SMALL RUMINANT

COLLABORATIVE RESEARCH SUPPORT PROGRAM

TECHNICAL REPORT SERIES

NUMBER

July, 1984

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Columbia, MO 65211
USA

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A SOCIAL SYSTEMS DESCRIPTION OF SMALL FARMERS IN TWO WESTERN KENYA DISTRICTS

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This research was carried out as a part of the United States Agency for International Development Title XII Small Ruminant Collaborative Research Support Program under Grant No. AID/DSAN/XII-G-0049 in collaboration with the Republic of Kenya, Ministry of Livestock Development and Winrock International Livestock Center.

PART I

INTRODUCTION

Change is an inevitable part of "development" in agriculture or any other sector of the society. The change can occur by merely altering habitual ways of doing things such as time of planting crops or by adopting new ideas and/or technology. Change creates problems and opportunities for both the farmer and those who may attempt to help him (change agents). This report has been prepared primarily as descriptive background for change agents. Social change is a complex process that is not well understood, but of which an understanding is essential if the process of bringing about change is to be successful.

Modernization of agriculture results in the farmer becoming a part of a more complex society in which a division of labor into specialized occupations is the norm. In the modernizing society much of what the small farmer needs or wants is developed and delivered by people who only do one thing such as selling or buying products, providing information or conducting research. In the traditional society the chiefs, the religious leaders or the village elders were the primary sources of information on almost any subject. The information specialists such as Extension agents serve as sources for addressing individual farmer needs and wants in a very limited range of topics. Essential to the process of change are a number of

elements including information about new farming practices which is accurate and applicable, markets for the products, and credit to buy the new technology, and supplies. The farmers must go to several specialists to obtain the necessary information together with other inputs to achieve their goals. This is a new procedure for the farmer and not one he/she accepts easily. This means that the first experiences need to be successful in order to encourage him/her. Since each farmer's situation is unique, the searching out of sources of information must be done by him/her in the context of a system of individual relationships and interdependences. The process of adoption by each farmer is further complicated because the information or technology delivered by the specialist is seldom precisely suited to local needs. The adapting is usually left to the individual farmers. Inputs of information or technology have to be altered frequently by the farmer to fit the precise ecological, economic and social conditions of his/her farming system. Herein resides a difficult problem for the user, particularly the small farmer with limited resources and management knowledge. The individual adaptation problem has been long unrecognized and unattended by people desiring to bring about change in agriculture. Good outside assistance is needed to provide the most adaptable information and technology and for this to occur, knowledge of the local farming systems is necessary.

We must emphasize that those who would help farmers must understand the system in which the farmer makes his changes. Although the conditions and influences in the larger social system such as government policies, markets and other infrastructure must be recognized, those conditions that count most from the farmer's perspective are the ones that operate in the farmers' systems. These

include more than just the farming system. It includes their belief systems, values, and perceptions about the future. The farmer's world is what he believes it to be. This may or may not be an accurate reflection of reality. We all act mostly in terms of what we believe situations to be, sometimes even when "what actually is" strongly suggests contrary courses of action.

Purpose

It is the purpose of this report to provide knowledge insight, and understanding of the local social situations of small farmers in two communities in Western Kenya: Siaya and Kakamega. This report compliments and supplements the Ph.D. dissertation by Michael Sands (1983) entitled, "Role of Livestock on Smallholder Farms in Western Kenya: Prospects for a Dual Purpose Goat", which provides considerable insight into the economic and agronomic situations of the small farmers. Also complimentary is Amanda Noble's (1982) M.S. thesis entitled, "Women and Livestock in Western Kenya: An Organizational Analysis" which explores the social organization of experimental goat cooperatives. Sand's work and this report both take a farming system approach.

For purposes of our report, the farming systems definition of Shaner, Philipp and Schmehl (1982, p. 16) will serve: "a farming system is a unique and reasonably stable arrangement of farming enterprises that the household manages according to well defined commercialized (cash crops are grown or part of food crops are sold for cash).

We, in this report, are not able to supply either the interdisciplinary effort or a fine tuned description of what farmers

do, how they do it, why they do it and the interactions of what they do as producers of agricultural products and as functioning members of the villages in which they live, as is ultimately necessary (Hildebrand, 1977). We try to provide a better understanding of the forces and conditions that in one way or another influence what farmers in Kakamega and Siaya want or may want to do. We used as background the Kenyan research of Sands (1983), rural sociologist Meyers (1982) and rural sociologist Mbithi (1974).

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What then are these forces and conditions that must be understood? Perhaps orienting our thinking to a farm family or household trying to achieve its goals would help (See Figure 1). Such an orientation assumes several things that should be noted. First it assumes that there is someone in the household who believes that man is in control and thus that his intervention in what happens is possible. Second, it recognizes that the household is the prime unit of agricultural production, accordingly that it is basically a group undertaking; not merely the devices of individuals acting alone. It further recognizes that the resources available to the family, the interactions among members, what can be expected from each and what must be given in return are at issue. Perhaps, Figure 1 diagram can help us visualize the kinds of variables that are at issue and how they interface, combine and interact through time to help farm families achieve their ultimate goals.

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First there are what we may call prior conditions. They are mostly what exists before a farmer starts on his way to achieving his goals. These include both (1) what the chief decision maker is

mentally, physically, emotionally and habitually and (2) the nature of the situation in which he operates. Agriculturalists with a psychological bent have identified such personal qualities as change proneness, initiative, management ability and ability to deal with abstractions. This is in addition to such well known things as age, health, education and physical strength. All seem to make a difference. Both the farmer and the change agent will likely have to live with many of the situational variables. Changes in them usually occurs slowly, if at all, and usually as the result of a long sustained effort.

