. Gill who worked untiringly and patiently on the typing.
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INTRODUCTION

The major purpose of this study is to identify the types of farming leaders or farmers in a community, to observe their interactions with personal and agricultural and non-agricultural characteristics compared with other farmers in the community. The results obtained will necessarily only apply to the particular community studied, but by reference to other studies done in other parts of the world it is hoped that interesting comparisons and parallels may be drawn.

The study also provided the author with the opportunity to observe a considerable number of farmers and their neighbors in the Burnham area of North Trinidad where the survey was carried out. These contacts taught the author of the nature of these farmers, their way of life, and their attitudes in general.

Before introducing Narocas Valley in detail, it is first necessary to clarify the meaning of the term leadership generally, and more specifically the meaning of informal leadership as used in the title of this dissertation. It is also necessary to point out why an identification of informal leaders in an agricultural community is of practical use.

2.1 What is Leadership?

Leadership is a vague word which can be, and is, used to mean many different things in different situations. It might be best to see how other people have defined leadership.

Rousseau (1762) defines it as "a complex process whereby a relatively small number of individuals in a community behave as if they affect, or effectively persuade, a change in the lives of a relatively large number of people. A slightly less comprehensive, but a more

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Introduction

1. General Introduction

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The study also provided the author with the opportunity and pleasure of meeting a considerable number of farmers and gardeners in the Maracas Valley area of North Trinidad where the survey was carried out. From these meetings much was learnt of the nature of their agriculture, their way of life, and their attitudes in general.

Before introducing Maracas Valley in detail, it is first necessary to clarify the meaning of the term leadership generally, and more specifically the meaning of informal leadership as used in the title of this dissertation. It is also necessary to point out why an identification of informal leaders in an agricultural community is of practical use.

2. a) What is leadership?

Leadership is a vague word which can be, and is, used to mean many different things in different situations. It might be best to see how other people have defined leadership.

FREEMAN et al. define it as "a complex process whereby a relatively small number of individuals in a collectivity behave so as they effect, or effectively prevent, a change in the lives of a relatively large number of people". A slightly less comprehensive, but a rather
more practical definition is given by BEAL et. al. (1962) in their book Leadership and Dynamic Group Action. "An individual is a leader in any social situation in which his ideas and actions influence the thoughts and behaviour of others."

A leader may be formally recognized by having some form of rank designated to him, or he may hold a position of leadership solely as a result of the high status which he enjoys amongst his peers. The former type of leader may obtain his formal leadership position in several ways. It may be the result of authoritarian, bureaucratic, or democratic processes. The latter type of leader may not even be aware of the leadership function he performs in the group. Although it is quite possible that in a democratic group these leadership qualities may be formalised by the members. For instance amongst a group of farmers he may be elected Chairman of the local Agricultural Society. He then immediately becomes a formalised leader. He may or may not maintain his informal leadership function within the group. A democratic leader evolves out of a group of which he is a part rather than by creating a following of his own. In general a leader of a democratic group is one who epitomizes the values and norms of his group. Consequently in democratic leadership it is often found that formal leaders coincide with informal leaders.

When a population is largely illiterate then the leaders are usually those who are literate. Leaders in any society are those who control by their actions, or influence, the process of change. The situation above is one where the means of change are in the hands of the literate, these, therefore, are the leaders. This is
in effect the Marxian theory of leadership. Although these people are leaders in the formal sense, they comprise an elite and for this reason may have only a limited influence, as opposed to power of control, on the rest of the community. This is not always true however. Take for instance the Kigesi, resettlement scheme in Uganda. (PURSEGLOVE 1951) The essence of this scheme was a voluntary resettlement of many tribespeople in unpopulated areas away from the present overcrowded settlement area. The Agricultural Officer concerned spent 18 months convincing the senior chiefs that resettlement was in the interests of the people. Once convinced the chiefs wholeheartedly supported the plan, and although the movement to new areas was completely voluntary many people moved. This is a case in which formal leaders were also natural leaders. Apart from power they also had influence.

It has been established therefore that leadership can be roughly divided into two categories, formal, and informal. Formal leadership is recognized by some form of rank and is institutionalized. Informal leadership is not institutionalized and informal leaders have no official power, they have however much influence over their peers. Informal leaders may or may not appreciate that they are leaders. Some formal leaders may also have an informal leadership function, this is more likely but not exclusively, to be found in formal democratic leadership.

In this study we are concerned with informal leaders, that is those farmers in the community who although they may hold no official position of leadership in the community, nonetheless, their ideas and actions influence the thought and behaviour of other farmers. Being a person of high status is a necessary prerequisite
for informal leadership in any particular community. However the determinants of high status vary depending on the nature of the individual community norms. These norms may be progressive i.e. the community is favourable to change, here informal leaders are likely to be those people whose ideas and actions move a little ahead of the main population. Or the norms may be static, in this case there is a strong desire to maintain the community as it is. The informal leaders are likely to be those who most strongly conform to the traditional values of the community. As an example (MEAD 1955) consider a traditional rural community in Burma. Here a high status is achieved not by being rich, but by giving away one's wealth, not by inheritance from high status parents but by what one does in one's own life. High status is thus achieved, by following traditional customs and mores and by doing good deeds. Recently western influence has upset these traditional values of the community and a new set of norms has to be built up.

The characteristics of informal leaders will differ in different communities; it is interesting to know how and to what extent they differ and to study what similarities may exist.

2. b) Why is it useful to be able to identify informal leaders?

The identification of informal farming leaders is not simply an academic exercise. In agricultural extension work knowing who the leaders are is of important practical value. An extension worker is a change agent, he specialises in a particular form of change; that is, planned change in which the goal setting is a mutual operation between the client and the change agent. An extension worker does not coerce people or indoctrinate people into making change. He should, however, be able
to recognize what change is most advantageous for his clients, and then convince them to make this change. The decision is the client's. If an extension worker can identify the informal leaders in a community, he, knowing that their ideas and actions are well respected and followed, should be able to use these people in effecting desired changes. If he can convince the leaders of the value of change then it is likely that the rest of the community will follow. An example of this was given earlier when the Kigesi resettlement scheme was discussed.

In any community development work, an obvious way of getting change is by obtaining the support of the community leaders (BATTEY 1957). One problem that arises especially in traditional communities is that informal leaders are very often most strongly identified with existing customs, and are very resistant to change. This makes the extension workers job more difficult. He may decide to persevere and try to get these leaders to accept change. Or he may decide to try and look for potential leaders not so resistant to change, and use these people. Whatever he does it is useful for him to know who the informal leaders are.

One important part of community development is the emergence of local leaders who can carry on with the project after its initial formation. These leaders must be given responsibility at an early stage in the project. It is essential that responsibility is given to the right people.

In general agricultural extension work it is almost impossible for the extension worker to have intimate contact with all of the farmers for whom he is responsible. Usually the pure weight of numbers of farmers involved prohibits this. Even when this is not the case, the
personalities of both the farmers, and the extension worker, make it unlikely that he will be on intimate terms with all the farmers. Identifying leaders can relieve the burden of work from the extension worker, and help him to be more effective. The so called 'two step' hypothesis of flow of information is now a well established concept. It was originated by Lazarsfeld in his study of the use of mass media in the 1940 United States of America presidential election campaign. In the agricultural context it can be used like this. Innovations (changes) spread from sources of new ideas (e.g. research stations) via relevant channels (e.g. extension workers) to opinion leaders (informal leaders) and from them by way of personal communication channels to their followers. This is an oversimplification of the theory but the general principle of the idea is useful.

Hence by identifying and using informal leaders an extension worker can more effectively carry out his work.

It is hoped that the above has clarified the meaning of leadership and the reason why an identification of informal leaders is a useful exercise. This report attempts to determine:

a) Who are the informal farming leaders in a community?

b) What are the characteristics of these informal farming leaders?

3. The place of study.

After some deliberation it was eventually decided that the study should be based on the Maracas Valley Land Settlement. This area was chosen because it was quite close to the University and because it was thought that a land settlement would be a fairly homogenous community. It was subsequently found necessary to include farmers not
FIGURE 1.
MAP OF NORTHERN SECTION OF MARACAS VALLEY.
actually on the land settlement in the survey.

Maracas valley is a long narrow valley stretching northwards into the northern range of mountains. (Fig. 1) At its southern end is St. Joseph the original capital of Trinidad, and beyond the valley to the north is the peak of El Tucuche, the second highest mountain in Trinidad. The valley is about seven miles long. Near the northern end the valley splits into two branches; it is in this area that the survey was carried out. The valley is bounded on all sides, except the south, by steep sloped forested hills and mountains. The only metalled road out of the valley is through the southern opening. The valley floor ranges in altitude from about 100 ft above sea level at the southern end to around 500 ft in the north.

The Climate.

Annual rainfall in Maracas valley is about 90 inches, and mean annual temperature is around 75 degrees F. Night temperatures especially in the dry season are quite low. Maracas is usually cooler than nearby parts of Trinidad outside the valley. This is probably a result of the high forested hills which almost enclose it.

The Soils.

The valley bottom is predominantly River Estate and St. Joseph series. These are similar alluvial soils: clay loams of moderate fertility, with a tendency to crust at the surface. The slopes mainly comprise Maracas and Malelot series. These are fine sand loams with a very low fertility status, especially in phosphorus, they also have a tendency to crust on the surface.

The History of the Valley.

Maracas Valley was settled at an early date by Spanish and French colonisers. Evidence of this is provided by some of the older buildings and by long abandoned settle-
ments high in the forest. St. Joseph was the original capital of Trinidad, and Maracas Valley was on the direct route from there to the port at Las Cuevas on the north coast. This port was fortified and was an important source of supplies, including fish; it was also a potential escape route for the settlers.

The early colonisers probably had small holdings, and used the valuable forest trees for timber. Hunting of deer, agouti, and manikou which were abundant in the forest was probably an important pastime.

Later on large estates mainly of cocoa, coffee, and citrus were established. The slaves on these estates often had their own gardens. Later still freed labourers from the sugar estates were able to buy virgin forest land at 24 cents per acre and several smaller estates were established. Low prices for cocoa, and the attractions of Urban life caused the abandonment of many of the larger estates in the valley.

The history of the land settlement.

