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UNIVERSITY OF NAIROBI

Discussion Paper No. 111

THE VIHIGA S.R.D.P. FARM-LEVEL SURVEY:  
A PRELIMINARY REPORT OF FINDINGS

By  
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*D. P. III*

TO THE STAFF OF VIHIGA DIVISION:

There is a heavy load of information about Vihiga Division packed into the following pages. No person could possibly bear it all at one sitting. This report is best treated as a kind of reference book on Vihiga. There is a Table of Contents to guide you to sections that you find particularly relevant to your job and your interests. In time, you may wish to wander farther afield.

Before, however, you turn to any of the tables, which are the heart of this report, it would be of satisfaction to the author and very probably of use to you to read carefully the three introductory sections, "An Explanation of the 600-Farmer Programme," "Suggestions on How to Interpret the Tables," and "Series I: Location and Progressiveness." The first is intended to answer questions that have been heard often in Vihiga concerning the purposes behind the selection of farmers and behind the Special Rural Development Programme in general. The second explains the sampling procedure used in the Vihiga Programme and discusses generally the use of sample data as a basis for increasing our understanding of an area or of a group of people, such as Vihiga Division. The third section introduces a particular set of tables--that which tabulates farmers by their Location and by their "progressiveness," against a variety of other characteristics. It is essential to read this section for an understanding of the term "progressiveness" as operationally defined in this set of tables.

The comments that follow tables are the author's first impressions as he played with the data. He often found himself, especially in commenting on agriculture, outside the limits of his own proficiency, and his remarks will appear whimsical to the technical expert. It was hoped simply that the tables and comments would serve to provoke productive thought in other quarters, especially among field staff like yourselves.

While the author assumes full responsibility for all misinterpretations and other sorts of errors in the following pages, he wishes to acknowledge his substantial debt and to express his appreciation to Joseph Ascroft of I.D.S. for his advice in planning the Vihiga Survey and its subsequent analysis, and to Timothy Ahutah of I.D.S. and to many of you, the Staff of the Division, for his and your assistance in carrying it out. The U.S.A.I.D. Mission to Kenya have provided (1) valuable technical assistance in the form of transportation for enumeration staff and a typist for this report and (2) in conjunction with others, persistent moral pressure for the completion of the Survey and its analysis at an earlier, as opposed to later, date. The author thanks them for these contributions.

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## INTRODUCTION: AN EXPLANATION OF THE 600-FARMER PROGRAMME

Many questions have been asked in Vihiga about the selection of 600 farmers for the Special Rural Development Programme (S.R.D.P.). Many questions will continue to be asked, and the burden of answering these questions will necessarily fall on the government employees of Vihiga - Chiefs and Subchiefs; AAs and AHAs; JAAs and JAHAs; CDAs, teachers, medical assistants, and all the rest who live and work amongst the people of Vihiga, the people who were "selected" and those many more who were not.

This introduction and the tables which follow have been prepared primarily for the use of such government employees, for their own information and for the benefit of the people of Vihiga, who depend on these civil servants for their information. It is intended further that what follows will provide the civil servant in Vihiga with additional insights, enabling him to perform his job even more effectively than before. For these reasons, it is fervently hoped that these pages will not be deposited in the bottom of various official desk drawers, but rather that they will be widely distributed and discussed, becoming the topic of staff seminars at Divisional and Locational levels, and with guidance from Provincial, District, and Divisional officers that field-level staff will realize the full benefits of this survey of their area.

The following presentation is intended secondarily for those members of Government and U.S.A.I.D. responsible for the preparation of further plans for the Vihiga area and also for those members of the University with an interest in the development of rural areas in general.

Perhaps the question most frequently asked of Vihiga government servants is how people were selected. The answer to this question is that they were selected randomly. A random selection of people is a group whose make-up has been determined by chance. Every farmer in Vihiga had an equal chance of being selected, just as every person who holds a ticket in the National Charity Sweepstakes has an equal chance of becoming a winner. A farmer with half an acre in the farthest corner of Shiru Sub-location had the same chance of being selected as another with ten acres situated 500 yards from Vihiga Headquarters, just as the night watchman of a large building on Harambee Avenue and the Permanent Secretary who works inside have an equal chance of winning the Charity Sweepstakes, provided each has purchased a two-shilling ticket.

The only "ticket" required in order to be eligible for selection as one of the S.R.D.P. "600" was a farm within the borders of Vihiga Division. It was decided that the term "farm" should refer to a piece of land on which crops and animals are raised and over which there is a single person

in charge of important farming decisions, decisions such as whether to introduce a cash crop, whether to hire farm labour, or whether to purchase capital goods for the farm. This person, whom we are calling the farm head, is considered vitally important to the success of any agricultural extension programme, like the agricultural component of the S.R.D.P., because he is the one who must give his consent to the innovations (especially those involving the outlay of money) that we believe will benefit him and his family.

The farm head, as we define the role, may not possess legal ownership of his farm (although in most cases he does). For example, a man's piece of land might still be in his father's name but he has, nevertheless, already assumed decision-making powers over it and therefore qualifies as a "farm head"; or a father may have legally turned over a piece of land to a son who is either too young or too busy to have taken decisions regarding the land, in which case that piece, for our purposes, would still be regarded as the father's. Some people have suggested that the Luhyia word omugidzi (Maragoli) or omuchitsi (Bunyore) is an adequate translation into the vernacular of what we have defined as the eligible unit for selection in this S.R.D.P. programme.

The farm head may or may not live at home on the farm. If, usually because of his job, he lives too far away to make the day-to-day farming decisions (as opposed to the major ones, especially those involving significant expenditure), it was assumed that there would always be another person in charge of these lesser decisions. It could be a wife, a father, a brother, or any other person. This person, whom we refer to as the farm manager, would decide, for example, on a given day whether the available labour on the farm were used to weed the coffee or to dig trenches across the slope of a maize patch. The manager, wherever he exists as a separate person from the farm head, is also an important person to reach in a programme for the extension of better agricultural practices.

The best way to select 600 farms at random would have been first to acquire a list of all farm heads in the Division. Since no such list was already available (had farm registration been completed in Vihiga Division, we might have used the complete list of registered farms, although this would have forced us to accept a slightly different definition of "farm unit") and since to compile a list of all farm heads ourselves would have taken us many long months, we used a short-cut method of selection, which nevertheless adheres to the principles of randomness. We proceeded in two stages, first to select a number of small areas within the Division,

and then to select farmers within these areas.

To describe the procedure in greater detail, we began with a map of Vihiga in the 1:50,000 scale series (a distance of 4 miles is represented by roughly 5 inches) of the Survey of Kenya. This map shows administrative boundaries (to Locational level); man-made features, such as roads, tracks, markets, and schools; and topographical features, such as streams, valleys, forests, and swamps. Using identifiable features on the map, we divided the entire Division into small areas of roughly equal size, averaging about one-third of a square mile, and numbered these areas from 1 to 611. We then selected at random 101 of these areas, or approximately one-sixth of the total area of Vihiga, for which to compile a list of farm heads, a far easier task than listing farm heads for the whole of the Division.

The enumeration of farm heads in the 101 areas was carried out with the cooperation of Locational and Sub-locational agricultural instructors, Chiefs, and Subchiefs. Through their efforts, we acquired a list of nearly 8,000 farm heads and from this list selected our 600 farmers, again at random.

Undoubtedly, the next question asked of the Vihiga staff is why farmers were selected in the above way. There are two answers to this question. The first is that random selection was considered the fairest way to choose a small number of farmers out of all farmers in the Division. The S.R.D.P. is not intended to benefit a particular group of people in Vihiga, let us say, only those with large land holdings or only those with homes comparatively easy to reach (close to roads or close to administrative centres), but rather to benefit all groups of people in the Division. Nevertheless, it was necessary to start somewhere, as 300,000 people is a very large number to try to reach all at once. If the Special Rural Development Programme was to be truly "special" it was necessary to try things that had not been tried before - new extension approaches, experimental credit schemes, untried farm enterprises with an eye to undeveloped markets. Since these were untried programmes, they needed to be tested on a small (and manageable) number before any attempt should (or could) be made to introduce them Division-wide.

Because the early successes (and failures) of the S.R.D.P. would necessarily fall on a small number of farmers, the fairest means of selecting this number was by random procedure whereby, as stated above, every farmer would have an equal chance of being chosen. Random selection permits no human bias to enter. Had the responsibility for selecting 600 farmers been given to any group of men, no matter how impartial they tried to be, their selection would necessarily reflect some bias, excluding, for example, any farmer whose existence they either momentarily forgot or were completely



unaware of. (Indeed, the random selection has taught us that there are farmers whom no one seemed aware of.)

The second answer to the question of why farmers were selected as they were is a scientific one. If the S.R.D.P. was to benefit all groups within Vihiga, then it was first necessary to find out what kinds of groups existed and in what proportions. In other words, it was necessary to carry out a survey of Vihiga farmers. One way of doing this would have been to gather information on every farm head in the Division and then to describe the characteristics of this population of farmers, but such a procedure, on a large population such as this, was prohibitively time-consuming.

There is a short cut to the problem of determining the characteristics of any population, and this procedure, which was used in Vihiga, is at the very core of most scientific investigation. The procedure is to take a random selection, usually known as a random sample, of individual members and then to infer the characteristics of the population by looking at the characteristics of the sample. In a random sample, the probability of selecting a member from a particular group on any draw is the same as the group's proportion in the population as a whole. The result is that we can expect the presence of any group or characteristic to be large or small in the sample, according to whether it is large or small in the population. In other words, if we found that one half of the 600 randomly selected farmers possessed less than three acres of land, then we could say that there is a very "good chance" that one half of all farmers in Vihiga possess less than three acres.

Furthermore, we have already noted that several new programmes would be tried out, or tested, on this small group of farmers. A frequently stated objective of the S.R.D.P. is that called replicability. Successful S.R.D.P. experiments in Vihiga are intended to be extended, to other farmers not in Vihiga only but in other areas similar to Vihiga as well. By experimenting with a random sample, we can safely attribute successes to the programmes themselves and not to a group of farmers which is not "typical" of Vihiga or of areas like Vihiga; or, alternatively, we can predict that a particular programme will succeed only with a certain proportion of farmers, perhaps those whom we have defined as the "most progressive" farmers, and that we must prescribe different programmes for other groups.

SUGGESTIONS ON HOW TO INTERPRET THE TABLES

The remainder of these pages is given to the results of the Vihiga Survey. After the selection of 600 farmers had taken place each of the farmers (or, more precisely, each of the farm managers, who were in many cases distinct from the farm heads) was visited by an agricultural instructor with a schedule of questions to be asked in an interview. Some questions were concerned directly with farming practices, and others with experience and socio-economic characteristics which we thought might help to explain differences in farming practices.

The first thing to notice in examining the data is that, although reference is continually made to the 600-Farmer Survey, there is information on 592 farms only. Whereas 600 farmers were selected originally, the reduced number is the result of the kind of attrition that can be expected in any random sample of a large and diverse population. Three farm managers (one each in Tiriki, West Bunyore, and South Maragoli) have refused to be interviewed. Three farms (one in East Bunyore and two in South Maragoli), were eliminated as having been ineligibly listed, given the rules established for sampling and the areas selected in the first stage. One farm (in North Maragoli) could not be located by the team of interviewers. Finally, one farmer (in West Bunyore), between the time of listing and the time of interviewing, migrated permanently with his family to another part of Kenya, and no new farmer has yet moved onto this piece of land. (These reductions leave 99 farms in Tiriki, 100 in Nyang'ori, 99 in East Bunyore, 98 in West Bunyore, 97 in South Maragoli, and 99 in North Maragoli).

In addition to the farm last mentioned, three other farms (two in Tiriki and one in East Bunyore) are empty of people and farming activities, the farmers having taken their families to their places of work outside the Division. In these cases, we have obtained certain limited information by visiting the empty holdings and by interviewing neighbours. The questions that can only be answered by the farm head or by his manager are left unanswered.

The second thing to be aware of is that we are dealing not really with one random sample, but with seven! It was an administrative decision, not a scientific one, to select 100 farmers from each Location. A true random sample of Vihiga farmers would contain farmers from the six Locations in numbers proportionate to their populations. Since Tiriki has fewer people than North Maragoli, we can expect a sample to reflect this difference. It is possible, of course, to draw six Locational samples of 100 farmers each (which is what we did) but, while these six samples allow us to make inferences

for the six Locations, they should suggest nothing to us about the Division as a whole.

Therefore, it was necessary to draw first a Divisional Sample. A five per cent selection of names from the Divisional list rendered 386 farms (61 from Tiriki, 37 from Nyang'ori, 55 from East Bunyore, 67 from West Bunyore, 81 from South Maragoli, and 85 from North Maragoli). Then, we separated the Divisional list into its Locational components and selected the number from each Locational list required to complete a Locational sample of 100.

In short, the Divisional Sample is not the sum of the six Locational Samples but rather smaller than that sum, taking into account the differences in Locational populations. Whenever we wish to make an inference for the whole of Vihiga Division, we refer to the Divisional Sample (386 farmers). Whenever we wish to make an inference for a particular Location, for example, to compare it with another Location, we look at the appropriate Locational Sample. That which was necessitated by an administrative decision has not detracted from the value of the Survey but, actually in some ways, has rendered it a more flexible scientific instrument.

The tables which follow (unless otherwise stated) are made up of percentaged data, as distinct from raw (i.e., unpercentaged) data. Only the bases (at the end of each column) are unpercentaged figures. A base refers to a total on which a percentage is taken.

For example, in Table 79, we note that 91% of Tiriki farmers have never had demonstration plots on their land. This means that 91% of the Tiriki Sample have never had demonstrations. To be explicit, we observed 90 cases of no past demonstrations out of the 99 total observations - 99 is the base; 90 out of 99 is 91%.

This statistic from the Tiriki Sample suggests the more sweeping statement that 91% of all Tiriki farmers have never had demonstrations. This statement is an inference based on the Tiriki Sample. We cannot declare it as fact, because we have not interviewed all Tiriki farmers. We can merely say that there is some probability that the percentage of all Tiriki farmers with no past demonstrations is 91%. In fact, what we do is to calculate the probability that the true percentage value is within some interval on either side of 91%. In the given example, we can state that the percentage value for all of Tiriki is between 85% and 97% (i.e., 91% plus or minus 6 percentage points), and we can calculate that the probability of this statement's being correct is 95% (i.e., the odds in favour of its being correct are 20 to 1, or it would be correct 95 times out of 100). We should place no more confidence than this in the statement we have made.

The comments which follow each table are intended to guide us in taking note of interesting percentages and also in knowing what confidence to place in a particular result. For example, Table 79 suggests that the percentage of North Maragoli farmers with no past demonstrations is 95%, in contrast to the 91% of Tiriki farmers. The intervals, however, on which we can place 95% confidence (odds 20 to 1) are 91-99% in North Maragoli and 85-97% in Tiriki. It can be seen that these intervals very much overlap. Therefore, we cannot say that the difference in rates of past demonstrations between Tiriki and North Maragoli is a significant difference (i.e., we cannot say with 95% confidence that Tiriki has a higher percentage of past demonstrations than North Maragoli).

Care must be taken to distinguish between significant and non-significant differences between groups and to remember that a percentage taken from sample observations and extended to a population is no more than an estimate of the true percentage value, which may be anywhere within some interval around the estimate. The exact interval is determined by mathematical formula, but it is useful to remember that, all else remaining the same, the interval becomes smaller as the base (number of observations) becomes larger. Thus, all else remaining the same, the Divisional Sample of 336 farmers provides us with better estimates than a Locational Sample of 100 farmers.

#### SERIES I: LOCATION AND PROGRESSIVENESS

The first series of tables presented for your use tabulates two variables against all other variables extracted from the Survey. The two variables are a farm's location and its "progressiveness". A variable may be thought of as a question, the answer to which may vary. To the question, "In what location of Vihiga is a particular farm found?", the possible answers are "Tiriki," "Nyung'ori," etc. To the question, "How progressive is a particular farm?", we have provided four answers: it is in the "most progressive" group; in the "upper middle" group; in the "lower middle" group; or in the group of "laggards."

Progressiveness refers to the readiness of a person's accepting new ideas relative to persons around him. A very progressive farmer in Vihiga, for example, would probably have adopted hybrid maize in the first half of the 1960s rather than more recently. It is important for members of government extension agencies in a particular area to have some idea as to which farmers are more progressive than others, because these are the farmers they will need usually to convince first when trying to introduce a new crop or a new practice. Others will follow "in their own good time" perhaps, or they will become easier to convince once they have seen the more daring farmers try the new idea and witnessed their

success at it.

It is interesting and potentially very useful to study the ways in which the "more progressive" farmers of an area differ from the "less progressive." Our conclusions could lead to policy decisions capable of bringing wide-spread benefits to the people of the area. For example, if we notice that farmers with one level of education were significantly more likely to accept profitable innovations at an early date than farmers with another level of education, we might wish to recommend that the first level be extended to a larger number of people.

Of course, caution must be exercised in interpreting such data, which compare one variable with another variable at a time only. If, in the above example, the farmers with the first level of education are significantly more likely than the other group to have brothers with high-paying jobs in Nairobi, and if their greater progressiveness were somehow the result of this fact and not the result of the education, then extending the level of education to more people would not lead to the desired outcome.

Of course, in answering how progressive is a particular Vihiga farm, we cannot proceed by asking a farmer, "How progressive are you?", and letting him choose "most progressive," "upper middle,"<sup>"lower middle,"</sup> or "laggard." We ask instead straightforward, unambiguous questions, truthful responses to which must lead to one set of answers and no other. We ask questions such as whether a particular crop has ever been grown on the farm and, if so, what year it was adopted, what spacing is used, what fertilizers are applied, and how many weedings take place in a season. When information has been collected on all farms in the sample, we look at the range that exists among farmers with respect to the adoption of recommended enterprises and practices and then devise some index which enables us to rank farmers from top to bottom with respect to the characteristic we are calling "progressiveness."