The land settlement scheme in Maracas was begun shortly after the second world war, its main aim was to provide land for ex-servicemen. This land was provided by the division of two large cocoa estates, which the government had bought, into small units. Applicants for land, if accepted, were given holdings of approximately 5 acres of cultivated land for a probationary period. No agricultural training was given, but during the probationary period the farmers were required to follow a programme of work drawn up by the government. At the end of this period, which was a minimum of one year, those farmers who had followed the plan of work satisfactorily were given a 25 year lease on the holding, with an option for
renewal at the end of this period. There are 216 government holdings, but slightly less leaseholders because some have more than one holding. Many farmers have increased the size of their holding by acquiring uncultivated lands. The main cropping system in the early days was tree crops and provisions. Bananas, plantains and root crops might be established first, and these followed by more permanent tree crops such as cocoa, coffee, citrus, tonca bean, avacado pears, and mangoes.

The land settlement totals 3000 acres in all. There is a Land Settlement officer responsible for the farmers on the holdings. In addition to farmers on government holdings there are a considerable number of farmers in the area owning or renting private lands. These farmers are the responsibility of the extension officer for the Tacarigua area. But because he has many farmers outside the valley in his area there is considerable contact between the Land Settlement Officer and these private farmers.

The agriculture now.

Although on many of the government holdings the original cropping system is still used, some farmers now have substantial pig and poultry enterprises supplementing their cropping system, and in some cases almost completely superseding it. Large private farms tend to be either tree crop estates, or livestock enterprises. Some horticulture is practised, usually vegetables or ground provisions. The majority of this is done by people renting private lands, or using others peoples holdings, or by people 'making gardens' in the forest on Crown lands.
Clubs, Societies and Religions.

There are two agricultural credit societies in Maracas, and four village councils. Although there is no branch of the Agricultural society of Trinidad and Tobago in Maracas several farmers belong to the national organisation. There are several sports clubs, and religious groups. The major religion in the area is Roman Catholicism. There are some Anglicans and Presbyterians, and a few members of several other religious groups.

This section has given a brief introduction to the place where the survey was carried out.
This report is concerned with the identification of leaders and a study of their characteristics. In order to introduce the subject of leadership properly, it has been necessary to include a certain amount of literature review in the general introduction. This has enabled the author to explain the meaning of leadership; to show how an identification of informal leaders can be useful, and hence justify the carrying out of the study.

This review will concentrate on literature directly connected with the identification of, and characteristics of, leaders. It will be in three sections.

1. Methods of identifying leaders.
2. Characteristics of informal leaders
3. West Indian studies of leadership.

Methods of Identifying Leaders.

ROGERS (1962) cites three different methods of measuring leadership.

1. Sociometric Techniques
2. Key Informants
3. The Self Designating Technique.

He says the first method, i.e. sociometry is probably more applicable to a research design where all members of a social system are interviewed. Key informants are subjectively chosen members of a social system who are likely to be able to identify the opinion leaders in that social system. The use of key informants has the advantage of timesaving, when compared with a sociometric method. It has the apparent disadvantage of being a subjective opinion, rather than an objective analysis, both in the choice of key informants and in their identification of leaders.

The third method, which ROGERS terms the "self designation method", consists of asking respondents a
a series of questions to determine the degree to which they perceive themselves to be opinion leaders. This method is dependent on the accuracy with which the respondents can identify and report their self images. He has found this method to be effective and time saving.

ALBANESI (1963) compared the efficiency of three methods for determining leaders, in a rural community of sixty small farmers in Costa Rica. His three methods were:

1. Questions to Public Authorities.
2. Use of judges - (similar to key informants)
3. Sociometry

He found that all three methods were similar in results and effectiveness but that sociometry was least efficient in terms of the time spent.

ROGERS reports sociometry to be the method which has been used most frequently in the past for the identification of leaders. Researchers using sociometric techniques included LIONBERGER (1953), WILKENING (1952 and 1958), ROGERS (1955) and SHEPPARD (1960). There are limited references available on the advantages and disadvantages of various methods of identifying leaders.

Characteristics of Informal Leaders.

There have been a large number of studies on the identification of farming leaders and a high percentage of these in the United States of America. ROGERS (1962) used the term 'opinion leaders' to refer to individuals who are influential in approving new ideas. He also listed the various leadership terms used by other workers in this field. The following are a few:

- Key Communicators (LIONBERGER 1960 p 55)
- Informal Leaders (WILKENING 1952)
- Fashion Leaders (KATZ and LAZARSFEID 1955)
Local Influentials (LIONBERGER 1953)
Influencers (EMERY and OESER 1958 p. 48)
All these terms refer to the same basic dimension, opinion leadership.

EMERY and OESER (1958) questioning a number of farmers in an Australian community found that there was a small proportion of farmers who were mentioned by many other farmers as being useful people with whom to discuss their farming problems. EMERY and OESER called these people of high local prestige 'influencers'. They went on to define some of their common characteristics. These farmers did not differ from non-influencers in background or in their use of mass media. They had a significantly larger scale of production (measured by the number of sheep they owned) and were more likely to have a close or moderately close contact with the local extension officer. The authors found that the three most influential farmers, i.e. those with the most mentions from other farmers as being useful people with whom to discuss problems, were innovators. Innovators are those farmers who first adopt new ideas and practices, defined for the sake of convenience as the first 2½% of farmers to adopt a new idea or practice (ROGERS and BEAL 1958).

Adopter categorization on the basis of relative time of adoption of innovations

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<td>Innovators</td>
<td>Early adopters</td>
</tr>
<tr>
<td>M-2d</td>
<td>M-d</td>
</tr>
<tr>
<td>2½%</td>
<td>13½%</td>
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Time of adoption of Innovations

M= Mean
d= standard deviation
The three most influential farmers were also found by EMERY and OESER to be capable of "conceptualising the interrelatedness of complex operations on a farm." Or, in other words, treated their farm as a business.

In a Canadian study (ABELL 1953) on the exchange of farming information it was found that those farmers who said that they had passed on farming ideas to other farmers, within a short period of time preceding the study, made use of significantly more sources of farming information, than those farmers who said that they had not passed on any new farming ideas.

LIONBERGER (1960) gives an interesting review of "special functionaries in diffusion." He classifies innovators, key communicators, influentials and sceptics as being these special functionaries. He denoted key communicators as persons who are more important in the communication of information than others. He goes on to say that they have also been called 'opinion leaders', 'local leaders', 'adoption leaders', and 'informal leaders'. The usual method of identifying them is by their mention by other farmers as sources of farm information. WILKENING (1952) required two mentions, LIONBERGER(1953) required five mentions. LIONBERGER'S key communicators, therefore, correspond to other researchers concepts of informal leaders. However, LIONBERGER goes on to define influentials as "those people who are important in legitimizing various new ideas"—an important informal leadership function. Innovators are defined as the first people to introduce new ideas or practices, and sceptics defined as those people slow to adopt new ideas or practices and who insist on more than average evidence of acceptability.

It is found that in more progressive communities
the characteristics of influentials and key communicators are similar. Since LIONBERGER himself relates his key communicators to other peoples 'opinion leaders'; 'informal leaders' and so forth, the characteristics of this group are described here.

The characteristics of key communicators as defined by LIONBERGER are found to vary depending on the community. In communities where a premium is placed on rapid successful adoption of new practices, key communicators are likely to be much more receptive to new ideas, more prone to change, and more inclined to use direct information sources e.g. research stations, and mass media. They are likely to have higher incomes, higher prestige, and be better educated. WILKENING (1952) in a North Carolina study of a fairly backward community found that local leaders tended to reflect the traditional values of the community studied. The result of this was that they were only marginally more innovative than the average community member. They were definitely not the most innovative members of the community.

ROGERS (1962) synthesised the research evidence from several investigations of 'opinion leadership'. He shows that the dichotomy between leaders and non-leaders is not, in fact, a simple one and that leadership is a matter of degree. He oversimplifies for the sake of clarity and classifies leader characteristics as follows.

1. Conformity to Norms

"Opinion leaders conform more closely to social system norms than the average member."
In a progressive community where innovation is favoured, this is reflected by innovative opinion leaders. In traditional communities where innovation is discouraged opinion leaders
are less innovative, but even so are usually slightly more innovative than average.

2. Lack of Overlap

The majority of research findings indicated that there is little overlapping among the different types of opinion leaders. An opinion leader in for instance, adoption of farming practices, is unlikely to be a leader in political matters.

However there are indications that in more traditional societies there tends to be more overlapping of leadership functions. This may be the result of there not being a role separation in more traditional society. Whereas in more developed society there is a considerable seperation of roles. There is little evidence to show whether or not opinion leaders for one farming innovation are opinion leaders for another farming innovation.

Opinion leaders differ from their followers in a number of ways. ROGERS again synthesises research results.

1. Information Sources

"Opinion leaders use more impersonal, technically accurate and cosmopolite sources of information than their followers."

2. Cosmopolitanism

"Opinion leaders are more cosmopolite than their followers." (LIONBERGER (1953) found that his opinion leaders tended to belong to formal organisations located outside rather than inside their Missouri Community.) Opinion leaders tend to have more links with the outside
world, including urban ones.

3. **Social Participation**

"Opinion leaders have more social participation than their followers." However they are not necessarily the formal leaders in their community.

4. **Social Status**

"Opinion leaders have higher social status than their followers." Although higher in social status, opinion leaders are not usually of very greatly different social status than their followers. Opinion leaders tend to have larger farms and higher farm incomes than their followers. Farm size and farm income were status determinants in the communities studied.

Summarising the characteristics observed by various researchers, it is found that opinion leaders tend to be of a higher social status, with larger farms and higher incomes than average. Although they are more cosmopolite and participate socially more than their followers, they are not always formal leaders in the community, and are usually opinion leaders only in one sphere of activity. But in traditional society leaders are more likely to be leaders in several fields.

They tend to be more business minded, better educated, and make use of a larger number in information sources, especially those which are of a direct and technical nature.

Opinion leaders conform to the norms of the community, but they are likely to be more innovative than the average community member. This trait is especially marked in progressive communities which favour innovation.
In the West Indies, leadership studies, per se, are very limited in number. However there are a number of studies where the question of leadership arises either directly or indirectly. NEGUS (1964), in his study of factors influencing the adoption of improved practices by vegetable growers at Aranguez estate, Trinidad, emphasised the importance of inter-gardener discussion as a factor responsible for the spread of new ideas and practices.

He identified three gardeners as being particularly progressive, and who were also frequently mentioned, as sources of information by other gardeners. He reviewed their common characteristics as follows:

a) All are willing to give advice to any gardener requesting help.

b) All are convinced of the need for co-operative buying and selling by the gardeners.

c) All have served on the committee of Aranguez Agricultural Society.

d) All have won prizes in the Agricultural Society vegetable growing competition.

e) All have contacts with the Department of Agriculture, the University, and the management of the main agricultural suppliers.

f) All make good use of the available mass media of communication.

g) All try out new ideas on their own gardens, before recommending them to other gardeners, and thus serve the dual function of innovators and influentials.

NEGUS points out the advantages that a change agent can derive by using these leaders in an extension programme.
However MACMILLAN (1967) in another study on Aranguez reports that these three progressive gardeners were not in fact very influential in the community as a whole. He found that a formal questionnaire approach to determine leadership patterns proved to be fruitless. The Aranguez leadership structure is complex, and leadership loyalty low. MACMILLAN gives a fascinating account of the subjective choosing of leaders to serve on a council. The purpose of this council being to organise the establishment and running of a vegetable buying centre. The subsequent failure of this vegetable buying centre mainly resulted from the problems of identifying and choosing suitable leaders to serve on the council.

MACMILLAN noted that considerable respect was afforded to certain of the well established, less vociferous, large gardeners by the rest of the community.

EDWARDS (1961) in a study of small farmers in Jamaica has a section on the communication of ideas from one farmer to another. He mentions that three farmers had learnt about peanut cultivation from other farmers. The farmers sought for information were said to be well informed, and prepared to give sound advice, by those who sought information from them.

Further work done in Jamaica (BLAUT et al. 1962) on the cultural determinants of soil erosion and conservation in the Blue Mountains, showed that the formal leaders in the community i.e. Catholic priest and Catholic lay teachers had a very limited influence in farming matters. The authors of the study noted the absence of "one universally important element in acceptance of development programmes: active farm leaders whose farming practice is imitated by others." It was found that informal and formal groupings centre around people unlikely to lead in
the direction of improved methods. There were isolated instances of progressive farmers but these people were only influential in their own small reference group. They were not leaders in the community as a whole.

This literature review has covered the various methods of identifying farming leaders, the characteristics of farming leaders, and work done in the West Indies on farming leaders.
METHODOLOGY OF STUDY

The main problem was to precisely identify leaders. It was felt that a simple game of sociometry, well suited.

Sociometry, originally developed by a psychologist, for the therapeutic treatment of groups. The sociometric test in its main form consists a subject choosing one or more associates to work with, as an activity organized by a group leader. Since its introduction and general use, it has been used as a method of identifying leaders in a number of fields, and especially in the field of sociology. Sociometry can also be used as a means for determining the degree to which individuals are accepted as a group, for discovering the relationships which exist among these individuals, and for analyzing the structure of the group as a whole.

One of the advantages of sociometry is the simplicity of its results and its accuracy. Only need observe and note the names of a group and see if any of them they would select to be their leader. From the answer to this question one can build on a cornerstone, which aligns.
**Methodology of Study**

Once it was determined that the report should be on the identification of informal leaders, and should be carried out in the Maracas Valley, it was decided that a survey questionnaire conducted, in person, by the author was the best method of obtaining the desired information. The main problem was to positively identify the leaders. It was felt that a simple type of sociometric analysis would be most suitable.

Sociometry was originally developed by a psychiatrist, (in 1934) J.L. Moreno, for the therapeutic treatment of groups. The sociometric test in its basic form consists of a subject choosing one or more associates to share with him an activity important to his group. Since its original use in psychiatry, sociometry has been used as a method of identifying leaders in a number of fields, one of these has been rural sociology. Sociometry can also be used as a means for determining the degree to which individuals are accepted in a group, for discovering the relationships which exist among these individuals, and for disclosing the structure of the groups as a whole. (Beal et. al. 1962).

One of the advantages of sociometry is the simplicity with which it can be carried out. One could simply ask all the members of a group which one of them they would choose to be their leader. From the answer to this question, one could build up a sociogram, which might look something like this:
From this diagram, where each arrow points to a person's choice for leader, it is seen that number 3 is most popular choice, whilst there is also some demand for number 8.

By incorporating a similar sort of question into the questionnaire given to the farmers the author was able to construct a sociogram of this nature.

Because of the limited time available it was not possible to interview all the farmers in the area. There are 216 government holdings, and in addition to this there are a considerable number of farmers either owning or renting private lands. Nor would it have been useful in this study to simply take a representative sample of farmers and interview them. It was eventually decided to take a small sample of farmers to begin with and give them the questionnaire. These farmers were randomly selected from a list provided by the Land Settlement Officer. The first five farmers interviewed were in fact a pre-testing of the questionnaire, but since it was found that the questionnaire was satisfactory they were included in the analysis. 15 farmers were originally selected. 14 of the 15 were subsequently interviewed. The sociometric test question was as follows: "Could you please tell me which of the farmers in this community you discuss agricultural matters with most often?". Farmers were invited to give the names of one or more people in reply to this question. From the names given by the 14 original farmers who answered the questionnaire a further number of farmers for interview were obtained. This procedure was continued until 35 farmers had been visited and interviewed. The one farmer in the original selection of 15 who refused to be interviewed was replaced by another from the Land Settlement Officers list. This was the only refusal encountered during the survey.
The usual procedure for interviewing farmers was as follows: first there was an introductory meeting with the farmer, on which occasion the author was accompanied by the Land Settlement Officer or the caretaker from the land settlement. The purpose of the study was explained and a brief outline of the content of the questionnaire given. If the farmer was willing to be interviewed a further meeting was arranged at a time convenient for the farmer. At the second meeting the questionnaire was given and wherever possible this was followed by a walk around the farmers holding to see his crops and/or his livestock. Sometimes the visit to the holding preceded the formal questionnaire, the advantage of this method was that it helped to establish rapport between the farmer and the interviewer. On an average the questionnaire took about 3/4 of an hour to complete but the time for individual interviews ranged from about 1/2 an hour to over 3 hours. Before the questionnaire was given the farmers were warned that they might find some of the questions a little personal, and if they did so to refuse to answer them. None of the 35 farmers refused to answer any question, and none said they found the questions in any way unacceptable.

The questionnaire was in six sections (Appendix 1) and comprised 47 questions in all. The author was a little apprehensive about having fairly personal questions on age and religion early on in the questionnaire, but felt this was justified because it helped in the logical build up of information sought. These apprehensions proved to be quite unjustified. As soon as the interview was completed the questionnaire was checked for accuracy and completeness.

Introductory work in Maracas was carried out in January. The survey itself took most of February and March to complete. The data was analysed during April.
ANALYSIS OF DATA

In order to obtain meaningful data for the identification and characterization of informal farming leaders it was necessary to interview farmers. The completed questionnaires from these interviews were analyzed. The analysis is presented in the following order: communication of informal leaders, the statistical technique, the experience of informal leaders, with other farmers and respondents on the length of time they have been farming, at the length of time they have been on their present farm, d) their culture, e) the number of children they have, f) their age at leaving school, g) their tribal membership, as indicated by the head of household in school and occupation, h) perception of personal experience and other factors on the influence of informal leaders.

ANALYSIS OF DATA
Analysis of Data

In order to obtain meaningful data on the identification and characteristics of informal farming leaders it was necessary to interview 35 farmers. The completed questionnaires from these interviews were analysed. This analysis will be dealt with in the following order,

1. The identification of informal leaders, the sociometric technique.

2. Comparison of informal leaders, with other farmers with respect to:
   a) their ages,
   b) the length of time they have been farming,
   c) the length of time they have been on their present farm,
   d) their acreage,
   e) the number of children they have,
   f) their age on leaving school,
   g) their formal leadership - as indicated by official positions held in clubs and societies.

3. A comparison of informal leaders with other farmers on four characteristic aggregates.
   a) Business orientation
   b) Education attitude
   c) Use of mass media
   d) Degree of urban/cosmpolitan influence.

4. A correlation study of the above four aggregate characteristics for all farmers in the survey.

5. A study of informal leaders as innovators, how do they compare with other farmers?

6. A comparison of informal leaders with other farmers with respect to their sources of new ideas and practices; including overall use and relative importance of,
various information sources. This section will include more general information on use of mass media and other information sources for all farmers.

7. A comparison of informal leaders with other farmers with respect to the discussion of farming problems.

8. A study of the specificity or otherwise of informal leaders, some factors controlling the determination of informal leaders and their referees.

9. An observation of the relative numbers of part-time and full-time farmers acting as informal leaders and non-leaders. A brief comparative study of full and part-time farmers.

10. A summary of characteristics of informal leaders.

1. The Identification of Informal Leaders

The sociometric technique was used to identify farmers who were informal leaders. The use of this method was justified since it was necessary to interview all the farmers anyway so no extra work was involved in asking a single sociometric question in the interview. In addition to this sociometry also determined which farmers should be interviewed. Informal leadership operates by degrees, but it was decided that for the purpose of this study informal leaders should be those farmers who received four or more mentions, as being people with whom farming problems were discussed. The number, 4, was chosen on the basis of other studies, and decided upon, before the analysis in order to avoid interviewer bias.

The completed sociogram is shown in figure 2. Each circle represents a farmer, and each arrow a mention. Where arrows do not lead to a circle it means that the farmer mentioned was not interviewed, these mentions were
FIGURE 2.
SOCIGRAM TO SHOW INTER-FARMER DISCUSSION OF PROBLEMS.
made by farmers interviewed towards the end of the survey. It can be seen that there are 6 informal leaders amongst the 35 farmers interviewed. One farmer has 8 mentions, 3 have 5 mentions and 2 have 4 mentions.

There are 5 more farmers each with 3 mentions, these might be termed sub-leaders, but no analysis of these farmers is made in this report.

A sociometric question to determine friendship patterns showed that friendship often corresponded with discussion of farming problems, again no detailed analysis was made on this subject.

After identifying the informal leaders, they were then compared, as a group, with all the other farmers interviewed. This comparison was for a number of characteristics.

2. Comparison of Leader Farmers with all other Farmers with respect to:

a) Their ages

A 't' test comparison of the mean ages of the two groups of farmers was made (Appendix 2b). This showed that leader farmers were younger than non-leader farmers (significant at the 10% level). The mean age of leader farmers was 50 years and non-leader farmers 55.8 years.

b and c) A comparison of the lengths of time farming, both total and on the present farm, showed little difference between informal leaders and non-leaders. The mean time lengths for both groups are shown in table 1.