The index of progressiveness which we are using in the first series of Vihiga tables is formed (although with some slight modifications) by adding together the years since adoption of each of several recommended crops. The sum obtained for a particular farm is that farm's value in the index. For convenience in interpreting the index, we have divided it into four categories, already named, from "most progressive" to "laggards."

This is not the only index of progressiveness that could be devised out of the Vihiga data; it may not be the best (i.e., most useful) index possible. The job required from the people for whom these tables are intended is to study the data as first presented, discuss their usefulness, and later request other series of tables which organize the data in other ways, more helpful to the needs of the Vihiga programme.

For abbreviation in the comments following tables, we shall refer to the four groups as the Mosts, the UpMids, the LowMids, and the Laggs. The Locations will be abbreviated Tiri., Nyan., EB, WB, SM, and NM.

FARM FAMILY

Tables 1/2: Location & Progressiveness by Residence and Sex of Farm Heads

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	Ebun	Wbun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
1. Residence of Head											
At Home.....	70	69	63	61	60	71	68	66	67	56	64
Elsewhere.....	30	31	37	39	40	29	32	34	33	44	36
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
2. Sex of Head											
Female.....	2	4	3	4	4	13	8	3	7	6	6
Head.....	98	96	97	96	96	87	92	97	93	94	94
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentageing Base.....	99	100	99	98	97	99	78	80	120	108	386

The farm head, for the purposes of the Vihiga survey, is that person from the farm who is in charge of important farming decisions, especially those involving cash outlays. He (or she) is usually the farm owner, though need not be so by definition. (See pp. 1-2 above).

Table 1 shows that approximately 36% (36 plus or minus 5) of Vihiga farm heads do not live at home. This result sheds doubt on the oft-heard statement that fully 65% of the adult male population is working outside the Division at any one time (but does not squarely contradict it, (a) because not all adult males are farm heads nor all farm heads adult males, and (b) because some farm heads live at home and work outside at the same time). It is interesting to note that there are no significant differences with respect to current residence either among Locations or among Progressiveness Groups.

In Table 2, we see that approximately 94% of Vihiga farm heads are male. NM has significantly more farm heads who are female than have the other Locations and significantly more than has the Division as a whole. There are no significant differences in this respect among the other five Locations or among Progressiveness Groups.

FARM FAMILY

Tables 3/4: Location & Progressiveness by Family Status & Sex of Farm Managers

Question: Who runs the farm on a day-to-day basis, i.e. who is the Manager?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	Ebun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
3. How Manager Related to Farm Head											
Head.....	71	68	57	59	53	68	63	64	60	52	59
Wife.....	20	21	33	29	31	25	27	20	30	33	28
Son.....	1	1	1	1	0	2	3	0	1	2	1
Brother.....	3	4	2	4	1	1	0	5	2	3	3
Father.....	1	0	2	3	5	0	5	3	2	1	2
Mother.....	2	4	2	3	7	1	1	6	2	3	3
Other.....	0	2	2	1	3	3	1	1	3	4	3
No Manager....	2	0	1	0	0	0	0	1	0	2	1
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
4. Sex of Manager											
Female.....	24	29	38	35	41	39	36	29	38	41	37
Male.....	76	71	62	65	59	61	64	71	62	59	63
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	99	100	99	98	97	99	78	80	120	108	386

In addition to the important (money) decisions which must be made on a farm (we use the word "must" advisedly, because even a farmer who does nothing at all is making an important, though regative, decision as to how he uses his land), there are the day-to-day decisions which can only be made by a person who is on the spot. For the purposes of the Vihiga Survey, we call this person the farm manager. The farm manager and the farm head may be embodied in the same individual or, in cases where the farm head is unable (or uninterested) to make the day-to-day decisions, may be two distinct individuals. (See p. 2 above).

In most cases, a farm head who lives away from home (see Table 1) is not in a position to be the farm manager. This is not always true, however, nor is the reverse statement, that a farm head who lives at home is necessarily the farm manager. There are some heads not in residence on the surveyed farms who, nevertheless, live nearby and make the day-to-day farming decisions, for example, polygamous husbands who head more than one farm or local traders who live at their shops. Moreover, there are some farm heads who live (i.e., sleep) at home but, because they work during the day perhaps in a Kakamega office or are in some other way occupied, they do not make the day-to-day decisions and do not qualify as farm managers in our terms.

Some farms (two in Tiri. and one in EB) have no managers. That is to say, these are holdings on which no one is living and no farming is taking place. (See p. 5 above).

Table 3 indicates that some 59% of Vihiga farms are managed by the farm heads and some 28% by the wives of the farm heads. It could be demonstrated in another table that, of those farms not managed by the farm heads (31% in Vihiga), about 70% are managed by the wives of heads, and about 81% by females of all statuses. Table 4 shows that the percentage of all farms under female management is approximately 37%. Locations and Progressiveness Groups do not differ significantly with respect to either status or sex of farm managers.



FARM FAMILY

Tables 5/6: Location and Progressiveness by Farm Family Sizes

Question: How many people live on this farm?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
5. Family Members											
Zero.....	2	0	1	0	0	0	0	1	0	2	1
1-2.....	8	6	9	9	4	1	8	4	5	6	6
3-4.....	19	14	19	19	14	13	11	14	17	21	16
5-6.....	11	23	27	22	22	26	18	17	21	29	21
7-8.....	21	21	19	30	28	22	23	28	28	23	25
9-10.....	20	17	18	11	17	21	16	25	15	9	16
11-12.....	8	7	3	4	9	8	12	6	5	6	8
13-14.....	6	7	1	3	3	6	5	3	6	1	4
15 & Over.....	5	5	3	2	3	3	7	2	3	3	3
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
6. Family Members											
0-6.....	40	43	56	51	40	39	37	36	43	58	44
7 & Over.....	60	57	44	49	60	61	63	64	57	42	56
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	99	100	99	98	97	99	78	80	120	108	386

The "farm family" here refers to all the people currently living on the farm. Locations do not differ significantly in farm family size, but Progressiveness Groups do somewhat. Table 6 shows that Mosts and Upmids consist of fewer small farm families (6 people or less) than do Laggs. Table 5 indicates that the modal and median family size for all Progressiveness Groups is 7-8 people. A further breakdown of Table 5, however, would show that the modal and median value for Vihiga as a whole is 7, whereas for the Mosts it is 8 and for the Laggs the mode is 7 and the median is 6.\*

There is thus a tendency for progressive farms to consist of more people than non-progressive farms. Why is this so? Does the larger farm family provide more farm labour, which in turn somehow facilitates early innovation, that is, progressive behavior? Or does progressiveness result in higher income, which enables the farm to support a larger group of people, encouraging more children, perhaps, or providing an alternative to labour migration? Or do these two effects work together, reinforcing one another? Or are there other factors more important, not yet considered? These are the kinds of questions we should be asking ourselves, but we shall not find answers in Tables 5/6 alone. Only by carefully looking at all tables, shall we form a reasonably complete picture of Progressiveness in Vihiga and of the factors which are related to it.

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\* The mode or modal value refers to the most frequently observed value. The median or median value is that value belonging to the middle-most observation; that is, half the observations lie above the median, and half below it.

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FARM FAMILY

Tables 7/8: Location and Progressiveness by Children supported by Farms in School

Question: How many children are you now sending to school?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
7. Primary											
Zero.....	43	36	39	46	26	30	19	30	34	44	33
1.....	19	19	17	17	18	18	19	13	22	20	19
2.....	13	17	23	24	14	14	17	18	21	15	18
3.....	11	15	10	9	16	22	25	20	14	4	17
4.....	10	9	7	2	10	8	8	14	4	3	6
5.....	2	2	1	0	13	5	10	2	4	2	4
6 or more....	2	2	3	2	3	3	2	3	1	2	3
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
8. Secondary											
Zero.....	91	83	91	91	87	85	74	81	92	93	87
1.....	7	8	3	7	9	12	14	12	6	5	9
2.....	1	6	4	2	3	3	8	4	2	2	3
3.....	1	3	2	0	1	0	4	3	0	0	1
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	99	100	99	98	97	99	78	80	120	108	386

Tables 7/8 indicate that approximately 67% and 13% of all Vihiga farms are sending at least one child to primary school and secondary school respectively. SM would appear to have the fewest farms with no children in primary school, but it differs significantly only from WB in this respect. There is a tendency, though not a significant one, for Nyan. to have fewer farms with no children in secondary school than other Locations. There are significantly fewer Mosts with no children in primary school than is the case for Lagg or even for the Division as a whole, and more Mosts send three or more children to primary school than do Lagg or LowMids. There are also significantly fewer Mosts than Lagg or LowMids sending no children to secondary school.

In sum, progressive farms tend to enroll more children in school, both primary and secondary, than do non-progressive. In some part, this may reflect the tendency towards larger farm families on progressive farms. There is, almost certainly, some financial chain at work here as well. Progressive farms reap higher yields, perhaps, out of which school fees may be paid. Alternatively, some farms may receive more money in remittances from employed migrant relatives (this perhaps due to past investment in schooling), and the remittances may help to finance both progressive farm behavior and present school attendance.

FARM TENURE

Table 9: Location and Progressiveness by Land Fragmentation

Question: How many separate pieces of land do you own in this Division?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Number of Pieces											
1.....	75	77	52	53	52	80	41	55	70	72	62
2.....	17	18	34	30	36	15	45	33	20	23	29
3.....	6	4	8	13	9	3	12	9	7	4	7
4 or More.....	2	1	6	4	3	2	2	3	3	1	2
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

In Table 9, we see that roughly 38% of Vihiga farms consist of two or more pieces. There is a significantly higher proportion of land fragmentation in West Vihiga (EB, WB, and SM) than in East Vihiga (Tiri., Nyan., and NM).

Conventional wisdom would fix a negative correlation between land fragmentation and progressive farming. It is very interesting to note the reverse tendency in Vihiga. The Most Progressive farms are significantly more likely to consist of two or more pieces than are those belonging to Lagg or Low Mids. This could be true in Vihiga because of the smallness of land pieces. All else being equal, acreage that is together in one piece is more conducive to progressive farming than acreage divided into two or more unconnected pieces. However, progressiveness is most probably related to farm acreage as well (see Tables 12/13 for Vihiga data). Farms of one piece in Vihiga may tend to be so much smaller in terms of total acreage that the latter relationship more than compensates for the former.

FARM TENURE

Tables 10/11: Location and Progressiveness by Land Registration

Question: Is your land (INDICATE HIGHEST APPLICABLE)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
10. Registration Status											
Not Begun.....	51	16	0	1	16	41	28	28	23	15	23
Adjudication....	7	15	16	6	11	43	14	13	26	20	19
Registered.....	42	69	74	72	69	13	48	53	44	59	51
Titled.....	0	0	10	21	4	3	10	6	7	6	7
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386
11. Of Farms that are Registered											
Not Titled.....	100	100	92	77	94	81	82	89	87	90	88
Titled.....	0	0	8	23	6	19	18	11	13	10	12
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	42	69	84	92	72	16	45	47	61	71	224

Since land registration is not within the control of farmers but rather is completed according to the Government's time-table, we should expect only chance relationship between registration and the progressiveness of farms. Our expectation is born out in Table 10.

We note that registration (as of late 1970, when the survey was administered) is completed for roughly 58% of Vihiga farms, and in Locations, Tiri. 42%, Nyan. 69%, EB 84%, WB 93%, SM 73%, and NM 16%.\* The registration process is not yet begun (i.e., adjudication areas not yet declared) in approximately 23% of the Division - 51% of Tiri., 16% of Nyan., 1% of WB, 16% of SM, and 41% of NM.

It is within the control of farmers to purchase title deeds once registration is completed, and we might expect progressive farmers to purchase deeds more quickly than non-progressive. This tendency, as measured in Table 11, does not appear very strong. The influence of the Government's time-table probably extends to the purchase of title deeds. Farmers in those areas first registered have had more time to purchase deeds and, in those areas only recently registered, deeds may not even be available yet (see note). Indeed, the highest rate of titles per registered farms occurs in WB, the Location which ranks lowest in progressive behavior (see Tables 14/15). It may be noted that roughly 7% of all Vihiga farmers possess title deeds to their farms.

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\*These figures may be somewhat too high. A farmer may believe his sublocation fully registered as soon as all disputes have been settled before the Arbitration Board. In fact, at this point, there is still much paper work to be done before deeds are actually ready for purchase.

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FARM TENURE

Tables 12/13: Location and Progressiveness by Farm Sizes

Question: What is the size of all your land in this Division?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
12. Farm Size											
Up to 1 Acre	7	5	17	11	20	31	6	9	22	17	15
" " 2 "	20	14	25	30	19	27	11	21	23	33	24
" " 3 "	25	18	18	28	19	14	15	22	19	21	19
" " 4 "	12	26	13	11	16	13	20	21	17	11	16
" " 5 "	11	8	8	11	10	7	16	4	8	9	9
" " 6 "	4	5	7	4	3	4	9	4	6	4	5
" " 7 "	2	2	3	0	3	1	4	4	0	2	3
" " 8 "	3	5	4	0	5	2	6	4	2	1	3
" " 9 "	1	2	0	1	0	0	1	1	1	1	1
Over 9 Acres	15	15	5	4	5	1	12	10	2	1	5
Total Percent	100	100	100	100	100	100	100	100	100	100	100
13. Farm Size											
Up to 2 Acres	27	19	42	41	39	58	17	30	45	50	39
" " 5 "	48	52	39	50	45	34	51	47	44	41	44
Over 5 Acres	25	29	19	9	16	8	32	23	11	9	17
Total Percent	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386

Farmers without title deeds, even those in registered areas, lack any precise notion as to their farm acreages. In most cases, the interviewers had to make their own estimates of farm size. We believe that there is a tendency, even among agricultural staff, to over-estimate acreages. To test this belief, we employed a research assistant to estimate acreages in one small area that has been registered. We then checked his estimates for 81 numbered pieces against the official figures held by the Kakamega District Registrar and found that he had over-estimated on the average by 18%.

Although we have not deflated acreage figures in the Survey results, we should bear in mind that these figures are interviewers' estimates rather than official measurements and that they are probably biased upwards. In other words, while noting the result that median acreage in Vihiga Division is between 2.5 and 3.0 acres, we should allow the possibility that a better estimate may be somewhat below 2.5 acres.\*

Nevertheless, we may assume the bias to be consistent throughout the sample, an assumption which allows us to make comparisons among groups. We observe in Table 13 that Nyan. has significantly fewer "small" holdings (up to and including two acres according to Survey results) than all other Locations save Tiriki; NM tends to have the greatest number. Nyan. and Tiri. tend to have the most "large" holdings (over five acres), significantly more than WB and NM.

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\*The median is that value belonging to the middle-most observation; that is, half the observations lie above the median, and half below it.

Among Progressiveness groups, Mosts have significantly fewer "small" and more "large" farms than do Laggs or Low Mids or farmers in the Division as a whole. Table 13 shows a very clear relationship between farm size and progressiveness.

FARM ENTERPRISE SUMMARY

Tables 14/15: Location and Progressiveness by Each Other

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
14. Location											
Tiri.....							17	18	17	13	16
Nyan.....							6	16	11	6	10
EBun.....							9	6	15	23	14
WBun.....							9	14	12	31	17
SMar.....							38	21	17	13	21
NMar.....							21	25	28	14	22
Total Percent..							100	100	100	100	100
15. Progressiveness											
Most Prgsve	25	19	12	12	36	16					
Upper Middle	23	25	14	13	24	26					
Lower Middle	33	39	28	25	24	42					
Laggards	21	17	46	45	16	16					
Total Percent..	100	100	100	100	100	100					
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

The recommended crops that we have used in devising the Index of Progressiveness (see p. 8 above) are Hybrid Maize, certified potatoes, coffee, tea, ground nuts, and Mexican 142 Beans. It must be stressed that these are not the only recommended farm enterprises that could have been included in such an index nor that a summation of years since adoption is the only procedure that could have been used in combining enterprises to form a single index. It might be argued that the index used in Series I tables reflects "unfairly" on the farmers of a particular location who could have adopted grade cows, bananas, or Rosecoco Beans as successful farm enterprises.

In defence of the present index as an indication of the progressiveness of groups the size of locations, we can submit the following two points: (1) all the enterprises included in the index are recommended by the Ministry of Agriculture as suitable for Vihiga (given the ecological environment and present marketing opportunities) and, at the same time, are present in numbers, neither too large nor too small, to be of value in differentiating among groups; and (2) all the enterprises excluded from the index are either said by the Ministry to be largely unsuitable for Vihiga (e.g., bananas, for which there is said to be an inadequate market) or found in numbers too small (e.g., grade cows, raised by less than 1% of Vihiga farmers) or too large (e.g., Rosecoco Beans, raised by some 85%) to be of much help in differentiating among groups. Of course, the index would not be a reliable instrument for comparing individuals, as opposed to groups, because an individual Vihiga farmer may very well have specialized successfully in bananas (he happens to live near the Railway and has exploited a profitable Nairobi market not accessible to most Vihiga farmers) or in milk production (he is one of the fraction of 1% of Vihiga farmers to have purchased a grade cow).

Table 14 can be used first of all to infer the relative sizes of Vihiga's six locations. The Survey implies that 16% of Vihiga's farms (as opposed to population) are in Tiri., 10% in Nyan., 14% in EB., 17% in WB., 21% in SM., and 22% in NM (plus or minus 4 in each case).

Table 15 further suggests what percentage of the Mosts, within Vihiga fall within each location, what percentage of the Up Mids, and so forth. For giving comparisons among locations, this table requires care in interpreting, because of the unequal locational representation. Knowing nothing else about the Division, we should expect a larger percent in each category from NM than from Nyan, because of the difference in farm numbers between the two locations. A way to interpret this table, therefore, is to compare a location's presence in each category with its presence in the Division as a whole. SM has a predominance of Mosts, whereas WB has a disproportionate number of Lags. Tiri. would seem to have a rather even distribution of farmers in the four categories, although Table 15 suggests a slight (not significant) predominance of Low Mids.

Table 15 is easier to interpret, and the two tables naturally tend to reinforce one another. SM has significantly more farmers in the top two Groups than in either of the bottom; EB more in the bottom two than in either of the top; Tiri., Nyan., and NM more in the middle two than in either of the extremes. WB has significantly more Laggs than any of the other three categories of farmers.

With respect to WB and EB, the charge of "unfairness" might continue to be heard from those who point out that the Tea Zone does not extend as far west as the Bunyores and that farmers there could not have adopted tea even if they had wanted to. In answer to this argument, our feeling is that progressive farmer who are prohibited by ecological conditions (and/or government edict) from exhibiting their progressiveness in one way (the raising of tea) will exhibit it in other ways (e.g., the raising of Hybrid Maize). As evidence of this, most of SM is outside the Tea Zone as well, and SM had the highest rate of Mosts, significantly higher than EB, WB, and NI.

FARM ENTERPRISE SUMMARY

Tables 16/17: Location and Progressiveness by Uncleared and Unusable Land

Question: How much of your total acreage is uncleared? How much unusable?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
16. Percentage Uncleared											
0-4%.....	57	57	67	67	77	85	62	73	68	69	68
5-24%.....	16	16	12	10	9	7	23	6	12	6	11
25-44%.....	14	17	8	14	12	5	14	16	12	8	12
45-64%.....	8	8	9	4	2	2	1	4	7	7	6
65% & Over...	5	2	4	5	0	1	0	1	1	10	3
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
17. Percentage Unusable											
0-4%.....	70	77	89	91	86	98	81	91	83	90	86
5-14%.....	10	15	7	5	6	1	9	4	8	5	6
15% & Over...	20	8	4	4	8	1	10	5	9	5	8
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base..	99	100	99	98	97	99	78	80	120	108	386

Anyone who spends time in Vihiga is likely to be surprised, in light of the known population density, at the extent of unused land. Table 16 indicates that about 32% of Vihiga farms are at least 5% uncleared ("uncleared" land does not include fallow), 21% at least 25% uncleared, 9% at least 45% uncleared, and 3% are 65% uncleared or more than that. By manipulation of the raw data, we are able to estimate that some 12% of Vihiga farmland is uncleared.

When asked about unused land, farmers give reasons which fall into two distinct categories. One, they point to a labour constraint or, what amounts to the same thing, a financial constraint, during labour requirement peaks in the agricultural seasons, especially during digging times. Due to hilliness, rockiness, and small acreages, Vihiga agriculture does not lend itself to mechanization. Plowing, planting, weeding, and harvesting are conducted, in almost all cases, by hand. There are alternatives to farm work for the use of people's time. Children, a great potential source of labour, are sent to school, whenever funds are available. The rest of the population devotes a considerable proportion of its time to non-farming activities, especially to non-farm employment or the search for it. After school fees and the purchase of immediate needs, leftover funds may find their way not into the family farm but rather into a variety of consumption possibilities, or into investments perceived as more profitable than additional farm expenditure such as the hiring of labour. Thus, when family labour available to the farm is less than that required for farming the family land, a proportion of the land is often left untilled, partially explaining the paradox of unused land in a Division averaging nearly 1400 people per square mile.\*

The second category of unused land is land that is unusable - too rocky, too steep, too wet, too acid. There is land in Vihiga simply unsuited for cultivation, even hand cultivation. In the Survey, we tried to get an estimate of unusable land, since this variable is outside a farmer's control. We may conclude that approximately 14% of Vihiga farms, as reported by farm managers, are at least 5% unusable, 8% at least 15% unusable, 5% at least 25% unusable, and 2% at least 35% unusable. A manipulation of data renders an estimate that 2.75% of Vihiga farmland (i.e., land currently reserved for no other purpose than farming) is unsuited for cultivation. Tiri. would appear to have the largest percentage of such land, followed by Nyan., NM to have the least.

\* 538 per square kilometer (Kenya Population Census, 1969, Volume I, p. 67). Because of the additional time required in digging land that is under grass or bush, as compared to land cultivated the previous season, tilled soil may approach exhaustion before fresh land is dug.



Since it is only suitable, or usable, land which a farmer can decide to cultivate or not to cultivate, to the extent that we are studying farming behavior, we are more interested in usable land than in unusable land. It might be useful at a later date to subtract the unusable from the uncleared land on each farm (in our Survey, unusable land is uncleared by definition) to get an estimate of the percentages of "wasted" land, that is, usable land which is uncleared.

FARM ENTERPRISE SUMMARY

Table 18: Location and Progressiveness by Adoption of Recommended Crops

Question: Have you ever grown (MENTION CROP)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Crops Ever Grown											
Hybrid Maize....	71	81	28	15	79	82	79	89	79	0	59
Certified Potatoes	16	6	6	10	8	6	28	15	2	0	9
Coffee.....	13	15	8	5	35	10	64	11	1	0	16
Tea.....	7	4	0	0	3	13	17	5	0	0	4
Ground Nuts....	8	10	18	28	25	1	41	17	8	0	15
Mexican 142 Beans	18	5	22	20	20	1	37	14	17	0	16
Rosecoco Beans..	81	86	87	79	85	97	74	94	88	81	85
Total Percent*.....	214	207	169	157	255	210	340	245	195	81	204
Percentaging Base...	99	100	99	98	97	99	78	80	120		386

\*Totals may equal other than 100%, as the table registers only positive responses to seven dichotomous variables (a dichotomous variable has only two possible values, such as "Yes, we have grown Hybrid Maize," and "No, we have never grown Hybrid Maize."). Universal adoption of all seven crops would render a maximum score of 700%.

In discussing recommended crops, we shall try to distinguish among three different questions: (1) whether or not a farmer has ever grown a crop (the question dealt with in Table 18 - this is the adoption variable); (2) how long since he first grew it (the period of adoption); and (3) whether or not he is still growing it, or grew it in the most recently recorded season (the permanence of adoption).

A perennial crop which is slow to mature and which has been adopted within the past decade, such as tea in Vihiga, is unlikely to be abandoned this soon, so that questions (1) and (3), in the case of tea, would tend to merge into a single measure. With a crop like Hybrid Maize, on the other hand, the decision of whether or not to plant it must be made seasonally, and a disappointing yield in the previous season or a shortage of funds may cause a farmer to abandon the new seed at any time once he has tried it. The greater the discrepancy between variables (1) and (3), the less stable the particular innovation has proven to be.

Our progressiveness index is derived from variable (2), the periods of adoption of six of the crops appearing in Table 18. The crop not included is Rosecoco Beans, which were so long ago adopted by such a large percentage of Vihiga farmers as to be indiscriminating and perhaps distorting in the index. We observe in Table 18, a correlation between the progressiveness index and the adoption of those crops included in the index, a correlation which is to be expected since crops must be adopted before adoption periods, by definition, can begin. There are some interesting anomalies, however, such as the fact that Mosts are no more likely to have grown Hybrid Maize than are UpMids and LowMids, although we shall see in Table 23 that they tend to have started growing it earlier.

We should note that roughly 59% of all Vihiga farmers have at least tried Hybrid Maize, surely a high rate of adoption compared to Kenya smallholders as a whole. Within Vihiga, however, we notice a significant difference between the Bunyores and other Locations. (We shall examine maize-growing behavior at some length in the next section of tables.)

There are no significant differences among Locations in the adoption of certified potatoes or, with the exception of the Bunyores, which are outside the Tea Zone, in the adoption of tea. Tea has been adopted by only 4% of all Vihiga farms, a lower figure than the M.O.A. or the K.T.D.A. might wish but partially explained perhaps by the long gestation period of tea in an area of such small acreages.

There are significantly more ground nut growers in WB and SM than in NM, Tiri., and Nyan., and significantly fewer farmers have adopted Mexican 142 Beans in NM and Nyan. than in the other Locations. Although Rosecoco Beans have been widely adopted everywhere, NM tops all other Locations in this respect.

The total adoption in the Division of the seven crops is 204%. This means that the average Vihiga farmer has tried about two of the seven (Rosecoco being one of them in 85 out of 100 cases). The average farmer in SM has tried two or three; in Tiri., NM, and Nyan. just over two; and in the Bunyores one or two.

FARM ENTERPRISE SUMMARY

Tables 19/20: Location and Progressiveness by Local Cattle & Poultry

Question: How many (MENTION TYPE) do you now keep?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
19. No. of Local Cattle											
Zero.....	39	24	43	47	25	30	20	29	30	52	34
1-2.....	21	21	37	28	28	32	27	15	35	26	26
3-4.....	19	23	15	21	31	25	30	31	24	16	25
5-6.....	14	23	4	3	10	9	17	20	6	3	11
7 or More...	7	9	1	1	6	4	6	5	5	3	4
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
20. No. of Local Poultry											
Zero.....	23	9	11	16	7	8	1	14	8	20	11
1-5.....	28	31	34	44	37	37	26	31	34	44	35
6-10.....	25	27	22	22	28	25	29	20	30	22	26
11-15.....	9	10	20	9	11	16	18	14	16	7	14
16-20.....	10	12	7	4	7	9	13	10	7	6	8
Over 20.....	5	11	6	5	10	5	13	11	5	1	6
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base..	99	100	99	98	97	99	78	80	120	108	386

The "typical" Vihiga farm has two local animals and six to ten chickens (these are median values).\* Nyan., Tiri., and SM have significantly more "large" herds (five or more animals) than the Bunyores, and Nyan. more than all but

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\*The median is that value belonging to the middle-most observation; that is, half the observations lie above the median, and half below it.

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Tiri, EB and Nyan. have significantly more "large" chicken flocks (11 and over) than WB, and Tiri. has less people without any chickens than SM, NM, and Nyan. Lags tend to have fewer cows and chickens than other groups (median values are zero cows and one to five chickens), presumably because they are less able to afford them.

FARM ENTERPRISE SUMMARY

Table 21: Location and Progressiveness by Other Livestock

Question: Do you now keep (MENTION TYPE)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Livestock Kept											
Graded/Upgraded											
Cattle.....	2	0	2	1	1	0	1	2	0	0	1
Sheep.....	15	20	3	11	9	8	15	12	11	7	10
Goats.....	5	8	6	14	23	11	23	15	9	9	13
Pigs.....	0	1	1	0	0	0	0	0	0	0	0
Improved Poultry	5	9	1	0	5	6	13	2	3	0	4
Total Percent*..	27	38	13	26	38	25	50	31	23	16	28
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386

\*Totals may equal other than 100%, as some farmers keep none of the five and some keep more than one.

Grade cattle, pigs, and improved poultry - three livestock enterprises stressed in the original S.R.D.P. Proposals - are virtually nonexistent in Vihiga, the first two kept by only a fraction of 1% of Vihiga farmers and the last, which in this Survey probably include ducks and turkeys as well as exotic chickens, kept by some 4% only. On the average, one of the five livestock varieties is kept by one out of every four farmers (one out of every two Mosts, but only one out of every six Lagg). Among Locations, EB tends to have the fewest farmers keeping such animals, significantly fewer than Nyan, and SM, which seem to have the most.

MAIZE

Tables 22/23: Location and Progressiveness by Hybrid Adoption Period

Question: What year did you first plant Hybrid?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
22. Years Since Adoption											
7 or More...	1	2	2	1	5	3	4	8	0	0	2
5-6.....	14	16	2	1	15	16	29	25	0	0	11
3-4.....	21	37	14	5	33	36	32	41	26	0	23
1-2.....	35	26	10	8	26	27	14	15	53	0	23
Never Grown...	29	19	72	85	21	18	21	11	21	100	41
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
23. Proportion Adopted by year:											
1964.....	1	2	2	1	5	3	4	8	0	0	2
1965.....	8	13	4	2	11	13	25	22	0	0	9
1966.....	15	18	4	2	21	19	33	33	0	0	13
1967.....	24	32	12	5	37	32	48	63	0	0	22
1968.....	36	55	18	7	54	55	65	74	26	0	36
1969.....	59	72	20	12	70	73	75	86	58	0	51
1970.....	71	81	28	15	79	82	79	89	79	0	59
Never Grown...	29	19	72	85	21	18	21	11	21	100	41
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base..	99	100	99	98	97	99	78	80	120	108	386

Tables 22 and 23 give us the same information, only in slightly different forms. Table 22 indicates what percentage of farms first grew Hybrid Maize seven years ago (or earlier), what percentage started growing it five or six years ago, and so forth, so that when we sum all the percentages, along with that percentage who have never grown Hybrid, we get 100%. Table 23 gives cumulative percentages, that is, it tells us what percentage had adopted Hybrid by a given year. For example, the percentage of Vihiga farmers who had adopted Hybrid by 1967 is that percentage who had already adopted by 1966 (13%) plus that percentage who adopted in 1967 itself (9%), the new total being 22%. The 1970 row of Table 23 gives the percentage in each group who had adopted by the time of the Survey, information we got earlier, in Table 18. The sum of this row and the next row is 100%.

In interpreting a cumulative table such as Table 23, it may prove helpful to pick some especially notable percentages, such as 25% and 50%, and to circle in each column the figures containing these percentages. This helps in drawing comparisons among groups. For example, we observe that one half of farmers in Tiri. Location and in Vihiga as a whole had adopted Hybrid by 1969, whereas one half in Nyan. and the Maragolis had already adopted it by 1968. In fact, if the pattern of adoption is unchanging, we should be able to conclude from a close examination of the table that Tiri. is roughly one year behind Nyan., SM, and NM in the adoption of Hybrid, EB three to four years behind, and WB four to five years behind.

We note further that 25% of Mosts had adopted Hybrid by 1965, 25% of UpMids by 1966, and 25% of LowMids by 1968; 50% of Mosts had adopted it by 1968, 50% of UpMids, surprisingly, by 1967, and 50% of LowMids by 1969; 75% of Mosts and UpMids had tried Hybrid by 1969, and this milestone was reached by LowMids in 1970. With respect to the adoption of Hybrid, the Upper Middle Group caught up with the Most Progressive Group in 1966 and have since surpassed them. LowMids made rapid strides for three years, so that by 1970 there is no significant difference among the top three Groups with respect to proportions having tried Hybrid seed.

MAIZE

Tables 24/26: Location and Progressiveness by 1970 Maize Crops

Question: What kind of maize did you grow during the last (NAME SEASON)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
24. 1970 Long Rains											
Some Hybrid	59	67	22	5	61	71	65	70	63	0	47
No Hybrid...	41	33	78	95	39	29	35	30	37	100	53
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386
25. 1970 Short Rains											
Local.....	83	79	81	93	80	89	77	80	84	95	85
Hybrid.....	6	8	7	0	12	3	10	10	5	0	5
Hybrid & Local	0	7	9	4	6	3	12	5	4	0	5
No Maize.....	11	6	3	3	2	5	1	5	7	5	5
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	70	80	120	108	386
26. Reduction Between Long & Short Rains											
Some Hyb Lng Rns*	59	67	22	5	61	71	65	70	63	0	47
Some Hyb Shrt Rns	6	15	16	4	18	6	22	15	9	0	10
Reduction in % Pts	53	52	6	1	43	65	43	55	54	0	37
Percentage Reduc'n	90	78	37	20	71	92	34	79	86	-	79

\*Also the percentaging base.

Although by 1970, 59% of Vihiga farmers had, at one time or another, tried Hybrid Maize (see Tables 18 and 23), only 47% (or 80% of those who had ever tried it) actually grew Hybrid in the major planting season of 1970 itself. This record does not suggest serious instability in the acceptance of the new seed. Some farmers may have discontinued using it until further convinced of its superiority in their own shambas. Their skepticism is quite possibly based on a realistic assessment of Hybrid yield vis-a-vis local seed yield in their fields, given the practices and fertilizers which they at this time are applying to their maize. Other farmers may have failed to grow Hybrid in the 1970 Long Rains due simply to a shortage of funds with which to purchase inputs. It is these latter farmers who could benefit from a smallholder credit scheme of the type being tested in Vihiga this year.

An interesting fact is how many farmers grow Hybrid just in the Long Rains, switching to local in the Short Rains. The reason usually given is that the Short Rains season does not allow enough time for Hybrid Maize to mature, a theory strongly contradicted by the M.O.A. and, it would seem, by the more progressive farmers themselves. The reduction in the number of Vihiga farmers who grew at least some Hybrid (i.e., Hybrid alone, or some Hybrid and some local) between the two 1970 seasons was about 79%. That is to say, four out of five farmers who planted Hybrid in the Long Rains did not do so again in the Short Rains. The reduction among Mosts, however, was only about 34%, significantly smaller than among UpMids and LowMids. It would appear that the reduction among farmers in EB and WB is smaller than in the other four Locations, where adoption is more wide spread, but the numbers in EB and WB growing Hybrid at all are so small that this result, while interesting, may mean little.