<table>
<thead>
<tr>
<th></th>
<th>total length of time farming</th>
<th>time farming present farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal leaders</td>
<td>26.7 years</td>
<td>14.5 years</td>
</tr>
<tr>
<td>non-leaders</td>
<td>24.4 years</td>
<td>14.1 years</td>
</tr>
</tbody>
</table>

N = sample size
d) Acreage comparison

Informal leaders were found to have a mean farm size slightly smaller than non-leaders.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>mean farm size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal leaders (6)</td>
<td>11.3 acres</td>
</tr>
<tr>
<td>non-leaders (29)</td>
<td>13.6 acres</td>
</tr>
</tbody>
</table>

It is interesting to note that none of the larger farmers (over 50 acres) owning private land was an informal leader. If the two largest private farms are left out of the analysis the mean farm size of non-leader farmers is reduced to 8.45 acres. However informal leaders' farms were not appreciably larger than non-leaders' farms even after this exclusion.

e) A comparison of the number of children in the family.

Mean family size for non-leaders was 5.2 and for informal leaders 4.8. The difference between these values is statistically unimportant.

f) Age of leaving school

The mean age of leaving school for informal leader farmers was 15 years, whilst for non-leader farmers it was 13.8 years. This difference is not large enough to be statistically important.

g) Formal leadership— as indicated by positions of authority in societies, or clubs directly involved with the community in Maracas.

It was found that 2 out of 6 of the leader farmers, and 6 out of 29 non-leader farmers held positions of authority in local organisations. Although statistical analysis is not possible because of the small numbers
involved, it would appear that there is little difference in formal leadership level between informal leaders and non-leader farmers.

3. A Comparison of Informal Leaders with other Farmers on Four Characteristic Aggregates

The components of these four aggregates and the scoring method is shown in Appendices 3a and 3b.

a) The first of these categories was termed business orientation. This section was an attempt to score farmers on the extent to which they considered their farm as a business. People who had visited experimental stations and demonstration farms, who kept records, and who stated their most pressing problem to be a managerial one, e.g. marketing or availability of capital, had a high score in this category.

A 't' test comparison of mean scores for informal leader farmers with non-leader farmers showed that leader farmers were more business orientated than non-leader farmers. This was significant at the 1% confidence level. (Appendix 4a).

One of the components of this section was record keeping. 5 out of the 6 informal leader farmers kept records, while only 7 of the 29 non-leader farmers kept them.

b) The second category of scoring was for education orientation. This was an amalgam of formal education received by the farmer, and his attitude to education generally. A high score was gained by people with more formal education themselves, and a favourable attitude towards education for their children. Very few farmers had had formal agricultural education of any kind, and most of this formal education had been in the form of seminars. Residential week long seminars are run by
the Government for farmers at the Eastern Caribbean Farm
Institute. There are also weekend seminars at St. Anne's
education community workshop. These seminars comprise
lecture courses and field trips.

Leader farmers were found to have a significantly higher
score for education orientation than non-leader farmers
(see Appendix 4b). The difference was significant at the
2% confidence level.

c) The third section was a comparison of the use made
of mass media by leader and non-leader farmers. Although
informal leader farmers made more use of mass media than
non-leader farmers a 't' test comparison of mean scores
for the two groups was not significant at the 5% level
(Appendix 4c).

d) The final characteristic aggregate was termed
urbanisation and cosmopolite index. This was a measure
of the farmers experience outside farming, and outside
the community. The above included the influence which his
childrens' extra-community experience might have had upon
him. Leader farmers were significantly higher in urban-
isation and cosmopolitanism than non-leader farmers (signi-
ificant at the 5% confidence level). (Appendix 4d).

4. A study of the Correlation of these Four
Aggregate Characteristics for all Farmers in
the survey

The purpose of this correlation analysis was to see
to what extent one of these characters was related to
another. If a high correlation were to be found between
any or all of these characteristics, it could be useful
for an extension worker using informal leaders. Supposing,
for instance, there is a high positive correlation between
use of mass media and business orientation, then an
extension worker who knows that his leaders are business orientated could use mass media techniques effectively with these leaders, or with any one else known to be business orientated.

The scores for all the farmers in the survey were correlated with each other for all four characteristics. The correlation coefficient $r$ was found for each pair of characters. For instance there is a positive correlation of $+0.5259$ between business orientation and use of mass media. The results are shown in table 3.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Business Orientation</th>
<th>Education Attitude</th>
<th>Mass Media use</th>
<th>Urbanisation/Cosmopolite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Orientation</td>
<td>x</td>
<td>+0.3310</td>
<td>+0.5259</td>
<td>+0.3266</td>
</tr>
<tr>
<td>Education Attitude</td>
<td>x</td>
<td>x</td>
<td>+0.4013</td>
<td>+0.5134</td>
</tr>
<tr>
<td>Mass Media use</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>+0.4233</td>
</tr>
<tr>
<td>Urbanisation/Cosmopolite</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Table 4 shows the percentage significant levels of the $r$ values in table 3. All four aggregate characteristics are positively correlated with each other. There are 33 Degrees of freedom. (Degrees of Freedom = number in sample − 2 = 35−2).
It is seen that there is a positive correlation between all pairs of characteristics, this is especially high for the pairs:

Education attitude– urbanisation/cosmopolite index,
business orientation– mass media use,
urbanisation/cosmopolite index– mass media.

5. A study of informal leaders as innovators

One question in the survey asked how long farmers had been using a number of farming practices. The purpose of this question was to find out how innovative farmers were, to identify innovators, and to see to what extent innovators and informal leaders were the same people. If innovators are the first $2\frac{1}{2}\%$ of farmers to adopt new ideas and practices then in a survey of 35 farmers, one would normally only expect to find one or two innovators at the most.

This section of the survey proved to be a difficult part of the study. Consequently the results are inconclusive and inadequate. However it is worthwhile to go into some of the problems encountered, and make some tentative suggestions from the limited results obtained,
if merely for the sake of pointing out some of the shortcomings of the technique used.

There were several problems presented. The first problem as has already been mentioned, is the small number of innovators likely to be found in a survey of this size. Secondly it was difficult to choose suitable practices as a measure of innovativeness. This problem was heightened by the varied enterprises of the farmers interviewed. Thirdly farmers were required to remember how long they had been using various practices; since this was several years in some cases, the accuracy of the answers is doubtful.

In the first instance five practices were chosen:
1. The use of fertilizers (salts)
2. The use of herbicides and or insecticides in a spray form.
3. The marketing of goods through the Central Marketing Agency.
4. The use of land conservation techniques.
5. The use of a bait method for the control of leaf cutting bachac ants.

Only 1, 2, and 5, were used in the analysis. These were felt to be more or less applicable for all farmers in the survey. They were innovations which all farmers could have adopted. Even so this choice was not entirely satisfactory. Gardeners, for instance, tended to be predisposed to make an earlier and greater use of the first two, whilst people with important livestock enterprises tended to have less interest in the upkeep of their cropping enterprises.

The most promising innovation was the use of a bait control for leaf cutting ants. The ants were a universal problem and the bait a fairly new innovation of proven effectiveness. The diagramatic representation of the
The following histograms illustrate the numbers of farmers adopting innovations over a period of time. For convenience the data has been grouped. In the case of Sprays and Fertilisers this has been done in three year periods and for Bait control of leaf cutting ants in six month periods. The total number of farmers in the survey was 35, of these 6 were informal leaders. The number of informal leaders adopting an innovation in each period of time is indicated on the histogram. At the right of the histogram the percentage of all farmers who had adopted the practice at the time of the survey is recorded.

**ADOPTION OF FERTILISERS**

<table>
<thead>
<tr>
<th>Percentage of all farmers adopting practice</th>
<th>Percentage of informal leaders adopting practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.5%</td>
<td>67%</td>
</tr>
</tbody>
</table>

Number of farmers adopting practice in 3 year period

Number of years practice has been in use.
**FIGURE 3 (cont.)**

**ADOPTION OF SPRAYS**

Number of farmers adopting practice in 3 year period

- Percentage of all farmers adopting practice = 54%
- Percentage of informal leaders adopting practice = 83%

Number of years practice has been in use.

**ADOPTION OF BAITS CONTROL**

Number of farmers adopting practice in 3 month period

- Percentage of all farmers adopting practice = 60%
- Percentage of informal leaders adopting practice = 100%

Number of months practice has been in use.
adoption of these practices is given in figure 3. Table 5 shows how informal leaders rank for these innovations.

**Table 5**  
Adoption of practices by farmers in survey.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Percentage of all farmers adopting practice</th>
<th>Percentage of informal leaders adopting practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>fertilizers</td>
<td>48.5%</td>
<td>67%</td>
</tr>
<tr>
<td>sprays</td>
<td>54%</td>
<td>83%</td>
</tr>
<tr>
<td>bait control</td>
<td>60%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Actual number of informal leaders in the first 7 adopting farmers:

| Total farmers = 35 | Total informal leaders = 6 | 0 | 2 | 2 |

From the data it can be seen that informal leaders are more innovative than the average farmer in the survey, but are not the most innovative. Nothing further than this can be validly drawn from these results.

In the case of bait control, (see figure 3) an interesting problem arose in the answering of the question. A fairly large number of farmers said they had been using the bait for about 2 years. Another group said they had been using it for about 1 year. The rest of the adopters gave answers of between 1 and 12 months. It seems very possible that when farmers had been using the bait for between 1 and 2 years, they corrected their answers to the nearest year. This makes the measure of innovation, at least among the early adopters, almost meaningless.
There was no farmer in the survey who stood out as being particularly innovative from the results drawn from the analysis of adoption of these three practices.

However a subjective study of innovators from personal observations of their farms indicated three very innovative farmers. Two were connected with poultry enterprises, and one had a large pig enterprise. Only one out of the three was an informal leader.

The results of this survey indicated that informal leaders in the Maracas valley tend to be more innovative than average, but not usually the most innovative of all.

6. A comparison of informal leaders with other farmers with respect to their sources of first information about new ideas and practices.

It must be said at the outset that this question presented considerable difficulty to some farmers, others found it quite straightforward. Those who found it difficult seemed unable to perceive themselves as having made any changes. Typical answers were, "from my father" or "through my own experience."

When the author gave examples of possible changes they might have made over the years the farmer usually managed to see what the question required.

Figure 4 represents a diagramatic representation of the relative importance of various information channels as sources of first information about new ideas and practices. A complete analysis is given in Appendix 5a.