MAIZE

Tables 27-31: Location and Progressiveness by Hybrid Husbandry

Of those who have ever grown Hybrid:	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Laggards	TOTAL
27. Spacing											
"Correct",...	76	89	68	33	87	91	89	85	78	-	83
"Incorrect"	24	9	32	67	13	9	11	15	22	-	17
None.....	0	2	0	0	0	0	0	0	0	-	0
Total Percent..	100	100	100	100	100	100	100	100	100	-	100
28. Seeds Per Hole											
One.....	75	78	25	27	52	65	69	67	53	-	61
Two.....	24	20	50	53	44	33	29	25	43	-	34
Three or More	1	2	25	20	4	2	2	8	4	-	5
Total Percent..	100	100	100	100	100	100	100	100	100	-	100
29. Fertilizer											
Chemical....	26	30	50	60	54	41	60	45	26	-	41
FYM only....	70	68	46	33	42	58	35	55	71	-	56
None.....	4	2	4	7	4	1	5	0	3	-	3
Total Percent..	100	100	100	100	100	100	100	100	100	-	100
30. Weedings											
Four or More	3	2	0	0	1	1	5	0	0	-	1
Three.....	52	44	36	27	23	23	29	41	32	-	34
Two.....	44	54	57	66	72	70	64	53	64	-	61
One.....	1	0	7	7	4	6	2	6	4	-	4
Total Percent..	100	100	100	100	100	100	100	100	100	-	100
31. Insecticide											
Uses.....	23	27	11	13	23	19	29	25	12	-	20
Not Use.....	77	73	89	87	77	81	71	75	88	-	80
Total Percent..	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base...	70	81	28	15	77	81	62	71	95	0	228

Tables 27-31 describe the practices applied to Hybrid Maize in Vihiga by those who have ever grown it. Table 27, unfortunately, is somewhat ambiguous. The M.O.A. currently recommends 75 cm. X 30 cm. (2½ ft. X 1 ft.) as the spacing to be used for maize in Vihiga, although 3 ft. X 1 ft. is sometimes cited by agricultural staff. In coding the Survey data, a farmer was said to be using "correct" spacing if the dimensions fell within certain limits: with plants 1 ft. apart, rows could range between 2½ and 3 ft. apart; with rows 3 ft. apart, plants could range between 9 in. and 1 ft. apart.

These are rather arbitrary limits. A spacing that did not quite qualify as "correct" might define a plant population within our acceptable population range (3 ft. X 9 in. gives 19,360 plants per acre; 3 ft. X 1 ft., 14,520 plants per acre). Moreover, it has been shown elsewhere that it is possible to plant as many as four seeds per hole, increasing the distance between plants by the same multiple so that optimum plant population is maintained, without there being any adverse effect on yield, especially if the larger spacing permits more efficient weed control. Furthermore, optimum plant population varies with soil fertility and other factors, and it might be that a very good farmer has adapted the M.O.A.'s spacing recommendation somewhat to suit the special conditions of his own land.

Finally, the M.O.A.'s spacing recommendation assumes no interplanted crop. A significant, though unknown, proportion of Vihiga farmers do interplant, most often beans or ground nuts, with their maize. If both crops are row planted, so that weeding is not impeded, and if allowances could be made in spacing to ensure optimum soil use for both varieties, interplanting might not detract from either yield. There is even the argument that beans replace in the soil nitrogen, consumed by maize. The problem is that little or no research has been directed at interplanting, so that we have little idea of the optimum spacing for alternate rows of crops, say, maize and beans. We can be quite sure, however, that the Ministry's recommended spacing for maize is insufficient if, between each row of maize, there is squeezed a row of beans; and it may be that some farmers in the Survey using "correct" spacing are crowding their maize through interplanting, while others using "incorrect" spacing have simply made reasonable allowances for interplanting.



Bearing the above points in mind, we can conclude from Table 27 that only about 17% of Hybrid growers in Vihiga use "incorrect" spacing and practically none "broadcast" that is, use no systematic spacing at all. Progressiveness Groups do not differ significantly in this respect, and although NM, Nyan., and SM (and Tiri.) tend to use less "incorrect" spacing than WB, this difference may be explained by the recency of Hybrid adoption in WB.

There are many Vihiga farmers who plant two or more seeds per hole, which, if holes are spaced at the recommended 75 cm. X 30 cm., would result in two or more times the recommended plant population. Agronomists sometimes recommend that maize be planted at a higher rate than the desired population (though never at twice the desired population) to allow for some germination failure and that plants be thinned at an early stage (when they are about 9 in. high). The M.O.A. does not recommend this practice in Vihiga, the reason perhaps being that farmers tend not to thin soon enough and, when they do, to thin in stages, providing continuous fodder for their cattle. Table 28 indicates that a small majority of Vihiga Hybrid growers (about 61%) plant one seed per hole, as recommended, with significantly fewer doing so in the Bunyores. Few Vihiga Hybrid growers, except in the Bunyores, plant three or more seeds per hole.

Table 29 does not distinguish dosage or kind of chemical fertilizer, indicating only whether or not some chemical (superphosphate or compound and/or sulphate of ammonia topdressing) is applied. Roughly 41% of Vihiga Hybrid growers apply chemical fertilizers, there being a slight correlation between this and progressiveness. The Bunyore Hybrid growers appear to use chemicals as extensively as those in other Locations.

In Table 30, we see that a majority of farmers weed their Hybrid Maize twice per season, whereas three times is the usual recommended minimum for effective weed control. Tiri. and Nyan. have significantly more Hybrid growers who weed three or more times per season than do other Locations, but Progressiveness Groups, surprisingly, do not differ markedly with respect to weeding.

Roughly 20% of Vihiga Hybrid growers use insecticide (against stalk borer principally), there being a very slight correlation with progressiveness. (Of those who use insecticide, nearly all use D.D.T. dust, applying it once.)

MAIZE

Tables 32-34: Location and Progressiveness by Acres of Maize 1970 Long Rains

Question: How many acres of (MENTION TYPE) did you grow during the last Long Rains?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
32. Acres of Hybrid											
Up to 0.5 Acres	16	5	8	2	15	26	5	13	29	0	12
" " 1.0 "	22	25	9	2	20	23	22	30	22	0	18
" " 2.0 "	8	21	3	0	20	17	23	21	7	0	11
" " 3.0 "	8	13	2	0	5	3	10	0	5	0	4
Over 3.0 Acres	5	3	0	1	1	2	5	6	0	0	2
No Hybrid.....	41	33	78	95	39	29	35	30	37	100	53
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
33. Acres of Local											
Up to 0.5 Acres	5	12	16	17	10	7	6	8	5	23	10
" " 1.0 "	16	10	29	39	19	9	11	10	17	35	20
" " 2.0 "	14	8	20	29	6	10	13	9	10	30	16
" " 3.0 "	1	4	4	7	2	0	4	1	2	4	3
Over 3.0 Acres	1	1	6	2	2	1	2	1	2	3	2
No Local.....	63	65	25	6	61	73	64	71	64	5	49
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
34. Acres of Hybrid or Local											
Up to 0.5 Acres	21	17	24	19	25	33	11	21	34	23	22
" " 1.0 "	38	35	38	41	39	32	33	40	39	35	38
" " 2.0 "	22	29	23	29	26	27	36	30	17	30	27
" " 3.0 "	9	17	6	7	7	3	14	1	7	4	7
Over 3.0 Acres	6	4	6	3	3	3	7	6	2	3	4
Total Percent*....	96	102	97	99	100	98	103	98	99	95	98
Percentaging Base.....	99	100	99	98	97	99	78	80	120	108	386

\*Totals may equal other than 100%, as a farm that grew both Hybrid and local is counted twice, and a farm that grew neither is not counted at all.

The proportions of farms growing different acreages of Hybrid Maize and local maize in the 1970 Long Rains is shown in Tables 32 and 33 respectively. Table 34 is a kind of summation of the two preceding tables. We note, for example, in Table 34 that 22% of Vihiga farms grew up to 0.5 acres of maize, a statistic derived from the preceding statistics that 12% grew up to 0.5 acres of Hybrid and 10% grew up to 0.5 acres of local. As we proceed down the column, those who grew some Hybrid and some local are counted twice; those who grew no maize at all are not counted. This procedure accounts for total percentages slightly above and slightly below 100%. As with farm size (Tables 12/13), acreage figures are the estimates of agricultural instructors or of farmers themselves, and we should allow for considerable error.

According to Survey results, some 60% of Vihiga farmers grew one acre or less of maize during the 1970 Long Rains, some 22%, one half acre or less. Locations tend not to differ with respect to farm maize acreages, this despite differences in farm sizes (see Table 13). Progressiveness Groups do differ, however, and in a rather peculiar fashion. Both Mosts and Lagg have fewer small acreages (one acre or less) than do LowMids. It is not immediately apparent why this should be so.

MAIZE

Tables 35/36: Location and Progressiveness by Acres of Maize 1970 Long Rains (Continued)

Of those who grew (MENTION TYPE):	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
35. Acres of Hybrid											
Up to 1 Acre....	64	45	77	80	58	69	40	61	83	-	64
More than 1 Acre	36	55	23	20	42	31	60	39	17	-	36
Total Percent.....	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base	59	67	22	5	59	71	50	56	75	0	181
36. Acres of Local											
Up to 1 Acre....	57	63	59	60	74	59	48	61	61	62	60
More than 1 Acre	43	37	41	40	26	41	52	39	39	38	40
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	57	35	74	92	38	27	29	23	44	103	198

Table 35 shows what proportion of those who grew Hybrid Maize in the 1970 Long Rains grew small acreages (up to one acre) and what proportion grew large acreages (over one acre). Table 36 does the same for local maize.

We see that Hybrid and local maize plots are split similarly into small and large plots (about six small to four large). Locations and Progressiveness Groups tend not to differ very much with respect to local maize acreages. With Hybrid growers, however, Nyan. has a significantly greater proportion of large acreages than do the Bunyores and NM, and Mosts a greater proportion than LowMids.

MAIZE

Tables 37/38: Location and Progressiveness by Maize Yields 1970 Long Rains

Question: How much maize did you harvest?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
37. Bags											
Zero.....	3	0	5	7	0	3	1	1	2	8	4
1-3.....	23	26	61	71	42	35	22	33	44	70	45
4-6.....	31	18	20	16	23	30	24	20	31	13	22
7-9.....	11	10	5	1	11	15	12	12	13	4	10
10-12.....	9	8	4	4	8	7	12	10	3	5	5
13-15.....	9	6	3	0	4	3	8	5	2	0	4
16-18.....	3	7	0	0	0	2	7	1	1	0	2
19 & Over.....	11	25	2	1	12	5	14	18	4	0	8
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
38. Bags											
0-3.....	26	26	66	78	42	38	23	34	46	78	49
4-12.....	51	36	29	21	42	52	48	42	47	22	37
13 & Over.....	23	38	5	1	16	10	29	24	7	0	14
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

The estimates of 1970 maize yields were gotten from farmers themselves and, as such, should be looked upon with some degree of skepticism. To begin with, a farmer may not have known his precise yield. Since maize is not physically bagged in Vihiga as a rule, the measurement concept of a bag of maize may escape some people, and since maize, as a farm food crop, is often picked bit by bit and usually consumed bit by bit, it may be difficult even to think in terms of total yield. Moreover, a farmer who misunderstood or distrusted the purpose of the survey may have deliberately falsified his yield estimate. For example, if he feared that he was being assessed for tax purposes, he may have understated his yield.

For these reasons, most yield questions were left out of the Survey.\* It was felt necessary, however, to get baseline estimates of maize yields, since maize was the focus of the first year of the S.R.D.P., even if these were likely to be poor ones. In 1971 and in subsequent seasons, we hope to get very precise estimates through direct observation.

According to the Survey, few Vihiga farmers harvested even as many as ten bags in the 1970 Long Rains. The modal yield was two bags, the median yield four.\*\* With the median maize acreage slightly below one acre (see Table 34), we may conclude simply that there is much room for improvement in Vihiga maize output per acre.

Roughly 49% of Vihiga farmers harvested three bags or less, only 14% over 12 bags. EB and WB had significantly more small harvests (three bags or less) than other locations and fewer large harvests (13 or more) than all but NM. Nyan had significantly more large harvests than all but Tiri. In the right side of Table 38, we can see a very clear relationship between maize yields and progressiveness.

\*Moreover, coffee and tea yields could be obtained through the cooperatives and the K.T.D.A., without having to rely on farmers' own estimates.

\*\*The mode is the most frequently observed value. The median is that value belonging to the middle-most observation.

CERTIFIED POTATOES

Table 39: Location and Progressiveness by Adoption Period (Certified Potatoes)

Question: What year did you first produce certified potatoes?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	Nmar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Proportion Adopted By Year:											
1962.....	6	1	1	5	2	5	18	0	0	0	4
1964.....	7	2	1	5	4	5	22	0	0	0	5
1966.....	9	3	2	7	4	5	22	4	0	0	6
1968.....	9	6	5	7	6	5	25	6	0	0	7
1970.....	16	6	6	10	8	6	28	15	2	0	9
Never Grown.....	84	94	94	90	92	94	72	85	98	100	91
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	99	100	99	98	97	99	78	80	120	108	386

The adoption of certified potatoes has crept along at the rate of approximately 1% every two years, until by 1970 they were produced by about 9% of Vihiga farmers.

CERTIFIED POTATOES

Tables 40-43\*: Location and Progressiveness by Potato Husbandry

Of those who have ever grown certified potatoes:	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
40. Spacing											
"Correct".....	25	(0)	(50)	10	(12)	(17)	18	17	(50)	-	19
"Incorrect"....	25	(67)	(50)	70	(38)	(33)	36	50	(50)	-	42
None.....	50	(33)	(0)	20	(50)	(50)	46	33	(0)	-	39
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
41. Fertilizer											
Chemical.....	12	(0)	(17)	0	(0)	(0)	9	0	(0)	-	6
Fym only.....	25	(0)	(33)	30	(50)	(50)	41	17	(50)	-	33
None.....	63	(100)	(50)	70	(50)	(50)	50	83	(50)	-	61
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
42. Weedings											
Three or More	19	(17)	(17)	10	(12)	(33)	14	8	(100)	-	17
Two.....	62	(66)	(66)	40	(63)	(67)	68	67	(0)	-	64
One.....	19	(17)	(17)	50	(25)	(0)	18	25	(0)	-	19
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
43. Chemical Sprays/ Dusts											
Uses.....	0	(0)	(0)	0	(0)	(0)	0	0	(0)	-	0
Not Use.....	100	(100)	(100)	100	(100)	(100)	100	100	(100)	-	100
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base.....	16	6	6	10	8	6	22	12	2	0	36

\*The bases (the numbers in each sample or group who have ever grown certified potatoes) are so small that percentages in these tables are very poor estimates of population characteristics. Percentages based on less than 10 observations are bracketed as a reminder that these are particularly poor estimates.

Potatoes in Kenya should be certified by an agricultural officer before they are sold to other farmers for seed. The object of certification is to ensure that Bacterial Wilt, a prevalent disease attacking potatoes, is not spread by infected seed. We have seen in Table 39 that about 9% of Vihiga farmers claim to have produced certified potatoes. Although Tables 40-43 suggest that potato husbandry in Vihiga is of a remarkably low standard, Vihiga producers may be simply fortunate in having a low incidence of Bacterial Wilt. At the same time, some farmers who claimed that they had produced certified potatoes may have misunderstood the question and meant by their answers simply that they had grown potatoes, never having requested certification.

For purposes of the Survey, "correct" spacing was defined as 2 ft. X 1 ft. Any other dimensions were declared "incorrect." By this rigid criterion, about 19% of Vihiga certified potato growers use "correct" spacing, 42% "incorrect," there being no real difference between Mosts and UpMids who grow certified potatoes. About 39% use no systematic spacing.

It is recommended that potato crops be well-fertilized with manure and with a supplement of phosphate and nitrogen. Only about 6% use any chemical fertilizers on their potatoes, and 6% use no fertilizers at all. Mosts tend to use somewhat more fertilizers than UpMids.

Potatoes should be kept clean of weeds. A majority of Vihiga farmers weed their potatoes twice per sea son, a season which lasts roughly four months.

There are a variety of diseases, in addition to Bacterial Wilt, and pests that attack potatoes. As precaution against these, there are several sprays and dusts that should be applied during the course of the crop and, if stored, after harvest. Virtually none of these treatments are used in Vihiga.

There are other practices important to healthy and abundant potato yields, such as rotation, ridging, and removing the plant tops some weeks before harvesting, which might have been queried in the Survey. The practices described in Tables 40-43 are sufficient for us to conclude that there is room for improvement in the cultivation of Vihiga potatoes.

COFFEE

Table 44: Location and Progressiveness by Adoption Period (Coffee)

Question: What year did you begin growing coffee?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Proportion Adopted by Year:											
1962.....	7	8	6	3	15	6	38	1	0	0	8
1964.....	11	11	6	3	20	8	47	1	0	0	10
1966.....	12	14	7	3	32	9	59	7	0	0	14
1968.....	12	15	8	4	35	10	63	11	0	0	16
1970.....	13	15	8	5	35	10	64	11	1	0	16
Never Grown.....	87	85	92	95	65	90	36	89	99	100	84
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentage Base...	99	100	99	98	97	99	78	80	120	108	386

By 1962, roughly 8% of Vihiga farms, half the most recently recorded percentage, had already adopted coffee. SM had the largest adoption rate then, as it does now. In most areas, the most rapid adoption to date took place in the years between 1962 and 1966. There have been practically no new coffee growers since 1968.



COFFEE

Tables 45-49\*: Location and Progressiveness by Coffee Husbandry

Of those who have ever grown coffee:	LOCATION						PROGRESSIVENESS				DIVSN TOTAL
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	
45. Fertilizer											
Chemical.....	8	0	(12)	(0)	12	20	12	(0)	(0)	-	10
Fym Only.....	77	100	(63)	(60)	88	60	76	(89)	(100)	-	78
None.....	15	0	(25)	(40)	0	20	12	(11)	(0)	-	12
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
46. Weedings Per Year											
Four or More..	85	80	(50)	(40)	68	100	74	(45)	(100)	-	70
Three.....	15	13	(38)	(0)	32	0	24	(22)	(0)	-	23
Two or Less...	0	7	(12)	(40)	0	0	2	(33)	(0)	-	7
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
47. Sprayings Per Year											
Three or More..	15	33	(12)	(0)	29	10	24	(11)	(0)	-	22
Two.....	38	34	(51)	(40)	59	50	52	(45)	(100)	-	52
One.....	47	13	(25)	(20)	9	40	20	(11)	(0)	-	18
None.....	0	20	(12)	(40)	3	0	4	(33)	(0)	-	8
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
48. Prunings Per Year											
Three or More..	0	0	(0)	(20)	32	20	22	(11)	(0)	-	20
Two.....	31	33	(12)	(20)	29	10	22	(45)	(100)	-	25
One.....	69	54	(76)	(40)	36	70	54	(22)	(0)	-	50
None.....	0	13	(12)	(20)	3	0	2	(22)	(0)	-	5
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
49. Desuckerings Per Year											
Three or More..	54	20	(25)	(25)	35	30	28	(22)	(0)	-	27
Two.....	8	27	(25)	(25)	15	0	12	(11)	(0)	-	12
One.....	31	33	(50)	(25)	24	70	48	(0)	(100)	-	34
None.....	7	20	(25)	(40)	26	0	12	(67)	(0)	-	27
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base.....	13	15	8	5	34	10	50	9	1	0	60

\*Percentages based on less than 10 observations are bracketed as a reminder that these are particularly poor population estimates.

We asked no question on coffee spacing since most farmers receive M.O.A. and Cooperative Society advice at the time of planting and few deviate from the 9 ft. x 9 ft. recommendation. We selected five practices to ask about, from the many which as a package make up good coffee husbandry.

For good coffee crops, year after year, it is necessary to apply fertilizers in order to replenish the supply of plant food in the soil. Nitrogen fertilizers and farm yard manure are two important sources of nutrients, a mixture of these and others as well usually required for maximum yields. Table 45 suggests that only 10% of Vihiga coffee growers apply chemicals in addition to FYM. About 12% used no fertilizers at all.

Weeds compete with coffee for nutrients and moisture in the soil and, if not controlled, are said to reduce yields by as much as two kilograms of berries per tree. About 70% of Vihiga farmers weed their coffee four or more times per year. Our survey questionnaire does not differentiate above three weedings. As four weedings per year is probably the bare minimum for effective weed control of coffee, we can conclude only that a majority of Vihiga coffee-growers weed at least to this minimum standard.

Coffee is vulnerable to a variety of diseases and pests. We asked farmers about the use of fungicide and insecticide sprays. About 8% use none at all. A small majority (roughly 52%) spray with one thing or another just twice per year.

Pruning of coffee is recommended for better quality beans, for larger and more equal yields from season to season, and for more effective control of pests and diseases. Pruning should take place right after berries have been picked. Very few farmers neglect to prune their trees at least once per year.

Unwanted shoots, or "suckers," should be removed every few months until, after several crops, a change of cycle is required and a few strong suckers are allowed to develop. On our 60 coffee grower observations in Vihiga, this operation assumes a peculiar bimodal distribution. A large group (about one third) desucker once per year; another large group (about one quarter), three or more times per year. We can be quite sure that, if we broke down the latter category into smaller categories (three times, four times, five times, etc.), we should observe something approaching the normal (one "hump") distribution, with a "tail" in this case on the upper end.

With most of the above practices, there tend to be slight correlations with the progressiveness index. The correlations are indistinct, however, and in some cases appear nonexistent or even opposite to the expected direction, probably due to the small number of observations in each group except Mosts.

COFFEE

Tables 50/51\*: Location and Progressiveness by Coffee Cooperatives and Present Creages

Of those who have ever grown coffee:	LOCATION						PROGRESSIVENESS				DIVSN TOTAL
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	
50. Cooperative Society											
Wamondo	**	**	(0)	**	88	**	44	(45)	(0)	-	43
Lunyerere	0	**	**	**	9	90	24	(0)	(0)	-	20
Bunyore	**	**	(88)	(100)	**	**	8	(22)	(100)	-	12
Jebrok	85	87	**	**	3	**	20	(11)	(0)	-	18
Other***	15	13	(12)	(0)	0	10	4	(22)	(0)	-	7
Total Percent	100	100	100	100	100	100	100	100	100	-	100
51. Current No. of Trees****											
Up to 100	15	20	(25)	(40)	38	40	30	(56)	(0)	-	33
" " 200	31	41	(25)	(40)	41	40	38	(44)	(0)	-	38
" " 300	31	13	(50)	(20)	9	0	18	(0)	(100)	-	17
" " 400	15	13	(0)	(0)	3	20	8	(0)	(0)	-	7
Over 400	8	13	(0)	(0)	9	0	6	(0)	(0)	-	5
Total Percent	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base	13	15	8	5	34	10	50	9	1	0	60

\*Percentages based on less than 10 observations are bracketed as a reminder that these are particularly poor population estimates.

\*\*There is no farm in this Location closer to this Society than to one of the other three major Societies in Vihiga.

\*\*\*Other Societies listed by a few (six out of 85) coffee growers were Chanderema, Kilingiri, Lwandon, and Lusuyi.

\*\*\*\*One acre equals approximately 540 trees.

The Cooperative Society to which a farmer belongs is decided almost entirely by geography. In addition to its reputation as the most successful Vihiga Cooperative, Wamondo is the largest, incorporating about 43% of Vihiga coffee growers (of course, precise figures could be obtained with little trouble from the books of the four major Societies).

Nearly three quarters of Vihiga coffee growers have 200 trees<sup>or</sup> less (200 trees is less than four tenths of an acre). As might be expected, the largest coffee growers (over 300 trees) tend to be found in Nyan. and Tiri. (the Locations with the largest land holdings), and among Mosts rather than less progressive groups.

TEA

Table 52: Location and Progressiveness by Adoption Period (Tea)

Question: What year did you begin growing tea?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	Smar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Proportion Adopted by Year:											
1962.....	4	2	*	*	1	6	9	0	0	0	1
1964.....	5	0	*	*	1	6	12	0	0	0	2
1966.....	6	3	*	*	2	7	12	0	0	0	2
1968.....	8	4	*	*	2	12	14	4	0	0	3
1970.....	8	4	*	*	3	13	17	5	0	0	4
Never Grown.....	92	96	100	100	97	87	83	95	100	100	96
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386

\*Outside the Tea Zone.

The adoption of tea has progressed at a steady, but slow, rate during the past decade. The Bunyores and much of SM are west of the present Tea Zone boundary, but the rest of Vihiga has shown remarkable resistance to tea in spite of considerable encouragement from the M.O.A., the Administration, and the K.T.D.A. itself. Presumably, despite the promise of high returns from tea (and improved, K.T.D.A. roads for the area), farmers are reluctant to sacrifice immediate, though lower value, returns for six to ten years, while tea grows towards full maturity.

TEA

Tables 53-55: Location and Progressiveness by Tea Husbandry

	LOCATION						PROGRESSIVENESS				DIVISION
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
53. Fertilizer											
Chemical.....	1	0	*	*	0	1	1	0	-	-	0
Fym Only.....	0	1	*	*	0	1	1	0	-	-	0
None.....	7	3	*	*	3	11	15	5	-	-	4
Never Grown.....	92	96	100	100	97	87	83	95	100	100	96
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
54. Weedings Per Year											
Four or More..	6	2	*	*	2	11	13	4	-	-	2
Three.....	1	1	*	*	1	0	1	1	-	-	1
Two.....	0	1	*	*	0	2	3	0	-	-	1
Never Grown.....	93	96	100	100	97	87	83	95	100	100	96
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
55. Prunnings Per Year											
Once.....	8	4	*	*	3	11	15	5	-	-	4
Never.....	0	0	*	*	0	2	2	0	-	-	0
Never Grown.....	92	96	100	100	97	87	83	95	100	100	96
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentage Base.....	99	100	99	98	97	99	78	80	120	108	386

\*Outside Tea Zone.

There are too few tea growers in Vihiga for us to say much about tea practices. Those who have adopted tea tend to use no fertilizers, to weed four or more times per year, and to prune once.

TEA

Table 56: Location and Progressiveness by Present Tea Acreages

Question: How many stems do you now keep?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
No. of Stems*											
Up to 1000....	4	1	**	**	0	6	4	4	-	-	2
" " 2000....	2	2	**	**	1	3	5	0	-	-	1
" " 3000....	1	0	**	**	1	2	4	1	-	-	1
Over 3000....	1	1	**	**	1	2	4	0	-	-	0
Never Grown.....	92	96	100	100	97	87	83	5	100	100	96
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

\*One acre equals approximately 3000 stems.

\*\*Outside Tea Zone.

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Tea acreages in Vihiga are small, tending not to exceed one acre, or 3000 stems.

GROUND NUTS & IMPROVED BEANS

Table 57: Location and Progressiveness by Adoption Period (Ground Nuts)

Question: What year did you first plant ground nuts?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Proportion Adopted by Year:											
1962.....	2	3	4	7	17	0	28	0	0	0	5
1964.....	3	5	5	8	17	1	31	0	0	0	6
1966.....	4	7	7	11	17	1	33	4	0	0	8
1968.....	7	10	13	18	19	1	37	12	3	0	11
1970.....	8	10	18	28	25	1	41	17	8	0	15
Never Grown.....	92	90	82	72	75	99	59	83	92	100	85
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

The adoption of ground nuts appears to be in an acceleration stage, that is, there has been an increasing increase during each two-year period since 1962. The proportions growing ground nuts have quadrupled since 1962 in EB, WB, and Tiri., and tripled in Nyan. SM, which had the greatest percentage of ground nut growers in 1962, and NM, which had the smallest, have progressed at more modest rates, so that by 1970 WB had surpassed SM in the adoption of ground nuts.

GROUND NUTS & IMPROVED BEANS

Tables 58-60\*: Location and Progressiveness by Ground Nut Husbandry

Of those who have ever grown ground nuts	LOCATION						PROGRESSIVENESS				DIVSN TOTAL
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	
58. Spacing											
"Correct".....	(0)	0	0	0	0	(0)	0	0	0	-	0
"Incorrect".....	(38)	100	56	52	24	(0)	41	71	50	-	50
None.....	(62)	0	44	48	76	(100)	59	29	50	-	50
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
59. Fertilizer											
Chemical.....	(12)	0	0	0	0	(0)	3	0	0	-	2
FYM only.....	(12)	20	0	0	25	(0)	22	7	0	-	14
None.....	(76)	80	100	100	75	(100)	75	93	100	-	84
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
60. Weedings											
Three or More	(12)	30	11	4	0	(0)	3	0	20	-	5
Two.....	(76)	70	56	78	29	(100)	59	64	50	-	59
One.....	(12)	0	33	18	71	(0)	38	36	30	-	36
None.....	(0)	0	0	0	0	(0)	0	0	0	-	0
Total Percent....	100	100	100	100	100	100	100	100	100	-	100
Percentaging Base....	8	10	18	27	24	1	32	14	10	0	56

\*Percentages based on less than 10 observations are bracketed as a reminder that these are particularly poor population estimates.

GROUND NUTS & IMPROVED BEANS

Tables 61/62: Location and Progressiveness by Bean Husbandry

Of those who have ever grown Mexican 142 or Rosecoco Beans:	LOCATION						PROGRESSIVENESS				DIVSN TOTAL
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	
61. Fertilizer											
Chemical.....	1	0	0	0	0	1	3	0	0	0	1
FYM only.....	9	4	4	1	23	1	13	9	3	5	6
None.....	90	96	96	99	77	98	84	91	97	95	93
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
62. Weedings											
Three or More	6	10	2	1	3	16	8	6	9	3	7
Two.....	74	68	42	42	45	75	63	61	62	54	60
One.....	20	22	56	57	51	9	29	33	29	42	33
None.....	0	0	0	0	1	0	0	0	0	1	0
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	93	87	92	86	95	96	77	78	116	88	359

Vihiga farmers are wont to plant ground nuts and beans among some other stand, especially maize. In consequence, the spacing, if any, of these two crops is thrown off the M.O.A.'s recommendation by the spacing of the other crop. We include a table, Table 58, which shows ground nut spacing in Vihiga. Virtually none of the Division's ground nut growers are using "correct" spacing, taken to be 18 in. x 6 in. Half use some other spacing, and half no systematic spacing at all. A similar breakdown is found for bean spacing. It is interesting to note in Table 58 that UpMids, more often than not, row plant their ground nuts, whereas Mosts tend to "broadcast" theirs (not quite a significant difference because of the small number of UpMid observations).



A large majority of Vihiga farmers use no fertilizers either on ground nuts (about 84% of ground nut growers use none) or on beans (about 93% of bean growers use none). Significantly more SM farmers use some fertilizer (mostly FYM) than do all other farmers in the case of beans and all except Tiri and Nyan. farmers in the case of ground nuts. Among Progressiveness groups, the tendency for Mosts to use fertilizer on beans and ground nuts more widely than do other Groups is significant vis-a-vis LowMids and Laggs only.

A majority (about 60%) of Vihiga farmers weed these crops twice, roughly a third weed them once. Hybrid Maize is weeded more often than beans and ground nuts (compare Table 30), but it is likely that local maize is largely interplanted with these crops and thus weeded about the same (there was no direct question on this in the Survey). NM, Tiri., and Nyan. farmers are very likely to weed their beans two or more times per season, whereas farmers in the other three Locations are significantly less likely to do so. There appears to be no relationship between the Progressiveness Index and the weeding of either ground nuts or beans.

LABOUR ON FARMS

Tables 63/64: Location and Progressiveness by Full-Time Labour

Question: How many people work on this farm full-time?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
63. Farm Family Members											
Zero.....	5	3	11	7	2	3	6	5	3	8	5
One.....	38	25	39	41	38	35	32	34	37	41	37
Two.....	33	36	35	31	30	40	29	32	39	35	34
Three.....	10	22	9	10	20	14	23	21	13	9	16
Four.....	7	7	4	9	8	4	6	4	6	6	6
Five or More.....	7	7	2	2	2	4	4	4	2	1	2
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
64. Paid Labourers											
Zero.....	92	82	91	94	89	95	80	86	96	98	92
One.....	4	11	6	5	11	2	14	10	2	2	6
Two or More.....	4	7	3	1	0	3	6	4	2	0	2
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	99	100	99	98	97	99	78	80	120	108	386

A full-time labourer, as we define the term, will not as a rule work eight hours a day, 40 hours a week, as one might be expected to do in a non-agricultural, wage position. The typical day of strenuous field work in Vihiga (for example, digging in preparation for planting) may last five or six hours only, although this period amounts to a full day's work in almost any other employment. A farm family member, more so than a full-time paid labourer, may do no work during certain slack periods, but we have called him full-time, if he is full-time available for work on the farm.

Given our definition, we observe that most Vihiga farms have one or two full-time family workers and no full-time paid worker. Mosts and UpMids are significantly more likely to have at least one paid labourer on the farm than are Low Mids and Lags, although such employment is rare (about 15-20%) even among these farmers. More Nyan. farmers employ a full-time paid labourer than farmers in NM and EB, but otherwise there are no significant difference among Locations.

With regard to family labour, EB tends to have the greatest number of farms with no full-time family worker or one only (about 50%), significantly more than Nyan., having the least (about 28%). Although we saw a slight (insignificant) tendency for EB to have smaller farm family sizes than other Locations, it seems doubtful upon close comparison of Tables 6 and 63 that family size alone can explain the small number of full-time family workers.

LABOUR ON FARMS

Tables 65/66: Location and Progressiveness by Part-Time Labour

Question: How many people work on this farm part-time?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
65. Farm Family Members											
Zero.....	34	31	58	58	55	31	49	27	42	53	43
One.....	25	21	19	31	11	23	13	19	22	28	21
Two.....	22	28	17	8	14	15	19	26	17	8	17
Three.....	8	6	5	1	5	18	5	8	11	7	8
Four.....	9	8	1	1	7	8	8	9	5	3	6
Five.....	1	4	0	0	4	4	5	5	2	0	3
Six or More..	1	2	0	1	4	1	1	6	1	1	2
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
66. Paid Labourers											
Zero.....	79	60	93	92	84	78	76	75	80	94	82
One.....	6	1	4	3	5	10	9	8	4	3	5
Two.....	10	8	1	4	7	5	9	10	5	1	6
Three.....	3	5	1	1	3	1	1	3	3	1	2
Four.....	0	4	1	0	0	3	4	1	2	0	2
Five.....	1	10	0	0	0	1	1	0	3	0	1
Six.....	1	1	0	0	1	2	0	1	2	0	1
Seven or More	0	11	0	0	0	0	0	2	1	1	1
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	99	100	99	98	97	99	78	80	120	108	386

We define a part-time labourer as someone who works on a regular basis, but less than full-time. For example, he (or she) may work a part of every day, perhaps after school, or a few days every week.

There are interesting differences among Location and Groups with respect to part-time labour. UpMids have significantly more farms with at least one part-time family workers than do the two extreme Groups; NM, Nyan., and Tiri. more than the other three Locations. NM, SM, Nyan., and Tiri. have significantly more farms with three or more part-time family workers than do EB and WB; UpMids more than Lags.

Nyan., N M, and Tiri. have significantly more farms with at least one part-time paid labourer than do EB and WB; Nyan. (about 40%) more than all the rest. Mosts and UpMids have significantly more than Lags.