The diagramatic representation of the use of various information media in figure 4 shows clearly that for every information channel there is proportionally greater use made by leader farmers than non-leader farmers.
PERCENTAGE OF FARMERS USING VARIOUS INFORMATION SOURCES FOR FIRST KNOWLEDGE ABOUT NEW IDEAS AND PRACTICES.

FIGURE 4.

ALL FARMERS

INFORMAL LEADERS

NON-LEADERS

RADIO

54%

83%

48%

DEMONSTRATION FARMS

50%

40%

38%

LOCAL EXTENSION WORKERS

50%

40%

38%

OTHER FARMERS

66%

83%

62%
However these diagrams do not show whether this extra use is significant. In order to test the importance of these results two statistical exercises were done.

First, the mean number of information sources for leader farmers and non-leader farmers was compared by means of a 't' test (Appendix 5b). It was found that leader farmers made use of more sources of information for first knowledge about new ideas and practices than did non-leader farmers. This difference was significant at the 1% confidence level.

Secondly, tests were done to establish whether or not leader farmers made relatively more use of certain types of information sources than others, when compared with non-leader farmers.

For this test information sources were put into one of three categories.

1. Mass media - Radio
   - Newspapers
   - Leaflets and pamphlets

2. Technical extra community sources
   - Research stations
   - Demonstration farms
   - Commercial firms'advisers
   - Government specialists
   - Seminars

3. Local personal sources
   - Local extension workers
   - Other farmers.

By means of a series of chi squared tests, the relative importance of each of the three information groups to leaders was compared with their relative importance to non-leaders (Appendix 5c).
It was found that leaders make proportionately more use of technical extra-community information channels (significant at 10% level), make proportionately less use of local information channels, and make proportionately almost the same amount of use of mass media channels, when compared with non-leader farmers. These results must be viewed in the light of an overall greater use of all types of information channels by leaders.

There are two other points on the use of mass media which are of interest. The first is the attitude of farmers towards the agricultural articles in the newspaper. 11 farmers in the survey found the articles in the newspaper to be of use to them on their farms. 14 more found the articles to be of general interest to them as farmers. Only 4 of the 29 farmers who received a newspaper did not read the agricultural articles. Although no question was asked concerning the farmers' literacy the numbers taking and reading daily newspapers indicates a fairly high literacy level.

The table below gives a comparison of the newspaper usage of leaders and non-leaders.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Receive a newspaper</th>
<th>read the agricultural page</th>
<th>find the agricultural page useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal leaders</td>
<td>(6)</td>
<td>100</td>
<td>67</td>
<td>17</td>
</tr>
<tr>
<td>non-leaders</td>
<td>(29)</td>
<td>79</td>
<td>72</td>
<td>35</td>
</tr>
</tbody>
</table>

(all figures expressed as a % of total farmers in that group)

Informal leaders find the information in the agricultural articles of less use to them on their farm, than do non-leader farmers.

The second point is the degree to which farmers pass on leaflets and pamphlets they receive to other farmers.
Table 7 shows the extent to which leader farmers and non-leader farmers pass on leaflets and pamphlets.

<table>
<thead>
<tr>
<th></th>
<th>Receive leaflets etc.</th>
<th>Pass them on to others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal leaders (6)</td>
<td>67</td>
<td>50</td>
</tr>
<tr>
<td>non-leaders (29)</td>
<td>59</td>
<td>14</td>
</tr>
</tbody>
</table>

(all figures expressed as a % of the total number of farmers in that group)

Whilst the percentage of farmers receiving pamphlets and leaflets is similar for both groups, there is a markedly higher percentage of leaders passing on this written material. Although statistical analysis is not possible because of the small number involved there are indications that some leaders are aware of their informal leadership function in the community, as indicated by this passing on of written information.

7. A comparison of informal leaders with other farmers with respect to the discussion of farming problems.

A similar type of analysis was performed as was done for the sources of new ideas and practices. A diagramatic representation of the use made of some of the discussion contacts is made in Figure 5. (A full list is given in Appendix 6a)

The mean number of types of discussion contacts for leader farmers and non-leader farmers was compared. It was found that leader farmers have a significantly (5% confidence level) greater number of types of contacts with whom they discuss farming problems than do non-
FIGURE 5.

PERCENTAGE OF FARMERS USING VARIOUS CONTACTS FOR THE DISCUSSION OF AGRICULTURAL PROBLEMS.

- ALL FARMERS - INFORMAL LEADERS - NON-LEADERS -

PEOPLE FROM U.W.I.

BANK MANAGER

LOCAL EXTENSION WORKERS

OTHER FARMERS IN MARACAS
leader farmers. (Appendix 6b).

The contacts for discussion were divided into two groups: local, and non local people. A chi squared test (Appendix 6c) was done to see whether or not leader farmers made relatively more or less use of non-local sources than did non-leaders. The difference although positive was not significant, even at the 10% confidence level.

8. A study of the specificity or otherwise of informal leaders, some of the factors controlling the determination of leaders and their referees.

There are a number of factors which might or might not be influential in the determination of whether a person would be a leader in any particular collectivity of farmers. They can also be determinants of groups within a community. Members of any particular group might only have scope for informal leadership within that group. In this study a sociometric technique was used to provide a sample of farmers to answer the questionnaire. It is arguable that most of them, at least, are in one group. They have several things in common, they are all Trinidadian, they all live and work fairly close to each other in Maracas Valley, they all make their living or part of their living from agriculture. There are, however, these factors which may separate them. First, there is the way in which they hold their land. Most lease it from the government, some own it, some rent it or use it free of charge from private landlords, some squat illegally on inaccessible government lands in the forest. Secondly there is the type of agriculture they practise. Some have tree crops, some grow provisions, some concentrate on pigs or poultry, some have gardens in which
they grow vegetables. Most combine two or more of the above. A person's colour, ethnic background, religion, and political party may or may not affect his reference or friendship groups. Finally, the clubs and societies which people belong to almost certainly affect their social and business contacts. In fact, club membership may be a result of some or all of the above characteristics.

It is beyond the scope of this study to make more than a superficial examination of these factors as determinants of leadership patterns. A complete picture of the situation could only be obtained by a long, detailed and intimate, sociological study.

However a few points can be made here. All but one of the informal leaders had government holdings, the other leader rented lands. Leaders' referents were drawn from all types of landholders, there didn't appear to be any specificity in this area.

As far as the types of agricultural enterprise are concerned, only one leader appeared to have a specialised topic for leadership. This leader had a specialised poultry enterprise and three of his four referents had a poultry enterprise.

Religion, and ethnic backgrounds appeared to have little affect on leadership patterns. There is a high proportion of Roman Catholics in Maracas Valley. Club membership was a little difficult to evaluate because there are two Agricultural Credit Societies in the area. It was only obviously important in one case; one leader had two out of his four referents belonging to the same society as he.

The question of whether people were more likely to mention neighbours as people with whom they discussed farming problems was studied. The matter is complicated
by farmers not always living on or even near their holdings. Neighbours may have their holdings far apart, or people with holdings together may not be neighbours. Although there was some indication that neighbours tended to mention each other as discussion contacts, it did not seem to affect whether a person was an informal leader or not.

The above analysis in section 8, on the specificity of leaders, and the factors controlling the determination of leaders and their referees, is all that can be validly drawn from the data analysed in this survey.

9. An observation of the relative numbers of part time and full time farmers acting as informal leaders and non-leaders, and a brief comparative study of full and part time farmers.

It is first necessary to define what full time and part time farmers are, in the context of this report. A full time farmer is a farmer without a regular income earning source, apart from his own farm, and any retail business connected with it. A farmer with a regular job, even if this job is of an agricultural nature is classified as a part time farmer. A comparison of numbers of full and part time farmers is given in table 8.

<table>
<thead>
<tr>
<th></th>
<th>Part time farmers</th>
<th>Full time farmers</th>
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<tbody>
<tr>
<td>Informal leaders</td>
<td>4</td>
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<tr>
<td>non-leaders</td>
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Table 8
Part time farmers were asked which they considered their more important income source. The answers are given in Table 9.

<table>
<thead>
<tr>
<th></th>
<th>Farm more important than job</th>
<th>both equal</th>
<th>Job more important than farm</th>
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<tr>
<td>Informal leaders</td>
<td>(4) 2</td>
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<td>non-leaders</td>
<td>(15) 5</td>
<td>1</td>
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Although these results can't be statistically analysed because the numbers are too small, it would appear that being a full or part time farmer was not important in determining leadership.

A comparison of mean scores for the four aggregate characteristics: business orientation, education attitude, use of mass media, and urbanisation/cosmopolitan index, was made between full time and part time farmers. There was very little difference between the means of the two groups for any of the characteristics. This finding adds weight to the hypothesis that informal leadership in Maracas Valley is independent of whether the farmer is full time or part time.

10. A summary of the characteristic differences of informal farming leaders from non-leaders in the Maracas Valley.

Informal leaders are younger than non-leaders. They are more business orientated, have a more favourable attitude to education and have more urban and cosmopolitan
backgrounds. They are more innovative than the average farmer, but not the most innovative in the survey. They have a greater number of channels for new ideas and practices, and make relatively more use of technical extra-community channels. They discuss their farming problems with a greater variety of people than do non-leaders.
DISCUSSION
Discussion

This discussion covers two areas of study, first the method used for identifying informal leaders, and secondly the characteristics of these informal leaders.

Identification of Informal Leaders

The first problem to be solved was how to reliably identify the informal leaders. The method chosen was the use of a sociometric question. How effective in practice was this? Although there has been criticism of the sociometric technique as a method of identifying informal leaders because of its time consuming nature, this problem did not arise in this study, because in order to obtain all the desired information it was necessary to visit the farmers anyway. In order to give some idea of how effective the method had been, the local Land Settlement Officer was asked, after the survey had been completed, who he considered to be the informal leaders in the area.

He gave a list of 9 farmers. Of these farmers 2 were amongst the 6 informal leaders discovered in this study, and 3 more on the Land Settlement Officer's list were sub-leaders (i.e. they had 3 mentions in this survey as sources for the discussion of farming problems). 2 farmers were innovators with large farming enterprises, and 2 were not visited during the survey. Thus of the 9 farmers mentioned by the Land Settlement Officer 7 had been visited during the survey.