LABOUR ON FARMS

Tables 67/68: Location and Progressiveness by Seasonal Labour

Question: What was the greatest number of seasonal workers on this farm on any day this year?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
67. Farm Family Members											
Zero.....	93	73	78	73	86	80	76	83	82	86	82
One.....	1	1	9	16	3	3	3	2	7	7	5
Two.....	3	6	9	10	5	7	14	7	6	4	7
Three.....	1	5	0	1	3	2	3	4	2	0	2
Four or Five...	2	9	2	0	2	2	1	4	2	2	2
Six or Seven...	0	5	1	0	1	4	2	0	1	1	2
Eight or More..	0	1	1	0	0	2	1	0	0	0	0
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
68. Paid Labourers											
Zero.....	49	39	59	73	47	60	32	40	56	78	54
One.....	1	1	11	5	3	1	4	0	3	5	3
Two.....	8	3	16	7	13	8	17	9	15	6	12
Three or Four..	16	20	3	9	14	14	16	19	12	7	13
Five or Six....	14	22	4	4	15	8	19	13	11	2	11
Seven or More..	12	15	7	2	8	9	12	19	3	2	7
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentage Base.....	99	100	99	98	97	99	78	80	120	108	386

Seasonal labour is the most difficult category of labour to get reliable information on. To begin with, it is somewhat more difficult for a farmer to remember seasonable labour than regular labour, be it full-time or part-time. Secondly, it is more difficult to phrase a question on seasonal labour that is interpreted the same by all farmers to be questioned. We are not interested in the number of individuals that have worked on a farm - the individuals could change at each labour requirement peak - but rather in the amount of labour input. Thirdly, there is the problem of how to interpret exchange labour, to the extent that it exists. Should the record of a farm's labour input include labour from neighboring farms, if farm family members are obliged to return the same amount of labour, which is then not available for the farm in question? It would seem that it should not, although a large work group might perform with different efficiency (more or less?) than a small group and, if there is crop diversity among neighboring farms, labour exchange may mitigate overall labour shortages and labour surpluses.

The problem posed with respect to exchange labour can be recognized but hardly resolved in a macrosurvey like this one. We tried to get comparable information from farmers by asking, "What was the greatest number of seasonable, or temporary, workers used on this farm on any one day during the past year?"

Unlike regular labour, seasonal labour is more likely to be hired from outside than found on the farm which uses it. Some farm family members work seasonally, school children on holidays perhaps (the December, April, and August holidays corresponding quite closely to the digging, weeding, and harvesting of maize in Vihiga) or employed members who take their leaves during peak seasons. It is interesting that Tiri. farmers are significantly less likely to use seasonal family labour than other Locations (except SM), interesting because Tiri. (and SM especially) tend to have more farms in the top two Progressiveness Groups than some other Locations (see Table 15).

Nyan. farmers are significantly more likely to use at least one seasonal paid labourer (about 61% of Nyan. farms) than farmers in WB, NM, and EB. The use of seasonal paid labour appears positively correlated with our Progressiveness Index, the larger acreages (Table 13) and higher incomes (Tables 18 and 97) of more progressive farms presumably contributing to this correlation.

LABOUR ON FARMS

Tables 69/70: Location and Progressiveness by Composite Labour Indices\*

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
69. 4:2:1 Index											
Farm Family											
Labour.....	271	333	208	219	277	294	284	305	261	216	264
Paid Labour...	92	156	50	36	82	77	122	125	78	26	80
Total Percent...	363	489	258	255	359	371	406	430	339	242	344
70. 12:4:1 Index											
Farm Family											
Labour.....	245	288	187	202	247	254	251	265	233	197	234
Paid Labour...	47	87	27	19	40	40	67	75	41	13	41
Total Percent...	292	375	214	221	287	294	318	340	274	210	275
Percentaging Base....	99	100	99	98	97	99	78	80	120	108	386

\*Percentages in these tables are indicators of the combined labour inputs found on the "typical" farm in each of the various categories, and totals may equal other than 100%. For example, the figure 100% represents the equivalent of one full-time labourer; 200%, two full-time labourers; 50%, half of one full-time labourer.

Instead of having to keep the three categories of farm labour input separate in one's mind and trying to judge mentally their combined impact on farm activities, it is much easier to combine the three arithmetically into a single measure. Of course, this necessitates making assumptions about the relative weights of the three categories. On the average, how much more work is contributed by a full-time labourer than by a seasonal one? We have no precise evidence on which to base our answer, and so we guess, using our experience as workers or as work observers to guide us. To be on the safe side, we may wish to make two or more guesses and see whether the resulting measures indicate similar or very different pictures of the relative labour inputs among different Locations and Progressiveness Groups.

Tables 69 and 70 contain measures of the same thing, combined labour input, using different weights for the three categories of labour. In Table 69, we assume that, on the average, a full-time labourer does twice as much work as a part-time labourer and four times as much as a seasonal one, that is, the three are weighted in the ratios of 4:2:1. In Table 70, we assume ratios of 12:4:1, that a full-time worker works three times more than a part-time and twelve times more than a seasonal. These may be two extreme assumptions but, although they give different impressions of labour magnitudes, they do not result in very different relative positions of Locations and Progressiveness Groups. The second table, however, does decrease the apparent importance of paid labour relative to farm family labour in Vihiga, because it reduces the weights of part-time and seasonal labour, which are more likely than full-time labour to be paid.

Table 69 suggests that the average Vihiga farm has available for work the equivalent of nearly three and a half full-time labourers, about 23% of which (80% of 344) is paid rather than farm family labour. Table 70, at the other extreme, suggests the equivalent of two and three-quarters full-time labourers on the average farm, 15% of which is paid. Although UpMids tend to have slightly more available labour than Mosts, there is otherwise a distinct relationship between the Progressiveness Index and the availability of farm labour. The differences are especially distinct with respect to paid labour, less so with respect to farm family labour. Among Vihiga's Locations, Nyan. has the greatest labour input, followed by NM, Tiri., and SM all about the same, these followed by EB and WB with the smallest amount of available farm labour.

WATER

Tables 71/72: Location and Progressiveness by Sources of Water

Question: Where do you get your water for (MENTION USE)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
71. Home Use											
Spring.....	84	52	88	87	90	90	88	77	87	80	84
River/Stream	11	35	9	11	7	3	6	17	11	14	12
Roof*.....	9	10	9	8	6	5	15	10	2	4	6
Reticulated Scheme.....	0	11	0	1	0	0	0	2	1	2	1
Well/Bore Hole	2	2	1	0	3	7	4	0	2	1	2
No One At Home	2	0	1	0	0	0	0	1	0	2	1
Total Percent**	108	110	108	107	106	105	113	107	103	103	106
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386
72. Cattle Use, of <u>THOSE WHO KEEP CATTLE</u>											
Spring.....	66	37	81	85	88	51	67	62	69	77	69
River/Stream	32	57	17	12	12	46	28	34	32	23	30
Roof*.....	8	5	5	8	4	4	11	9	1	0	5
Reticulated Scheme.....	0	4	0	2	0	0	0	3	0	0	1
Well/Bore Hole	2	3	0	0	0	4	3	0	1	0	1
Total Percent**	108	106	103	107	104	105	109	108	103	100	106
Percentaging Base	62	76	58	52	73	69	64	58	84	52	258

\*Rain tank or simple catchment (the latter, as it is small, usually supplemented by some other source).

\*\*Totals may equal more than 100% because of permissible multiple responses.

We should expect little relationship to exist between progressiveness and farm water sources since, with exceptions such as a farmer's decision of whether or not to build a roof catch, or the decision of a farmer who happens to live equidistant between two public water sources or who happens to have the choice between piped water, which may be closer and cleaner but costs money, and water from a natural source, which costs the time of carrying it only - with these, statistically insignificant exceptions, the water available to Vihiga farmers is outside their control.

Thus, although the few farmers who have roof catches are more likely to be Mosts than LowMids or Lagg, among the majority of farmers who get their water from a spring or from a stream, the former being closer to the ground source and hence usually purer than the latter, there is no significant tendency for more progressive farmers to use one and less progressive the other. Indeed, Vihiga is fortunate in that some 84% of its farms have access to fresh, spring water for home use. The least fortunate area in this respect is Nyan., where only 52% have such access.

While 84% of farms use spring water for home use, only about 69% of those who have cattle use springs for watering their animals, a great many switching to streams for their livestock. With many springs, there are communal restrictions against watering livestock, and water must be carried away for whatever uses it is intended. There are other springs to which cattle may be brought and watered at a lower pool or outlet than that which is reserved for home use. The switch from spring water to stream water is more pronounced in NM, Tiri., and Nyan. than it is in SM, WB, and EB.

WATER

Tables 73/74: Location and Progressiveness by Mean Distances to Water

Question: How far is the place where you get your water for (MENTION USE)?*	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	Wbun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
73. Home Use											
Up to 220 Yds	47	39	45	35	33	18	35	35	36	32	34
" " 440 "	36	34	24	19	35	52	33	43	29	33	33
" " 880 "	1	14	1	2	3	1	5	2	4	3	5
Over 880 Yds	14	13	29	44	29	29	27	19	31	30	27
No One At Home	2	0	1	0	0	0	0	1	0	2	1
Total Percent	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	99	100	99	98	97	99	78	80	120	108	386
74. Cattle Use, of THOSE WHO KEEP CATTLE											
Up to 220 Yds	43	33	42	33	30	22	39	32	32	31	33
" " 440 "	37	36	22	23	42	44	33	45	29	35	35
" " 880 "	2	14	0	0	1	1	3	2	5	0	3
Over 880 Yds	18	17	36	44	27	33	25	21	34	34	29
Total Percent	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	62	76	58	52	73	69	64	58	84	52	258

\*If a farmer gets water from two sources for a particular use (e.g., roof catch and spring for home use), we have calculated distance as the "average" (arithmetic mean) of the two distances.

According to farmers' own estimates of distances, the "typical" Vihiga farmer is approximately a quarter mile (the median value\*\*) from the water he uses in his home and, if he has cattle, from the water he uses for them. There are significantly fewer Tiri. farmers more than a quarter mile away from their home-use source than farmers in the Bunyores and the Maragolis.

\*\*The median is that value belonging to the middle-most observation.

CHANGE AGENT CONTACT

Tables 75/76: Location and Progressiveness by One-to-One Extension Contact

Question: Which of the following officials visited your farm at least once since this time last year? And which did you go see at least once?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
75. Agent Initiated											
Agriculture....	59	60	23	13	57	55	81	61	30	15	42
Veterinary.....	37	37	11	10	32	21	40	44	19	6	25
Rural Service* Community	9	7	*	*	5	17	13	5	5	2	6
Dev'ment.....	8	6	4	6	6	6	13	10	2	4	6
Administration	84	64	59	37	78	52	77	66	62	55	64
Health.....	18	16	25	18	17	24	28	21	16	17	20
Home Economics	6	4	6	1	7	1	9	7	3	0	4
Total Percent**...	221	194	128	85	202	176	261	214	137	99	167
No Contact.....	11	19	28	50	8	25	8	12	26	37	23
76. Client Initiated											
Agriculture....	25	24	15	7	22	26	37	31	9	6	17
Veterinary.....	12	27	12	11	23	14	29	27	13	4	17
Rural Service* Community	4	4	*	*	3	7	8	0	2	2	3
Dev'ment.....	2	3	2	3	0	0	2	2	1	0	1
Administration	35	30	36	23	55	24	38	44	32	27	35
Health.....	8	7	24	21	19	8	15	25	11	12	12
Home Economics	2	0	2	1	4	0	5	1	1	0	1
Total Percent** ..	88	95	91	66	126	79	134	130	69	51	86
No Contact.....	36	45	45	60	30	53	29	31	52	58	45
Percentaging Base.....	99	100	99	98	97	99	78	80	129	108	386

\*The Rural Service Programme is a non-government extension project operating out of Kaimosi Mission in Tiriki and aimed at those areas of Western Province where there are Friends churches. Within Vihiga, the Bunyore Locations are largely outside the operating area of the Rural Service Programme.

\*\*Totals may equal other than 100%, as some farmers visited (were visited by) more than one official, and some farmers visited (were visited by) none.

"A change agent is a professional who influences innovation decisions in a direction deemed desirable by a change agency."\*\*\* All Vihiga staff are acting, to a greater or lesser extent, as change agents. They carry new ideas to the people of Vihiga, usually with the object of changing people's behavior, in ways that the Kenya Government sees as necessary and beneficial. When a new variety of maize seed is developed at Kitale Station that can increase farmers' yields, alleviating hunger and augmenting incomes, the government staff is charged with informing the people of the new discovery, demonstrating its advantages, and seeing that it is available to those who wish to begin using it. When an epidemic of a disease such as cholera threatens an area, government medical officers inform people of the dangers and provide precautionary advice and medicine, perhaps even to some who resist such help.

Tables 75-79 clearly confirm what we might expect to be true, that more progressive farmers are in greater contact with change agents than are less progressive farmers. There is probably no simple explanation of this fact, but rather a variety of causes, all working in combination with one another. One may be that change agents are successful in influencing behavior, and farmers with whom they are in regular contact are more progressive as a result. Another may be that farmers who are already more progressive - for whatever reasons, formal education, church affiliation, the availability of funds from non-farming employment, or proximity to other progressive farmers - these farmers seek out government officials and other change



agents in order to keep abreast of the latest ideas. Still another reason for the connection between progressiveness and extension contact, the reverse of the preceding reason, may be that change agents seek out the more progressive farmers, avoiding the less progressive ones, because the former are easier and more rewarding to work with. It will be difficult to conclude at this time what part of the correlation between progressiveness and extension contact should be attributed to each of these three hypothetical reasons or what part is left unexplained by the three in combination.

Table 75 suggests that the "typical" Vihiga farmer has been visited by about 1.7 ("one or two") of the seven mentioned change agents; the "typical" Most has been visited by 2.6 ("two or three"), the "typical" Lagg by one. Only about 8% of Mosts and nearly 40% of Lags have received no such visits. The most frequent visitors in all four Groups are Administration officials. The Administration, unlike any other Department, is staffed right down to Sub-Area level\*\*\*\* and is charged with the broad-based and sometimes unpopular function of collecting taxes and self-help funds. The second most frequent visitors, contacting some 42% of Vihiga farms, are the agricultural staff. The differences among groups in percentages contacted are quite startling in this, statistically significant except for the difference between Mosts and UpMids, which is not quite significant at the 95% confidence level.

The relationship between progressiveness and client-initiated contact (Table 76) is somewhat weaker than that between progressiveness and agent-initiated contact (Table 75). In fact, Table 76 shows ambiguous relationships in at least two cases, visits to Administration and Health officials. We conclude that nearly half of Vihiga farmers made no visits to any of the seven categories of officials, and that about one out of three visited an Administration official, one out of six an agricultural instructor, one out of six an animal health employee, and one out of eight a health assistant.

Among Locations, WB has significantly more farmers who received no visits than all other Locations, and SM less farmers who received no visits than all but Tiri and Nyan. Farmers in WB and EB received significantly fewer agricultural visits than all the rest and less animal health visits than all except those in NM. Tiri farmers received significantly more Administration visits than all except SM farmers.

Significantly fewer WB farmers themselves visited agricultural staff than did farmers in all Locations except EB. On the other hand EB and WB farms initiated more contact with Health officials than all except SM farms.

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\*\*\*Everett M. Rogers, Modernization among Peasants: The Impact of Communication (New York, Holt, Rinehart and Winston, 1969), p.169.

\*\*\*\*The Chief is the administrative head of a Location; the Sub-Chief, the head of a Sub-Location; and the Ligutu (Liguru), a non-salaried Administration appointee, the head of a Sub-Area.

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CHANGE AGENT CONTACT

Tables 77/78: Location and Progressiveness by Extension Meetings

Question: Which of the following meetings did you attend at least once since this time last year? Which gave the most useful advice about your farm or home?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
77. Meetings Attended											
Adm. Baraza.....	75	72	44	41	59	65	69	69	58	36	56
Crop Demonstration...	56	57	14	10	43	46	67	46	33	14	37
Animal Demonstration...	34	56	14	5	20	8	32	34	20	5	21
Cooking Demonstration...	16	19	11	5	17	10	24	19	8	5	13
FTC Course.....	6	9	3	1	16	2	18	11	2	0	7
Health.....	7	15	7	8	6	10	14	15	4	5	8
Family Planning	4	4	14	12	11	7	14	11	10	4	9
Total Percent*.....	198	232	107	82	172	148	238	205	135	69	151
No Meetings.....	16	15	42	54	25	26	14	22	29	54	32
Percentaging Base..	99	100	99	98	97	99	78	80	120	108	386
78. Of those who attended a given meeting, percentage naming it as a "most useful" meeting:**											
Adm. Baraza.....	45	54	64	65	32	56	44	44	53	59	50
Crop Demonstration...	69	77	(71)	(50)	76	94	67	86	80	(67)	76
Animal Demonstration...	12	41	(71)	**	(58)	**	36	44	(33)	**	37
Cooking Demonstration...	(25)	(37)	(82)	**	(53)	(40)	(26)	(33)	(50)	**	40
FTC Course.....	**	**	**	**	(81)	**	(86)	**	**	**	88
Health.....	**	(20)	**	**	**	(60)	(27)	(50)	**	**	39
Family Planning	**	**	(36)	(50)	(18)	**	(18)	**	(58)	**	31
Total Percent***	273	354	477	250	351	445	304	368	361	314	361

\*Totals may equal other than 100%, as some farmers attended more than one kind of meeting, and some farmers attended none.

\*\*Some meetings were attended by very few people. Percentages based on less than 25 observations are bracketed as a reminder that these are particularly poor population estimates; those based on less than 10 observations are omitted altogether.

\*\*\*Totals may equal other than 100%, as not all farmers attended meetings and, of those who attended more than one meeting, some named more than one as "most useful" meetings. This total may be treated as a measure of a Location's or a Group's enthusiasm for meetings in general. Although some percentages are not recorded in the body of the table because of small bases (see preceding note), they are included in the totals.

The "typical" Vihiga farmer attended 1.5 ("one or two") of the seven categories of meetings during the year which preceded the Survey; some 32% attended no meetings at all. The "typical" Most attended 2.4 categories of meetings, and only 14% no meetings at all. The "typical" Lagg attended 0.7 categories of meetings (that is, on the average, three out of ten Lagg attended no meetings at all), and 54% of all Lagg attended no meetings at all.\*\*\*\*

The category of meetings attended more commonly than all others is the Chief's and Sub-Chief's Baraza, but there are no significant differences among Progressiveness Groups except between Laggs and the rest. Significantly fewer farmers in WB and EB attended Barazas than did farmers in Tiri., Nyan., and NM.

The second most frequently attended meetings are crop and animal demonstrations. Mosts are more and Laggs are less likely than UpMids and LowMids to have attended a crop demonstration. LowMids are less likely than Mosts and UpMids but more likely than Laggs to have attended an animal demonstration. Farmers in WB and EB attended less crop demonstrations and farmers in Nyan. and Tiri. more animal demonstrations than farmers in other Locations.

Although only about 7% of Vihiga farmers attended an FTC course in the past year, significantly more Mosts did so than farmers in the Division as a whole and more than farmers in any other category except UpMids and SM Location.

Of those who attended at least one FTC course, 88% named it a "most useful" meeting. Some 76% did the same for crop demonstrations, and 50% for Administration Barazas.\*\*\*\*\* Enthusiasm for meetings, as indicated not by their attendance but rather by their selection as useful meetings, does not appear correlated with progressiveness. In fact, the two middle Groups seem somewhat more enthusiastic about the meetings they have attended than does either of the two extreme Groups.

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\*\*\*\*\*Notice the difference. About 54% of all Laggs attended no meetings at all, but on the average only about 30% attended no meetings at all. The difference is caused by the fact that some Laggs attended more than one category of meetings.

\*\*\*\*\*Percentages in Table 78 should not be treated as an index of popular reception by which to rank categories of meetings. Some people attended one category only, most often the Baraza, and no other meetings, so that this meeting was selected automatically as the one most useful to them. Other meetings were seldom attended alone, and these had to compete with other meetings in a farmer's selection.

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CHANGE AGENT CONTACT

Table 79: Location and Progressiveness by Farm Demonstrations

Question: Has there ever been a demonstration plot on this farm?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Demonstration											
Yes.....	9	8	3	2	2	5	11	9	3	1	5
No.....	91	92	97	98	98	95	89	91	97	99	95
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	99	100	99	98	97	99	78	80	120	108	386

About 5% of Vihiga farmers have had M.O.A. crop demonstrations on their own farms. However, whereas some 11% of Mosts and 9% of UpMids have had demonstrations, only about 1% of Laggs have ever been chosen as demonstrators. Agricultural staff have tended to feel that a farmer who has performed poorly in the past is incapable of managing a demonstration. This may be a technical argument that ignores important educational implications. The benefits of a demonstration are intended not for the demonstrator himself but for an entire community of farmers. If the demonstrator is generally more progressive than his neighbors, the neighbors may tend to discount the lessons of the demonstration on the basis that "he can do it on his farm but we cannot on ours, because we are not like him." If, on the other hand, a farmer is selected as a demonstrator because he is "typical" of the farmers around him, and if, through close supervision, he is helped to run a demonstration that is technically adequate, he may prove a far more effective demonstrator than the one who, as a farmer, is generally ahead of his neighbors. In an experimental departure from the past, the 100 S.R.D.P. demonstrators for the 1971 Long Rains season have been selected by a combination of random methods and staff judgment in an attempt to find farmers who are somehow "typical" of Vihiga Division.

CHARACTERISTICS OF FARM MANAGERS

Tables 80/81: Location and Progressiveness by Residence Outside Division

Question: How long have you worked or studied outside of Vihiga Division?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
80. No. of Years											
Zero.....	23	26	25	21	24	23	28	20	27	27	26
Up to 3.....	20	23	18	34	22	14	25	15	17	22	20
" " 6.....	5	16	13	10	23	16	10	15	17	13	14
" " 9.....	10	9	9	9	7	7	6	10	8	8	8
" " 12.....	9	8	7	9	9	13	11	9	13	4	9
" " 15.....	7	5	7	5	5	7	4	9	5	8	6
" " 18.....	6	4	7	4	2	1	1	6	2	8	4
Over 18.....	20	9	14	8	8	19	15	16	11	10	13
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
81. No. of Years											
0 - 5.....	47	61	52	62	58	45	59	47	53	58	54
Over 5.....	53	39	48	38	42	55	41	53	47	42	46
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	97	100	98	98	97	99	78	79	120	106	383

In trying to understand progressiveness among farmers, it is often helpful to ask questions that indicate the extent to which they are aware of the larger world outside their own family or village. It has been observed again and again throughout the world that the greater a group's contact with life outside their immediate social system - whether direct contact, through travel outside, or vicarious contact, through books, films or talk with other people - the greater is that group's willingness to accept new ideas.

The greater the contact, the greater the acceptance of new ideas. This is the hypothesis simply stated, and we shall see it confirmed for Vihiga in many of the remaining tables. It may be appropriate here, however, to remind ourselves of the basic rule to be observed in interpreting statistical data. The data may allow us to make general statements about a large group of people, because we can rely on the principle of "safety in numbers," known in statistical studies as the law of large numbers or the central limit theorem, but we should never feel secure, on the basis of group data, in making statements about individuals. For example, the fact that a particular individual has had relatively little contact with the outside world does not by itself mean that he is any less willing to try new ideas than another individual who has had relatively a lot of outside contact. This fundamental rule should be kept in mind as we draw conclusions from tables.

We asked farm managers to tell us how many years they had lived outside the Division, in most cases, that time spent working, looking for work, or studying. The median answer is five years for all managers in the Division - four years among Lagg, five years among LowMids, six years among UpMids, and three years among Mosts.\* Thus, there appears to be a peculiar pattern, whereby the least and the most progressive have spent less time away than those in the middle.\*\*

\*The median is that value belonging to the middle-most observation.

\*\*This pattern is confirmed within a small section of Vihiga and tentative explanations put forth by Joyce L. Mook in her present field study of labour migration and economic activity in Madzoo Sub-Location.

CHARACTERISTICS OF FARM MANAGERS

Tables 82/83: Location and Progressiveness by Journeys Outside Division

Question: How often do you now travel to places as far from your home as Kisumu, Kakamega or Kapsabet?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
82. Journeys											
Daily.....	0	1	3	1	1	0	3	0	1	2	1
Few Times Per Wk	4	19	1	7	8	3	5	13	5	5	7
Few Times Per Month.....	26	25	18	13	25	10	32	25	12	9	18
Rarely.....	32	26	46	33	47	58	43	43	50	35	43
Never.....	38	29	32	46	19	29	17	19	32	49	31
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
83. Journeys											
Few Times Per Month At Least	30	45	22	21	34	13	40	38	18	16	26
Rarely/Never...	70	55	78	79	66	87	60	62	82	84	74
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

Farm managers, by definition (see p. 2 and Tables 3/4 above) are living at home now, or at least near enough that they can make the day-to-day farming decisions. However, some travel frequently to centres such as Kisumu, Kakamega, and Kapsabet, 10 to 20 miles from their homes, or to other, perhaps further, places; others travel infrequently or not at all. Those who journey from their homes may do so on business or for pleasure - it matters little which. The fact that they do so demonstrates an acceptance of the outside world, and the travel itself may be expected to reinforce this attitude.

Significantly more Lags and LowMids than Mosts and UpMids travel rarely or not at all. Managers in Nyan. tend to travel the most; those in NM, followed by WB and EB, the least.

CHARACTERISTICS OF FARM MANAGERS

Tables 84/85: Location and Progressiveness by Radio

Question: How often do you listen to the radio?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
84. Listen											
Daily.....	29	39	31	20	37	23	37	49	24	12	28
Few Times Per Week.....	24	19	24	12	19	3	15	11	24	16	18
Few Times Per Month.....	7	7	8	2	11	4	10	6	5	4	6
Rarely.....	23	17	17	24	23	51	26	23	31	27	27
Never.....	17	18	20	42	10	19	12	11	16	41	21
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
85. Listen											
Few Times Per Month At Least	60	65	63	35	67	30	62	66	53	32	52
Rarely/Never...	40	35	37	65	33	70	38	34	47	68	48
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

Another kind of contact with the outside world is contact via the mass media. Of these, radio is typically the most pervasive in agrarian communities today, perhaps due to high illiteracy rates and the relative cheapness of modern transistors. A majority of Vihiga farm managers (about 52%) listen to the radio at least a few times per month, and over a quarter do so every day. UpMids and Mosts are significantly more likely to be among those who listen at least a few times per month than are Lags.

CHARACTERISTICS OF FARM MANAGERS

Tables 86/87: Location and Progressiveness by Newspapers and Periodicals

Question: How often do you read a (DAILY NEWSPAPER/PERIODICAL)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
86. Daily Newspaper											
Daily.....	5	7	4	4	3	4	9	10	2	3	5
Few Times Per Week.....	6	8	8	5	10	11	12	12	7	3	8
Few Times Per Month.....	7	5	11	7	7	0	3	4	7	6	5
Rarely.....	20	9	12	18	20	23	23	18	18	10	17
Never.....	62	71	65	66	60	62	54	56	66	78	65
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
87. Periodical											
Daily.....	2	2	1	1	0	0	0	3	0	1	1
Few Times Per Week.....	3	4	2	3	3	3	5	3	3	1	3
Few Times Per Month.....	3	4	6	2	7	5	12	5	2	1	4
Rarely.....	14	12	3	8	10	17	17	14	7	7	11
Never.....	78	78	88	86	80	75	66	75	88	90	81
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	97	100	98	98	97	99	78	79	120	106	383

Relatively few Vihiga managers (about 35%) ever read a daily newspaper, and fewer still (about 19%) a weekly or monthly magazine. Nevertheless, significantly more Mosts and UpMids read newspaper and periodicals than do Laggs. Of course, it is necessary to be literate in either English or Swahili to be able to read most printed matter in Kenya, and Mosts and UpMids are more likely to be literate in at least one of these languages than are Laggs (see Table 93).



CHARACTERISTICS OF FARM MANAGERS

Tables 88/89: Location and Progressiveness by Television and Cinema

Question: How often do you (WATCH TELEVISION/ GO TO THE CINEMA)?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Laggards	TOTAL
88. Television											
Few Times Per Month At Least	3	2	3	2	2	1	3	1	1	3	2
Rarely.....	9	7	15	9	16	7	15	14	8	5	10
Never.....	88	91	82	89	82	92	82	85	91	92	88
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
89. Cinema											
Few Times Per Month At Least	2	4	5	2	3	2	5	6	3	1	3
Rarely.....	55	46	46	24	37	40	54	42	41	25	40
Never.....	43	50	49	74	60	58	41	52	56	74	57
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	98	99	78	79	120	106	383

There are few televisions in Vihiga Division and no cinema houses, although films, especially agricultural and other educational films, are sometimes seen at schools where there is electricity and in mobile cinema vans. Most farmers would have access to television or cinema only when journeying outside, if at all. Although groups do not differ markedly with respect to television viewing, significantly fewer Laggards than other farmers ever see films, and fewer WB farmers than Tiri., EB., and Nyan. farmers ever do so.

CHARACTERISTICS OF FARM MANAGERS

Tables 90/91: Location and Progressiveness by Organization Participation

Question: Are you a (MEMBER/OFFICE BEARER) of the following organization?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
90. Member											
Co-Op. Society	11	15	7	4	30	12	55	16	2	0	15
Church Group...	78	85	87	82	90	89	90	86	89	77	85
Maendeleo Group	12	26	7	2	20	7	20	20	6	1	10
School Board...	21	23	18	3	25	12	38	12	7	7	15
Harambee Group	46	58	64	38	49	57	52	60	54	43	52
4K Club.....	2	1	1	0	1	1	2	0	0	1	1
Sports Club....	3	7	12	3	4	1	10	5	3	4	5
Total Percent*...	173	215	196	132	219	179	267	199	161	133	183
None.....	15	3	9	13	4	7	3	10	4	18	9
91. Office Bearer....											
Co-Op. Society	0	1	1	0	0	1	1	1	0	0	1
Church Group...	23	22	19	15	26	29	42	24	22	10	32
Maendeleo Group	1	2	0	0	2	1	1	1	0	0	1
School Board...	5	10	9	0	8	1	11	6	0	1	4
Harambee Group	3	7	10	5	4	2	3	8	3	3	3
4K Club.....	1	1	1	0	0	0	1	0	0	0	0
Sports Club....	1	4	3	1	1	1	1	3	1	1	1
Total Percent*...	34	47	43	21	41	35	60	43	26	15	42
None.....	57	66	63	67	67	60	53	67	76	90	73
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

\*Totals may equal other than 100% as some farmers are members (office bearers) of none of the seven organizations, and some are members (office bearers) of more than one.

Participation in formal organizations may be thought of <sup>as</sup> another kind of link with the outside world, and we do observe in Tables 90/91 a correlation between participation and progressiveness. The "typical" Most is a member of 2.7 ("two or three") of the seven listed organization, and more than one out of two Mosts (60%), on the average, hold an office in one of them; the "typical" Lagg belongs to 1.3 of the seven, and only one or two out of ten (15%) are office bearers. About 18% of Lagg belong to none of the seven organizations, whereas only 3% of Mosts and 4% of LowMids are non-participants. For some reason, non-participation is significantly greater in Tiri. than it is in Nyan. For all groups, participation is greater in church organizations (about 85% of Vihiga farm managers), and next greatest in Harambee societies (52%).

CHARACTERISTICS OF FARM MANAGERS

Tables 92/93: Location and Progressiveness by Academic Education and Literacy

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBur	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
92. Level of Education											
None.....	49	47	44	65	39	39	36	35	44	55	44
Up To Standard III.....	35	32	31	21	32	32	39	29	31	35	33
Up To Last Year Primary	14	20	21	13	27	25	22	30	22	10	20
Up To Form II	2	1	3	1	1	3	2	5	2	0	2
Above Form II	0	0	1	0	1	1	1	1	1	0	1
Total Percent	100	100	100	100	100	100	100	100	100	100	100
93. Literacy*											
None.....	50	46	45	59	38	39	35	33	46	56	44
Vernacular Only.....	6	11	10	11	10	23	16	14	13	16	15
Vernac. & Swahili.....	33	30	32	23	41	27	36	33	31	22	29
Vernac., Swah., and English	11	13	13	7	11	11	13	20	10	6	12
Total Percent	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	97	100	98	98	97	99	78	79	120	106	383

\*This is self-declared literacy; that is, no literacy tests were administered. The categories are judged to be progressive levels of literacy, that is, any one who reads Swahili also reads Vernacular, and any one who reads English also reads Swahili and Vernacular.

We asked farm managers to declare their levels of education and literacy. We divided education into categories corresponding to Kenya's examination levels, with the exception of the first category, which is schooling up to Standard III. We chose Standard III as a breaking point on the basis of a U.N.E.S.C.O. rule of thumb which states that world-wide a minimum of four years of schooling is necessary for the average individual to learn and retain a level of literacy which is sufficient for his everyday use. In Vihiga, however, although only some 23% of farm managers have had four years of schooling or more, nevertheless, a full 56% declare themselves literate at least in the vernacular, 41% in Swahili, and 12% in English. Although it is quite possible for exceptional individuals to learn to read and write in less than four years of school, or on their own time, the large discrepancy that we observe in the data tends to discredit either the U.N.E.S.C.O. rule of thumb or self-declaration as an indication of functional literacy.

Taking 69% as the proportion of Vihiga farm manager that are non-literate in English and/or Swahili, we might consider this a constraint to agricultural development since nearly all available agricultural material is written in either English or Swahili, practically none in the local languages. UpMids and Mosts are significantly more likely than Laggs to be literate at least in Swahili; SM managers significantly more likely than those in WB.

Although significantly fewer Mosts and UpMids than Laggs managing farms have had no schooling, Progressiveness Groups do not differ very markedly with respect to the education of farm managers. It appears that the "average" UpMid has had about the same education as the "average" Most, and the other two Groups fall not far behind.

CHARACTERISTICS OF FARM MANAGERS

Tables 94/95: Location and Progressiveness by Agricultural Training

Question: What agricultural certificates do you hold?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
94. 1969-1970											
At Least One Course.....	1	6	1	0	2	2	5	3	0	1	2
None.....	99	94	99	100	98	98	95	97	100	99	98
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
95. 1968 Or Earlier											
At Least One Course.....	5	5	2	3	6	4	11	8	2	0	5
None.....	95	95	98	97	94	96	89	92	97	100	95
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

Only a very small proportion of Vihiga farm managers have had any formal agricultural training. Of those who have had training, most have had one brief course at a farmer training centre. Although there is a tendency for more progressive farmers to have had more training, it is not significant at the 95% confidence level.

CHARACTERISTICS OF FARM MANAGERS

Table 96: Location and Progressiveness by Other Training

Question: What other vocational training do you have?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Training											
Military.....	4	4	3	0	0	1	0	0	0	4	1
Religious.....	0	4	3	3	3	1	9	0	1	1	2
Teacher.....	0	1	4	0	1	2	4	1	0	0	1
Artisan*.....	4	3	3	7	3	6	5	3	6	2	4
Other.....	2	5	4	5	2	4	4	8	2	3	4
Total Percent**.....	10	17	17	15	9	14	22	12	9	10	12
No Training.....	90	85	85	87	91	87	79	89	92	91	88

\*Carpentry, masonry, tailoring, mechanics, cooking, pottery, etc.

\*\*Totals may equal other than 100%, as some farmer\_s have had more than one kind of vocational training and most farmers have had none.

On the average, about one out of ten Vihiga farm managers has had formal training in some non-agricultural vocation. The tendency for Mosts to have had more than other Progressiveness Group is not quite significant.