These results are worthy of comment. This author considers that the reason why the two innovators were found not to be informal leaders, was simply that their size and system of farming was beyond the range of the majority of farmers in the area. They may have been respected for their achievements but were not influential. There is a possibility that the actual phrasing of the
the sociometric question i.e. "Which farmers in this community do you discuss agricultural matters with most?" tends to pick out as informal leaders those people in the community who are most talkative, rather than those who are most influential in decision making. It is of course possible that these people are one and the same. Another study found that the characteristics of the communicators and the influentials were similar in progressive communities. In this study in Maracas, two of the informal leaders may have been identified on the merits of their verbosity rather than by their influence on other peoples farming decisions. However the farmer mentioned most frequently in the survey as a problem discussion contact, said that he himself did not discuss agricultural problems with anybody! This farmer was not on the Land Settlement Officer's list of influential farmers. In retrospect the author considers that it might have been better to have phrased the sociometric question something like this "Which farmers in this community influence you most in the decisions you make on your farm?" However he considers that the method used was quite effective in determining the informal leaders. One point to be remembered is that the categorizing of informal leaders is not a clear cut dichotomy between leaders and non-leaders. There are degrees of leadership, and the composition of the secondary leadership patterns is useful to know.

Characteristics of Informal Leaders

The comparative analysis of the characteristics of informal leaders and non-leaders in Maracas revealed a number of interesting points, both in the way that informal leaders differ from non-leaders in this study; and also as a comparison with studies in other parts of the world.
1. **Farm Size**

It was found that informal leaders in Maracas do not have larger farms than non-leader farmers. Most other studies have found informal leaders to have larger farms than average. The reason for this difference in Maracas, has already been suggested earlier in this section i.e. the gulf between larger farmers' enterprises and the average farm in the community.

2. **Age, business orientation, education and urbanisation/cosmopolite index.**

Informal leaders are younger than non-leaders in Maracas. Although no statistical analysis was done, this is likely to be the reason why informal leaders are more business orientated, have a more favourable attitude to education, and are more urbanised and cosmopolite. A correlation study between age and these characters for all farmers might reveal an association, but even if the correlation were positive it would not be definitely established that youth was a causal factor in obtaining a high score for the characteristics mentioned above.

Other studies of informal leadership have found leaders to be more urbanised and cosmopolite, and also more business orientated than non-leaders. Usually informal leaders are better educated than non-leaders. In this study, although informal leaders had a more favourable attitude towards education, they themselves had not had appreciably more formal education than had non-leaders.

3. **Formal leadership**

In common with the results of other studies on progressive communities, informal farming leaders in Maracas were not found to act as formal leaders in local organisations any
more frequently than farmers who were not informal leaders. This points to considerable separation of roles amongst community members.

4. Enterprise Specificity of Informal Leaders

Informal leaders, except in one case, were not specific for any one enterprise. This may reflect the large amount of mixed farming that takes place in Maracas.

5. Innovativeness of Informal Leaders

A fairly progressive community is again indicated by the innovativeness of informal leaders in Maracas. Although they were not the most innovative farmers, the results of the study show informal leaders as being more innovative than the average farmer. This state of affairs should aid the introduction of improved farming ideas and practices. One apparent anomaly here is the widespread reliance on Macdonald's Almanac, and the phase of the moon for determining when agricultural operations should be carried out (Appendix 7). A high proportion of farmers in Maracas use these guides, and this proportion is by no means confined to the older farmers. Despite this reliance on astrology for decision making; it is not really a barrier to change. It would be foolish for any extension worker to scorn these methods which will probably die a natural death anyway.

6. The gaining of information.

In common with the results of many other surveys, informal leaders in Maracas were found to make use of more sources for the gaining of first information about new ideas and practices than non-leaders. Not only did Maracas leaders make more use overall of information sources, but they also laid a much greater relative emphasis on extra-community technical sources such as research stations and demonstration farms than did non-leaders. This is a reflection of their greater orientation to their business,
and their more cosmopolite nature. Notwithstanding this greater relative importance of technical sources; all farmers, including informal leaders, made the highest use of local information sources, such as extension workers and other farmers in the district. It is important to notice how much information is gained from within the community by informal leaders.

Informal leaders did not make more general use of mass media sources such as radio, newspaper articles, or pamphlets and leaflets, than non-leader and the relative importance of mass media for first information about new ideas and practices was less for informal leaders than non-leaders. These findings do not agree with most other studies on informal leaders. This may well be because the radio and newspapers supply rather general information only, and there is a shortage at present of good leaflets and pamphlets. It should be pointed out that the radio programmes were praised by many of the farmers in the survey. Television was owned by very few farmers and had little agricultural impact. Visiting people for the purpose of watching agricultural programmes on television did not appear to be practised. Informal leaders tend to be more likely to pass on leaflets and pamphlets, which they had received, than were non-leaders. This may be a reflection of the degree to which informal leaders perceive themselves as leaders in the community.

7. The discussion of farming problems.

In common with other studies, informal leaders were found to discuss agricultural problems with a greater variety of people than non-leaders. There was much more discussion within the community than with people outside, informal leaders did not make relatively more use of external contacts than did non-leaders. This again emphasises
the importance of extension work within the community.

8. **The determinants of informal leadership.**

Partial analysis was done on certain characteristics of individual leaders and their referees in an attempt to see if these characters had any affect on leadership groupings, or on choice of informal leaders. Most studies have found informal leaders to be of high social status. Factors contributing to high social status were often such things as a large farm, a certain type of farming, land ownership, a certain religion, membership of particular clubs, income and family background. No work was done by the author on the factors contributing to a high social status in Maracas. However farm size, how lands were held (owned, leased, rented), and the type of farm seemed to have little affect on choice of leadership. Religion, and race seemed unimportant in determining informal leaders. In Maracas it seemed almost impossible to take a group of characteristics like those given above and predict that a person with a particular combination of characteristics is likely to be an informal leader. It is however likely that different characteristics may be influential in the determination of sub-groups within the community but the boundaries of these sub-groups are by no means clearly defined.

9. **Full and part time farming.**

It was surprising to find that part time farmers were as likely to be informal leaders as full time farmers. It might be expected that farmers who devoted all their time to agriculture would be more influential than people who spent some or most of their time doing another job. The informal leaders doing another job all had work not directly connected with agriculture, this may be important. Apart from this no explanation can be offered as to why the
situation should be as it is.

The discussion has considered the method of identification of informal leaders, and some of their characteristics.
SUMMARY

A study identified 6 informal leaders among the study participants. The sociometric method was adapted to be effective in this formalization.

Informal leaders were compared with the most preselected informal leader by similarity of characteristics. Informal leaders tended to be younger than non-leaders. They were more different from coworkers in the age, marital, and occupation of being school, work or less related to be formal leaders.

Informal leaders were compared with the mean of the mean social group of community members. They tended to be more in the situation, more forwardable to change, and could be more isolated from non-leaders. Informal leaders are more socially innovative than non-leaders and are more innovative because of the community.

Other leaders use one of a greater number of sources of information about new ideas and practices. Informal leaders use one of a greater number of people for the discussion of ideas and problems. Leaders, but do not take information into consideration and are more likely to be accepted by the community. This membership and the acceptance of informal leaders' practices has been shown to be leadership within the community. Whether a person was a former or a new leader was not important for attaining informal leadership.

These characteristics correspond quite highly with the characteristics of informal leaders in other studies of informal leaders in agricultural communities elsewhere.
Summary

The study identified 6 informal leaders amongst the 35 farmers interviewed. The sociometric method was found to be effective in this identification.

The 6 informal leaders were compared with the rest of the sample of farmers on a number of characteristics. Informal leaders were found to be younger than non-leaders. They were not appreciably different from non-leaders as far as length of time farming, size of farm, size of family, and age of leaving school, were concerned. They were not more or less inclined to be formal leaders in local organisations than non-leaders.

Informal leaders were compared with the rest of the farmers on a number of aggregate characteristics. They were found to be: more business orientated, more favourable in attitude to education, and more urbanised and cosmopolitan than non-leaders. Informal leaders are more agriculturally innovative than the average but not the most innovative farmers in the community. Informal leaders make use of a greater number of sources for first information about new ideas and practices than non-leaders. Informal leaders make use of a greater variety of people for the discussion of farming problems than non-leaders, but do not make relatively more use of people outside the community. Club membership and the type of agriculture practised had some affect on leadership grouping within the community. Whether a person was a full time farmer or a part time farmer was not important in determining informal leadership.

These characteristics correspond quite highly with the characteristics of informal leaders in other studies of relatively progressive agricultural communities elsewhere. Maracas is by no means a Traditional community. The
attitude to change is quite favourable and contact with the outside world considerable. The progressive community norms are reflected in the innovativeness and urban/cosmopolite nature of the informal leaders. However there is quite a strong local influence in agriculture which is exemplified by the importance of local information sources and the local discussion of farming problems.
CONCLUSION

AND

RECOMMENDATIONS
Conclusion and Recommendations.

The author feels that this study has demonstrated that the sociometric technique is quite effective in determining informal farming leaders. The comparison of informal leaders with other farmers has revealed a number of ways in which the informal leaders in Maracas differ from non-leaders.

The identification of informal leaders is of practical use in extension work. From the results of the survey a few of the possible uses can be suggested.

1. Since informal leaders make relatively more use of technical extra-community information channels, for the gaining of first knowledge about new ideas and practices, than non-leaders; it might be possible to furnish them with some of the relevant findings from research organisations and demonstration farms, either by publications or through personal discussion with the local Land Settlement Officer.

2. If the formation of farming groups for discussion, or special study purposes, is proposed it would be wise to consider the informal leaders and their referents when deciding group membership.

3. If demonstrations are to be held, then whenever possible these should be on the farms of informal leaders.

4. Because of the importance of local sources, both for first knowledge of new ideas and practices, and also for discussion of farming problems; it is likely that local discussion groups and local demonstrations will be particularly effective extension methods.

One point that should not be neglected, when using informal leaders, is to take care not to overuse any one individual. Too much attention may well make people believe that this person is being favouritised by the
extension worker and the farmers' informal leadership may be lost.

The results from this survey are only valid for the one community studied in Trinidad. It would be useful to identify informal leaders in other Trinidadian farming communities especially in the newly formed Land Settlement schemes. Here new communities are being formed from people with diverse backgrounds, and often in places where no previous community existed. Identification of informal leaders would aid in community development, and also in general agricultural extension work. This author considers that the characteristics of leaders in these communities should not be very different from those in Maracas. It would not be difficult to find out. If characteristics of informal farming leaders are found to be similar in other communities, then informal leaders might quickly be identified from an objective study of farmers' characteristics.

Apart from studies concerning the identification and characteristics of informal farming leaders' this author considers it would be valuable to study two related topics. The first of these is a detailed study of the determinants of leadership. This study would have to go into the structure of a community in detail, analysing various sociological factors. The author would need a wide knowledge of rural sociology, and the survey would take time.

The second topic for study is a more detailed analysis of the use made by informal leaders of the various types of agricultural information available, and the effectiveness of the various information sources.

One other study, not directly connected with leadership, that could be done is a study of full time and part time farming. It would be interesting to know what affects
part time farming has on the individual farmer, and on the community as a whole.

It is hoped that this report has gone some way towards building up a picture of informal leadership patterns in a Trinidadian agricultural community. It is not comprehensive and further studies on the subject would be valuable.
BIBLIOGRAPHY
Bibliography.


WILKENING, E.A. (1952) Informal leaders and Innovators in Farm Practices. Rural Sociology. 19, pp. 39-49
### Table of Appendices

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Appendix 1

Questionnaire to Farmers

Confidential
Code No.

Section 1  

1. How many years have you been farming altogether? ___
2. How many years have you been farming on this farm? ___
3. How many children do you have? ___
   Details: children under 13, boys over 13, girls over 13
4. What age are you?
   less than 21
   21-30
   31-40
   41-50
   51-60
   over 60

5. What is your religion?
   Hindu
   Islam
   R.C.
   Anglican
   Methodist
   Baptist
   Presbyterian
   Seventh day Adventist
   other (specify)

Section 2  

6. How big is your farm? ___

7. Could you tell me what crops you grow on your farm? (in order of importance)
   1.
   2.
   3.
   4.
   5.
   6.
Appendix 1
(con't)

8. What livestock do you have on your farm? (in order of importance) 1.
2.
3.
4.
5.

Section 3 Characteristics

(1) Business Orientation

9. Do you work on this farm full time? yes no
   If no what other work do you do?

10. Do you keep any written records? yes no

11. If yes to (10) do you find these records
    always useful
    sometimes useful
    rarely useful

12. Would you like to be able to spend more time on record keeping? yes no

13. Do you employ any non-family labour? regular casual no

14. Have you ever visited
    a) the central experimental station
    b) the U.W.I. field station
    c) the Texaco demonstration farm
15. Do you hope to get a larger farm or enlarge this one in the future?  
   yes ___  
   no ___  

16. What do you consider to be the greatest problem facing you on this farm?  

(2) Education  
17. At what age did you leave school?  

18. Have you received any other non-agricultural full time education?  
   yes ___  
   no ___  

19. What formal Agricultural Education have you received?  
   none  
   part-time course at farm institute or elsewhere  
   full-time course at farm institute or elsewhere (over 6 months)  
   full-time at farm institute or elsewhere (short course)  
   other  

20. Would you have liked more formal education of any kind?  
   yes ___  
   no ___  

21. Do you hope your sons will be farmers?  
   yes ___  
   no ___  

If Yes to 21  
22. Do you think a secondary education would be of value to them?  
   yes ___  
   no ___
Appendix 1
(con't)

If no to 21

23. What sort of jobs would you most like to see your children doing?

(3) Mass Media

24. Do you receive a daily newspaper? yes no

If yes,
25. Do you read the agricultural page?
   a) sometimes
   b) always
   c) never

26. If a) or b) to 25 do you find the agricultural articles usually of
   a) general interest
   b) use on your farm
   c) neither

27. If c) to 25
   Why do you never read the agricultural page?

28. Do you own any text books on farming? yes no

29. Do you receive any agricultural leaflets or pamphlets or journals? yes no

Examples
Agricultural society of Trinidad and Tobago publications
Appendix 1 (con't)

Texaco or other oil co. publications
Government Extension publications
U.W.I. publications
Harland Society Farmers Dairy
C.E.S. reports
others (specify)

30. Do you ever pass on these publications to other farmers to read? yes ___
    no ___

31. Do you listen to Agricultural Broadcasts on the radio? very often ___
    sometimes ___
    rarely ___
    never ___

Characteristics

(4) Urbanisation /Cosmopolite. index

33. Have you ever had a non-agricultural job? yes ___
    no ___

If yes, what was/were the jobs?

34. Do any of your children do a non-farming job? yes ___
    no ___

35. Do you ever go to the cinema? never ___
    rarely ___
    often ___

36. Have you ever been a member of the armed forces? yes ___
    no ___
Appendix 1
(con't)

37. Have you ever visited any other countries?
   Tobago  
   other parts of the W.I.  
   elsewhere  
If applicable
38. Does your wife or other member of your family help you with your record keeping?  
   yes  
   no

Section 4  

Clubs
39. Are you a member of any associations or clubs?
   a) Agricultural  
   b) non-agricultural  
40. Do you hold a position of authority in any of these clubs and associations?  
   yes  
   no

Section 5  

Information Sources
41. From where do you usually get first information about ideas and practices?
   Radio  
   Newspapers  
   Bulletins, pamphlets  
   Research stations  
   Demonstration farms  
   Local Extension workers  
   other farmers  
   others (specify)  

42. With whom do you discuss farming problems which occur on your farm?
   a) people at the Central Experimental Stn.  
   b) people from U.W.I.  
   c) people at Texaco or Shell farms
Appendix 1
(con't)

d) Agricultural merchant

e) your bank manager

f) farmers outside this village

g) your local extension worker

h) farmers in this village

i) farming relatives

j) your own family

43. Could you please tell me which of the farmers in this community you discuss agricultural matters with most. e.g. problems, new ideas and practices, etc.

44. With whom in this community do you discuss matters of more general nature most frequently e.g. family education, housing, social amenities, sports.

45. Out of the following farming practices could you tell me which ones you are using and when you first started using them?

Practice  Tick  Length of time in use

1.  
2.  

Appendix 1
(con't)

practice tick length of time in use
3.
4.
5.
6.

Section 6 Income Level
For part time farmers
46. Which do you consider your most important source of income, your farm, or your other job?

For fulltime farmers
47. Do you think that it is worth spending a lot of money on making improvements on your farm?
## Appendix 2a

**Basic data of some farmer characteristics**

### Non-leader farmers

<table>
<thead>
<tr>
<th>Farmer's number</th>
<th>Age of school leaving</th>
<th>Farmer's age</th>
<th>Full time (F) or Part time (P) farmers</th>
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### Informal Leaders

| Informal Leaders |
|------------------|------------------|
| 1                | 13               |
| 2                | 14               |
| 3                | 16               |
| 4                | 14               |
| 5                | 16               |
| 6                | 17               | 54           | F                                      |
Appendix 2a
(con’t)

Basic data of some farmer characteristics

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<th>Number of children</th>
<th>Size of farm</th>
<th>Length of time on farm (yrs.)</th>
<th>Length of time farming (yrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-leaders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>7.0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>9.5</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>5.5</td>
<td>15</td>
<td>15</td>
</tr>
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<td>8</td>
<td>5.0</td>
<td>43</td>
<td>43</td>
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<tr>
<td>6</td>
<td>14.0</td>
<td>15</td>
<td>18</td>
</tr>
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<td>8</td>
<td>120.0</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>6.5</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>7</td>
<td>2.0</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>5.0</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>6.0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>9.0</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>1</td>
<td>7.0</td>
<td>8</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>5.5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>56.0</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>10.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>10.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>14.0</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>8</td>
<td>6.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>3.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>11.5</td>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>6.0</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>17.0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
<td>1.0</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>4</td>
<td>10.0</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>20.0</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>9.0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>1.5</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>4.5</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Informal leaders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>17.0</td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>x</td>
<td>11.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>4.0</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>1</td>
<td>10.0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>9.0</td>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>6</td>
<td>17.0</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>
Appendix 2b

A comparison of the mean ages of leader and non-leader farmers using a 't' test analysis.

The 't' test analysis establishes whether or not a difference between the means of two samples is caused by chance alone.

Non-leader farmers

Mean age in years of non-leader farmers = 55.08 (M₁)

Standard deviation (d₁) squared = 65.42 (d₁²)

Number of farmers in the sample = 29 (N₁)

Leader farmers

Mean age of leader farmers = 50.00 (M₂)

Standard deviation (d₂) squared = 29.67 (d₂²)

Number of farmers in sample = 6 (N₂)

For a comparison of the means of small samples using a 't' test

Critical Ratio = \[
\frac{M₁ - M₂}{\sqrt{\frac{d₁²}{N₁-1} + \frac{d₂²}{N₂-1}}}
\]

Critical Ratio = \[
\frac{5.08}{2.876}
\]

Critical Ratio = 1.766

1.766: exceeds the 't' value at the 10% significance level for 33 degrees of freedom (Degrees of freedom = (N₁-1)+(N₂-1)). Thus leaders are significantly younger than non-leaders. Only one in ten times will this be the result of chance.
Appendix 3a

Scoring basis for four characteristic aggregates.

1. Business Orientation  
(all scores positive)

<table>
<thead>
<tr>
<th></th>
<th>Sub-score</th>
<th>Maximum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer employs full time labour</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farmer <em>keeps written records</em></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Farmer would like more time for records</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farmer has visited Central Experimental Station</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Farmer has visited Texaco demonstration farm</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Farmer has visited University field station</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Farmers greatest problem managerial</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Farmer is a full time farmer*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farmer would like a larger farm</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Overall Maximum score = 11

2. Education Orientation

<table>
<thead>
<tr>
<th></th>
<th>Sub-score</th>
<th>Maximum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer left school at over 16 years of age</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Further full time non-agricultural education (apart from school)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Army educational training</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 3a (con't) Sub-score Maximum score

<table>
<thead>
<tr>
<th>Further agricultural education</th>
<th>2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance of agricultural seminars</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Farmer would have liked more formal education</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farmer thinks a secondary education to be of value for farming children</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>or Farmer would like to see his children doing professional or technical jobs</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Maximun overall score = 8

### 3. Use of Mass Media

<table>
<thead>
<tr>
<th>Farmer takes a daily newspaper</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer reads the agricultural page of the newspaper always or sometimes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farmer receives pamphlets, and leaflets - up to six in number</td>
<td>0.5</td>
<td>3</td>
</tr>
<tr>
<td>Farmer owns farming text books</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Farmer listens to T.V. or radio programs</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Maximun overall score = 8

### 4. Urbanisation/Cosmopolite index

<table>
<thead>
<tr>
<th>Farmer has had at some time a non-agricultural job</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) manual unskilled</td>
<td>1</td>
</tr>
<tr>
<td>b) technical or professional job</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Children with a non-agricultural job</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) manual unskilled</td>
<td></td>
</tr>
<tr>
<td>b) Technical/professional</td>
<td>2</td>
</tr>
<tr>
<td>c) all children at school</td>
<td>1</td>
</tr>
</tbody>
</table>
**Appendix 3.**

*(con't)*

<table>
<thead>
<tr>
<th>Sub-score</th>
<th>Maximum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer visited cinema often</td>
<td>1</td>
</tr>
<tr>
<td>Farmer has been a member of the armed forces</td>
<td>2</td>
</tr>
<tr>
<td>Farmer has been overseas</td>
<td></td>
</tr>
<tr>
<td>a) to Tobago</td>
<td>1</td>
</tr>
<tr>
<td>b) other Caribbean areas</td>
<td>2</td>
</tr>
<tr>
<td>c) elsewhere</td>
<td>3</td>
</tr>
<tr>
<td>Wife helps farmer with record keeping</td>
<td>1</td>
</tr>
</tbody>
</table>

*Maximum possible score = 11*

*This score is left out for a comparison of full and part time farmers.*
Appendix 3b.