CHARACTERISTICS OF FARM MANAGERS

Tables 97/98: Location and Progressiveness by Occupations\*

Question: What is your (MAJOR/MINOR, IF ANY) occupation?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
97. Major Occupation											
Farmer.....	86	83	90	85	85	88	76	81	92	94	87
Labourer.....	0	0	0	2	2	1	1	0	0	2	1
Domestic.....	0	0	0	0	0	0	0	0	0	0	0
Trader.....	2	4	2	9	1	2	3	8	2	1	3
Artisan.....	8	5	1	2	5	3	3	5	4	2	3
Office Worker	0	0	1	0	1	0	1	1	0	0	1
Professional	0	3	4	0	3	3	6	4	1	0	2
Govt Official	3	3	0	0	1	0	1	1	0	1	1
Church Elder	0	0	0	0	0	0	0	0	0	0	0
Church Functionary	1	2	2	2	2	3	9	0	1	0	2
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	97	100	98	98	97	99	78	79	120	106	383
98. Minor Occup'N of Those Who Farmers First											
None.....	79	85	89	91	86	91	81	85	88	89	87
Labourer.....	1	0	1	2	0	0	0	3	0	1	1
Domestic.....	1	2	1	1	0	0	0	2	1	2	1
Trader.....	0	8	1	4	5	7	9	6	5	3	5
Artisan.....	5	1	5	1	4	1	3	2	4	3	3
Office Worker	0	0	0	0	0	0	0	0	0	0	0
Professional	0	0	0	0	0	0	0	0	0	0	0
Govt. Official	1	0	1	0	0	1	2	0	1	0	1
Church Elder	4	4	0	0	1	0	3	2	0	0	1
Church Functionary	0	0	2	1	4	0	2	0	1	2	1
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base	83	83	88	83	82	87	58	64	111	100	333

\*Some categories may require clarification. Labourer refers to workers with no special training, including watchmen. Domestic here includes restaurant, bar, and hotel, as well as household, employees. A trader refers to anyone at any level involved in buying and selling goods (not including farmers selling their own produce only). An artisan is any skilled worker with the hands, here including drivers in addition to the other artisan types. An office worker is any semi-skilled "white-collar" worker, from messenger/clerk to telephonist/typist. The professional category here includes students of secondary level or higher, teachers (the largest sub-category), and those practicing medicine or law at whatever level. Government official here includes Administration and agricultural staff and also politicians. Church functionary refers to evangelists as well as the more sedentary kinds of preachers.

We observe in Tables 97/98 that about 87% of Vihiga farm managers consider farming to be their major occupation, and of these farmers 87% have no other, minor occupation. This means that about 76% of Vihiga farm managers (87% of 87%) have no occupation other than farming. Whereas 82% of Laggs (89% of 94%) fall into this category, only 61% of Mosts (81% of 76%) do so, a significant difference.

CHARACTERISTICS OF FARM MANAGERS

Tables 99/100: Location and Progressiveness by Church Affiliation

Question: What church do you attend?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
99. Church											
None.....	13	7	3	12	1	7	4	6	4	10	6
African Holy Spirit.....	3	2	0	2	1	2	3	6	0	2	3
African Divine	4	3	0	0	8	3	4	5	4	3	4
African Israel	6	12	4	0	3	3	4	1	3	4	3
Anglican (CMS)	1	0	19	24	3	1	6	5	12	13	10
Church of God	0	0	42	28	1	0	9	4	9	19	11
Friends (FAM)	9	1	0	0	44	25	31	19	13	7	16
Islam.....	1	2	0	0	2	1	0	1	0	1	1
Orthodox.....	6	3	1	2	0	1	5	1	3	1	2
Pentecostal (PAG).....	30	57	15	13	22	34	19	40	31	23	28
Roman Catholic	15	5	3	7	2	7	4	2	5	10	6
Salvation Army	9	7	5	4	12	14	6	8	10	7	8
Other*.....	3	1	8	8	1	2	5	2	6	0	2
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
100. Kind of Church											
None.....	13	7	3	12	1	7	4	6	4	10	6
Islam.....	1	2	0	0	2	1	0	1	0	1	1
Separatist**	19	20	5	4	12	9	16	13	10	10	12
Other Christian	67	71	92	84	85	83	80	80	86	79	81
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	98	100	99	98	97	99	78	80	120	107	305

\*The principal others are African Interior, Bahai, Baptist, Methodist, and Seventh Day Adventist.

\*\*We have categorized as separatist religions in Vihiga the following: African Divine, African Israel, African Church of the Holy Spirit, and Orthodox. The others, while diverse, are cosmopolitan and, having spread to Vihiga typically as the result of missionary activity, might be classified as mission-affiliated, as opposed to separatist or independent.

A number of academic studies have examined the relationship between religion and progressiveness. Norman Long, for example, concludes that Jehovah's Witnesses in Zambia utilize their religion to break out of certain traditional patterns of behavior.\*\*\* A study within Vihiga itself is Walter Sangree's Age, Prayer & Politics in Tiriki, Kenya.

Sangree refers to a dichotomy among the Tiriki people between initiators (the 'progressives') and ...legitimizers (the 'conservatives') of social change." He writes that, while the division was traditionally based on age grades, "a pagan-Christian factional division pervaded the Tiriki social scene in the 1920's and 1930's, with the pagans retaining the more conservative orientation."\*\*\*\*

Although paganism, defined negatively as the non-acceptance of Christianity or Islam, has virtually disappeared in Vihiga (according to our Survey, about 6% only of Vihiga farmers claim no church affiliation - 13% in Tiri.), it may be that alignments have formed between progressiveness and contemporary religious sects. It is interesting to note, for example, that Laggs and LowMids are significantly less likely than Mosts to be members of the Friends African Mission, one of Vihiga's largest religious groups. It is impossible to say, however, on the basis of this information alone, whether F.A.M. affiliation contributes somehow to a progressive outlook or, contrariwise, a progressive farmer is more likely to be attracted than another farmer to the F.A.M.

Naturally, place of residence has something to do with a farmer's choice of church affiliation. For example, a Bunyore farmer, progressive or not, would have difficulty in attending a Friends church, since there was relatively little F.A.M. missionary activity within the Bunyores and there is probably no Friends church within easy walking distance from his home. The administrative centre of the F.A.M. in Kenya is at Kaimosi in Tiri. Location but, for a variety of historical reasons, the people in Kenya with undoubtedly the greatest proportion of F.A.M. followers are the Maragoli.

The Pentecostal Assemblies of God, while numerous throughout the Division are more so in East Vihiga than in West. The Church of God and Church Missionary Society (Anglicanism) in Vihiga are concentrated in the Bunyores.

Denominationalism has flourished in Vihiga, as it has throughout Kenya (compare Uganda, where Christianity is divided almost exclusively between two groups, the Roman Catholics and the Anglicans). Non-Christian religions are practically non-existent in Vihiga (compare the Coast, with its Moslem influence). Within the predominant religious category, which is Christianity, we might look for classifications larger than individual denominations, in our efforts to increase our understanding of progressive behavior among Vihiga farmers. One classification that suggests itself is that of separatist, or independent, churches. The separatist churches are an African response to the spread of outside religions, often containing a denial of outside influence and an affirmation of local traditions.

The separatist movement has been fairly widespread in western Kenya. The principal independent churches in Vihiga are the African Church of the Holy Spirit, the African Church of Israel, the African Orthodox Church, and the African Divine Church. The first two are breakaways from established missions, the F.A.M. and the P.A.G. The Orthodox Church is a western branch of Karinga, a kikuyu independent church, and claims an affinity with the Greek Orthodox Church.\*\*\*\*\* One might expect a correlation to exist between separatist affiliation and non-progressive farming behavior. This expectation is not confirmed in Table 100, given the rough index of progressiveness which we are using.

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\*\*\*Long, Social Change and the Individual. (Manchester, Manchester University Press, 1968).

\*\*\*\*Sangree, Age, Prayer & Politics in Tiriki, Kenya (London, Oxford University Press, 1966), p. 284.

\*\*\*\*\*Ibid., chpt. VII.

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CHARACTERISTICS OF FARM MANAGERS

Tables 101/102: Location and Progressiveness by Age

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
101. Years											
Up to 30.....	16	17	18	17	22	16	6	13	16	20	14
" " 40.....	20	25	27	27	24	25	15	24	29	25	25
" " 50.....	23	27	22	21	17	20	28	22	18	21	21
" " 60.....	20	14	13	15	17	27	23	15	20	15	18
Over 60.....	21	17	20	20	20	12	28	26	17	19	22
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
102. Years											
Up to 45.....	49	54	57	57	55	54	36	48	53	61	51
Over 45.....	51	46	43	43	45	46	64	52	47	39	49
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

Age is a difficult variable to relate a prior to progressiveness. We might postulate that older farmers are more progressive, reasoning that age is an indicator of experience and that older farmers have learned to be better farmers. Moreover, older farmers have had longer in which to accumulate savings and may have, on the average, less children of school age, enabling them to invest more money into their farms.

Alternatively, we might wish to argue the opposite, that older farmers are less progressive. Assuming them to have, on the average, less education and less media exposure (though probably not, in the case of Vihiga, less years of residence outside the area), we might argue that older farmers would show greater resistance to new ideas in farming.

Were we to argue the second alternative, the information in Tables 101/102 would prove us wrong for farm managers in Vihiga Division. There is a tendency, though not quite significant<sup>at</sup> the 95% confidence level, for Mosts and UpMids to be older than 45 years of age and for Lags and LowMids to be younger.

CHARACTERISTICS OF FARM MANAGERS

Tables 103/104: Locations and Progressiveness by Birthplace & Marital Status

	LOCATION						PROGRESSIVENESS				DIVSN TOTAL
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	
103. Birthplace											
Present Location	80	36	79	86	85	85	80	75	76	85	79
Elsewhere in Division.....	16	61	17	10	14	11	18	23	21	11	18
Outside Division	4	3	4	4	1	4	2	2	3	4	3
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
104. Marital Status											
Single.....	4	1	4	5	5	1	3	3	2	8	4
Married Monog.	85	78	81	77	83	83	77	84	86	77	81
Married Polyg.	8	15	9	6	9	6	14	7	6	5	8
Widowed.....	3	6	5	9	3	8	6	6	5	8	6
Separated.....	0	0	1	3	0	2	0	0	1	2	1
Total Percent...	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	97	100	98	98	97	99	78	79	120	106	383

About 79% of Vihiga farm managers were born in the Locations in which they now live. Managers are more likely than non-managing farm heads (compare Table 115) to have moved from their birthplaces to their present Location (because they are more likely to be female and, thus, less likely to be living on their fathers' land). The Location with by far the most number of residents born outside is Nyan., this statistic reflecting the large in-migration, especially of Maragoli people, from the west and north.

About 81% of Vihiga farm managers are married monogamously, 8% polygamously. The more progressive farmers, as evidenced in Table 104, appear as a group to be no less attracted to polygamy than their less progressive neighbors, and they are no doubt in a better position to afford it. It may be finance as well that explains the relatively high proportion of Laggards who are single, although this pattern is not repeated in Table 116 for non-managing farm heads.

NON-MANAGING FARM HEADS

Tables 105/106: Location and Progressiveness by Residence Outside Division

Question: How long has FH worked or studied outside of Vihiga Division?		LOCATION						PROGRESSIVENESS				DIVSN
		Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
105.	No. of Years											
	Up To 5.....	22	37	14	28	17	7	25	11	23	24	20
	" " 10.....	33	30	24	18	24	13	14	23	23	17	21
	" " 15.....	15	10	34	22	20	20	22	12	18	28	21
	" " 20.....	4	10	14	22	21	34	11	23	21	20	20
	" " 25.....	19	13	2	2	7	13	3	11	10	7	8
	Over 25.....	7	0	12	8	11	13	25	20	5	4	10
	Total Percent...	100	100	100	100	100	100	100	100	100	100	100
106.	No. of Years											
	Up to 10.....	56	67	38	45	41	20	39	34	46	41	41
	Over 10.....	44	33	62	55	59	80	61	66	54	59	59
	Total Percent...	100	100	100	100	100	100	100	100	100	100	100
	Percentaging Base	27	30	42	40	46	30	28	28	46	50	152

We have maintained that a certain class of farm decisions, especially those involving cash expenditure, is reserved for farm heads, even when the farm head, usually because he is working outside, has entrusted someone else with the day-to-day decisions (see pp.1-2 above). Thus, it was important in the Survey that we obtain information about non-managing farm heads on those farms that had such heads, in addition to the information obtained on all farms about farm managers. Where there was a non-managing farm head, we asked the manager some additional questions, fewer than those he had answered about himself, but many of the same ones.

Tables 106-117 summarize the data on non-managing farm heads. With the exception of that for the whole Division, percentaging bases are rather small, so that estimates are perhaps insufficiently reliable for making comparisons among farm groups. These tables are presented without further comment, and the reader's attention should be directed primarily at Divisional estimates.

NON-MANAGING FARM HEADS

Tables 107/108: Location and Progressiveness by Academic Education & Literacy

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
107. Level of Education											
None.....	30	23	21	40	13	30	28	25	28	32	29
Up To Standard III.....	36	17	31	28	22	30	21	18	28	32	26
Up To Last Year Primary.....	30	50	41	30	54	34	29	53	38	34	38
Up To Form II	4	10	5	2	0	0	4	0	4	2	2
" " " IV	0	0	0	0	7	3	7	4	0	0	2
" " " VI	0	0	2	0	2	3	7	0	2	0	2
College or Univ.	0	0	0	0	2	0	4	0	0	0	1
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
108. Literacy*											
None.....	33	23	19	28	13	30	25	21	28	26	26
Vernacular Only	7	7	7	5	2	7	0	11	13	0	6
Vernac. & Swahili	27	33	36	42	44	50	39	36	33	50	40
Vernac, Swah., & English.....	33	37	38	25	41	13	36	32	26	24	28
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base.....	27	30	42	40	46	30	28	28	46	50	152

\*This is literacy of non-managing heads as judged by farm managers.

NON-MANAGING FARM HEADS

Tables 109/110: Location and Progressiveness by Agricultural Training

Question: What agricultural certificates does FH hold?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
109. 1969 - 1970											
At Least One Course.....	0	0	0	0	2	0	0	0	0	2	1
None.....	100	100	100	100	100	100	100	100	100	98	99
Total Percent....	100	100	100	100	100	100	100	100	100	100	100
110. 1968 Or Earlier											
At Least One Course.....	4	3	5	0	4	0	4	4	2	0	2
None.....	96	97	95	100	96	100	96	96	98	100	98
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	27	30	42	40	46	30	28	28	46	50	152

NON-MANAGING FARM HEADS

Table 111 : Location and Progressiveness by Other Training

Question: What other vocational training does FH have?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Training*											
Military.....	0	3	5	0	0	0	4	4	2	0	2
Religious.....	0	0	0	2	2	0	4	0	2	0	1
Teacher.....	4	3	2	0	2	3	7	0	2	2	3
Artisan.....	0	3	7	20	15	23	25	11	11	6	12
Other.....	4	10	19	10	7	0	4	21	7	4	8
Total Percent.....	8	19	33	32	26	26	44	36	24	12	26
No Training.....	93	83	71	68	76	77	68	71	76	88	78
Percentaging Base	27	30	42	40	46	30	28	28	46	50	152

\*See notes to Table 96.

NON-MANAGING FARM HEADS

Table 112: Location and Progressiveness by Current Employment

Question: How is FH now employed?	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
Employment*											
Unemployed.....	22	17	14	20	21	29	18	21	26	24	23
Labourer.....	33	27	24	28	13	29	25	25	22	28	25
Domestic.....	26	10	19	5	23	20	14	11	30	12	18
Trader.....	7	13	10	10	9	9	7	7	7	8	7
Artisan.....	7	17	21	25	9	7	10	21	7	16	12
Office Worker....	0	10	5	8	12	4	4	11	4	6	6
Professional.....	4	3	5	2	7	4	14	4	2	2	5
Govt Official....	0	3	2	2	4	0	4	0	2	4	3
Church Functionary	0	0	0	0	2	0	4	0	0	0	1
Total Percent.....	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base...	27	30	42	40	46	30	28	28	46	50	152

\*See note to Tables 97/98

NON-MANAGING FARM HEADS

Tables 113/114: Location and Progressiveness by Age

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
113. Years											
Up To 30.....	26	23	12	5	22	7	14	14	13	13	14
" " 40.....	22	57	49	50	41	27	31	49	40	35	38
" " 50.....	26	10	39	30	24	49	32	20	29	40	30
" " 60.....	19	10	10	10	9	10	17	11	13	10	13
Over 60.....	7	0	0	5	4	7	6	6	5	2	5
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
114. Years											
Up To 40.....	48	80	61	55	63	34	45	63	53	48	52
Over 40.....	52	20	49	45	37	66	55	37	47	52	48
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	27	30	42	40	46	30	28	28	46	50	152

NON-MANAGING FARM HEADS

Tables 115/116: Location and Progressiveness by Birthplace and Marital Status

	LOCATION						PROGRESSIVENESS				DIVSN
	Tiri	Nyan	EBun	WBun	SMar	NMar	Most Prgs	Upper Middle	Lower Middle	Lagg ards	TOTAL
115. Birthplace											
Present Location.....	81	54	86	98	100	93	93	87	93	92	91
Elsewhere in Division.....	15	43	12	2	0	7	7	9	7	8	8
Outside Division.....	4	3	2	0	0	0	0	4	0	0	1
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
116. Marital Status											
Single.....	7	0	2	8	9	7	10	11	4	6	7
Married Monog.	79	94	79	80	82	83	82	64	92	80	81
Married Polyg.	10	3	17	10	7	10	4	21	4	10	9
Widowed.....	0	3	0	0	2	0	0	0	0	2	1
Separated...	4	0	2	2	0	0	4	4	0	2	2
Total Percent..	100	100	100	100	100	100	100	100	100	100	100
Percentaging Base....	27	30	42	40	46	30	28	28	46	50	152