Scoring of all farmers for the aggregate characteristics analysis based on Appendix 3a

Non-leader farmers

<table>
<thead>
<tr>
<th>Business Orientation</th>
<th>Education Attitude</th>
<th>Mass Media Use</th>
<th>Urbanisation/Cosmopolite Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. score 11</td>
<td>Max. score 8</td>
<td>Max. score 8</td>
<td>Max. score 11</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>11</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>5</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>3</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>19</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>3</td>
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</tr>
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<td>7</td>
</tr>
<tr>
<td>22</td>
<td>4</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>23</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Leader Farmers

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4

a) A 't' test comparison of means of scores of leader and non-leader farmers for business orientation.

<table>
<thead>
<tr>
<th>Leaders</th>
<th>Non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>M</td>
<td>7.0</td>
</tr>
<tr>
<td>(d^2)</td>
<td>4.333</td>
</tr>
</tbody>
</table>

Total degrees of freedom = 33

Critical Ratio value = 2.894

The difference in mean scores for business orientation between the two groups of farmers is significant at the 1% confidence level.

b) A 't' test comparison of means of scores of leader and non-leader farmers for education attitude.

<table>
<thead>
<tr>
<th>Leader</th>
<th>non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>M</td>
<td>4.500</td>
</tr>
<tr>
<td>(d^2)</td>
<td>0.583</td>
</tr>
</tbody>
</table>

Total degrees of freedom = 33

Critical Ratio value = 2.491

The difference in mean scores for education attitude between the two groups of farmers is significant at the 2% confidence level.

c) A 't' test comparison of means of scores of leader and non-leader farmers for mass media use.

<table>
<thead>
<tr>
<th>Leader</th>
<th>non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>M</td>
<td>4.250</td>
</tr>
<tr>
<td>(d^2)</td>
<td>1.646</td>
</tr>
</tbody>
</table>

Total degrees of freedom = 33

Critical Ratio value = 1.195
Appendix 4
(con't)

The difference in mean scores for mass media use between the two groups is not significant at the 10% confidence level.

d) A 't' test comparison of means of scores of leader and non-leader farmers for urbanisation/cosmopolite index.

<table>
<thead>
<tr>
<th></th>
<th>Leader</th>
<th>non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>M</td>
<td>5.833</td>
<td>4.103</td>
</tr>
<tr>
<td>$d^2$</td>
<td>2.139</td>
<td>6.990</td>
</tr>
</tbody>
</table>

Degrees of freedom = 33
Critical Ratio value = 2.001

The difference in mean scores for the urbanisation/cosmopolite index between the two groups is significant at the 5% confidence level.
Appendix 5

Use of various information channels for the gaining of first knowledge about new ideas and practices.

a) Numbers of farmers using particular information source.

<table>
<thead>
<tr>
<th>Information source as classified</th>
<th>All farmers total 35</th>
<th>Leader farmers total 6</th>
<th>non-leader farmers total 29</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mass Media</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td>19</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Newspaper</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Pamphlets-leaflets</td>
<td>13</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td><strong>Technical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Stations</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Demonstration farms</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Commercial firm advisers</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Government specialists</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>seminars</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local extension workers</td>
<td>14</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>other farmers</td>
<td>23</td>
<td>5</td>
<td>18</td>
</tr>
</tbody>
</table>

b) A 't' test comparison of the mean number of information sources used by individual leaders and non-leader farmers.

<table>
<thead>
<tr>
<th></th>
<th>Leader</th>
<th>non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number in sample (N)</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>Mean number of information sources (M)</td>
<td>4.667</td>
<td>2.345</td>
</tr>
<tr>
<td>Standard deviation squared (d^2)</td>
<td>2.389</td>
<td>1.260</td>
</tr>
</tbody>
</table>

Degrees of freedom = 33

Critical Ratio value = 2.94
Appendix 5
(con't)
This value exceeds the 't' value at the 1% confidence level. Thus informal leaders use more information channels than non-leader farmers for the gaining of first knowledge about new ideas and practices.
c) A comparison of the relative importance of various types of information channels for leader and non-leader farmers using a 2 by 2 contingency table to determine the value of chi squared.

Classification of Information Sources.
i. Radio
   Newspapers Leaflets and pamphlets
   Mass Media

ii. Research stations
   Demonstration farms Commercial advisors Government specialists Seminars
   Technical extra-community sources

iii. Land Settlement Officer or local extension worker Other farmers
   local personal sources

Technical sources v Mass and local sources

<table>
<thead>
<tr>
<th></th>
<th>mass and local sources</th>
<th>technical sources</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>leaders</td>
<td>18</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>non-leaders</td>
<td>57</td>
<td>11</td>
<td>68</td>
</tr>
<tr>
<td>total</td>
<td>75</td>
<td>21</td>
<td>96</td>
</tr>
</tbody>
</table>
Appendix 5 (con't)

Expected table

<table>
<thead>
<tr>
<th></th>
<th>Mass and local sources</th>
<th>Technical sources</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaders</td>
<td>21.875</td>
<td>6.125</td>
<td>28</td>
</tr>
<tr>
<td>Non-leaders</td>
<td>53.125</td>
<td>14.875</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>21</td>
<td>96</td>
</tr>
</tbody>
</table>

Since one value in the expected table is below 10, Yate's correction is used; thus the observed table is modified.

Corrected observed table

<table>
<thead>
<tr>
<th></th>
<th>Mass and local sources</th>
<th>Technical sources</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaders</td>
<td>18.5</td>
<td>9.5</td>
<td>28</td>
</tr>
<tr>
<td>Non-leaders</td>
<td>56.5</td>
<td>11.5</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>21</td>
<td>96</td>
</tr>
</tbody>
</table>

The value of Chi squared = \[ \sum \frac{(\text{observed}-\text{expected})^2}{\text{expected}} = 3.36 \]

This value of Chi squared is significant at the 10% level (for 1 degree of freedom). Thus leaders make relatively more use of technical information sources than non-leaders.

Chi-squared tests were also carried out comparing the relative use by leaders and non-leaders of local, and mass media information channels.

The Chi-squared value for comparison of leaders and non-leaders for use of mass media sources was 0.2471. This means that there is a tendency for leaders to make relatively slightly less use of mass media than non-leaders, compared with other information channels. This was only significant at the 50% level and is therefore unimportant. The Chi-squared value for comparison of
leaders and non-leaders for use of local information sources, was 1.6570. This again shows leaders making relatively less use of this type of information than non-leaders, the significance level was 25% this time.
Appendix 6

Use of various contacts for the discussion of farming problems

a) Number of farmers using particular contact

<table>
<thead>
<tr>
<th>Contact</th>
<th>all farmers total 35</th>
<th>leader farmers total 6</th>
<th>non-leader total 29</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non local contacts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People from;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central exp. station</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>U.W.I.</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Texaco or Shell farm people</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Commercial or Merchants</td>
<td>7</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Bank Manager</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Government Specialists</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Farmers outside Maracas</td>
<td>10</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td><strong>Local contacts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local extension worker</td>
<td>17</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Farmers in Maracas</td>
<td>28</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>Relatives</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Immediate family</td>
<td>27</td>
<td>5</td>
<td>22</td>
</tr>
</tbody>
</table>
Appendix 6
(con't)

b) A 't' test comparison of the mean number of discussion contacts for farming problems, used by individual leader and non-leader farmers.

<table>
<thead>
<tr>
<th></th>
<th>Leader</th>
<th>non-leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number in sample (N)</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>Mean number of contacts</td>
<td>4.500</td>
<td>2.931</td>
</tr>
<tr>
<td>Standard deviation squared (d^2)</td>
<td>2.563</td>
<td>2.133</td>
</tr>
</tbody>
</table>

Degrees of freedom = 33

Critical Ratio Value = 2.045
This critical ratio value exceeds the 't' value at the 5% confidence level. Thus informal leaders use more contacts for discussion of farming problems than do non-leaders.

c) A comparison of the relative importance of local, and non-local, discussion contacts for leader and non-leader farmers using a 2 by 2 contingency table to determine the value of Chi squared.

**Hypothesis:** That leader farmers make relatively more use of non-local discussion contacts than do non-leader farmers.

**Non-Local sources**
- C.E.S. people
- U.W.I.
- Shell and Texaco people
- Commercial people or Merchants
- Bank Manager
- Government specialists
- Farmers outside Maracas.

**Local sources**
- Local extension workers
- Maracas farmers
- Relatives
- Immediate family
The Chi squared value was found to be 0.448. This value is only found to be significant at the 75% level, or in other words, leader farmers only have relatively more non-local discussion sources than non-leader farmers 1 in 4 times. Leader farmers therefore, only make slightly more relative use of non-local discussion contacts for farming problems than do non-leader farmers when compared with use of local discussion sources.
Appendix 7

Operations in which the phase of the moon is important for some farmers in Maracas

Cassava planting
At full moon - this gives large single sticks of cassava.
3 days before new moon - this gives good cassava.

Cush-Cush planting
At full moon - this gives large plants.
At new moon - this gives small plants.

Plantain planting
3 days after full moon - best time for planting.

Tannia planting
At full moon - this gives large tannia plants.
Just after new moon - this gives a large head and small root.

Barking trees
3 days after full moon - this is the best time for the tree to recover well.

One farmers explanation of the affect of the moon

The moon influences the water carrying the soil nutrients in the same way as it affects the tides. At full moon the water table and consequently the nutrients in the water are nearer the surface.