The situation in which the chief decision maker and his or her family find themselves presents many additional variables. They are "stuck with" government agricultural price, production policy, local government restrictions, village and kinship obligations, land quality and quantity, water supply, and the weather. There is also the infrastructure that facilitates or hinders their efforts in what they do or want to do. Here too, change tends to occur slowly and when they do, usually with outside help. The last may or may not be forthcoming.

Closer to home is the family which may include only biological parents and their offspring or mmbers of the extended family from whom reciprocal duties may be expected and to whom obligations are owed. These obligations generally take precedence over the requirements of agricultural production. Thus an animal needed for food or power may be sold to pay the school tuition of a son. Or time needed to weed the maize may be spent instead participating in extended funeral rituals or religious obligations (Mbithi, 1974). The number of able bodied

workers available to work in the fields, or those away from home who may send money back all operate as important determinants of farming operations (Meyers, 1982).

The support infrastructure is actually a conglomerate of specialized agents and agencies whose purpose is to render services and/or provide supplies to farmers. If they do not operate properly (on time, and on terms acceptable to the farmer) or if they are so unreliable that farmers can't depend on them, they will not use them.

Then there are the variables that intervene between where a farm family is and where they ultimately want to go. If for a moment we forget about services delivered by the infrastructure which also must intervene, there are still actions that must line up. Think of the ultimate goal of sending a son to college. The route may be adoption of new farm practices or enterprises, increased cash crop yields, family savings (above requirements), and finally support of the son in college. Also remember there are sometimes unintended consequences of what the farmer does, e.g. creating a disease problem by planting new high yielding varieties which are suspectible to certain pathogenous.

Thus in the context in which the farmer must make his decisions on what to do or not do, the variables are many and varied. They interact and combine over time yet, there is an order in which the events must occur if the best decisions are to be made. Complicated and difficult? Yes, and even more so for farmers with limited resources and limited management knowledge. These are the first lessons to be learned and remembered by the change agent. Perhaps the second is that the plight of the farmer can be understood only in the

context of his own farming system and its relation to the larger society.[1]

These things a change agent must know if they are to be of much help to small farmers with their problems. If they are native to the people they are trying to help they already have built-in understanding of many things. This was true of county agricultural advisers in the U.S. Otherwise they must acquire this understanding quickly.[2]

Place of Agriculture in the National Economy

About 90 percent of the population in Kenya live in the rural areas. Families engaged in smallholder agriculture represent about 85 percent of Kenya's total rural population. The remaining 15 percent are found on large-scale farms and in non-farm activities, such as agro-business, administration and commercial enterprises. Cast within the overall national economic framework, agriculture is the single largest sector and the most fundamental rural economic activity in Kenya.

Agriculture plays a principal role in national development. It is the backbone of the nation's economy. Because of this it is given prominence in the government's budget. The growth of the expenditures for the Ministry of Agriculture has been faster than other ministries (Kenya, 1979-1983). The budget for the Ministry of Agriculture will

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1 This was recognized in the farm and home unit approach in extension teaching of years past in our own state of Missouri. The program was popularly known as Balanced Farming.

2 Recently the central focus of an international Institute of Development Studies sponsored conference on "quick and dirty" surveys for this purpose. Suggested methods from here and elsewhere are briefly noted by Lionberger and Gwin (Communication Strategies: A Guidebook for Agricultural Change Agents, 1982).

increase nearly two-fold in 1983 to about 23.6% of the total development expenditure compared to 12.6% in 1979.

Government Agricultural Policy

The 1979-1983 Development Plan, the Sessional Paper No. 4 on Food Policy (1981), and the National Livestock Development Policy Paper (1980) together provide the government's strategy for overall agricultural development on a national scale. As the mainstay of the national economy, priority is being given to increased agricultural production in order to improve the standard of living of the rural population which depends on farming as a primary source of livelihood.

The primary objective of Agricultural Policy is to alleviate poverty through the provision of income earning opportunities in agriculture. There is to be a growing emphasis on farm productivity and the development of the production potential of smallholder farming in order to generate more rural employment, higher incomes and improved nutrition (Kenya, 1979).

The strategy for achieving this objective emphasizes lines of agricultural research that are appropriate for land use intensification in smallholdings and on production techniques in low, medium and high potential areas. Research on developing viable mixed crop/livestock production and the deployment of extension services is to be oriented to alleviating the constraints facing small farmers. Considerable effort is being made by the government to develop technology appropriate to the small farmer setting.

Food supplies have not kept up with population increases. The demands for even more food creates a demand for more new crop varieties and other improved practices. If these are to be adopted the research

in agricultural production must be mounted on a multi-disciplinary basis and be relevant to the farmer's situation, not only to his physical environment but also to his socio-economic setting. Agricultural technology must be adapted to local realities in terms of scope, size, and resource complementarity (Mbithi, 1974; Shaner, et. al, 1982).

The government has a food policy designed to meet nutritional objectives and avert frequent food shortages. In general, Kenyans depend on a cereal based diet, supplemented with pulses, milk and some meat. The diet of most people is high in carbohydrates and low in protein. The current policy aims at shifting the emphasis toward small-scale farmers in medium and high potential areas to ensure that adequate food supplies can be grown on these smallholdings (Kenya, 1981). In addition, the smallholder oriented programs will promote the production of a wider range of foods, especially fruit and vegetables, leading to a more balanced diet.

In food crop production, increased production of pulses will be emphasized, especially beans mainly through varietal improvement. Maize remains the staple food for the majority of the people so research efforts will be made to shorten the maturing period of Katumani maize to make it more tolerant of low moisture growing conditions.

Animal production policies emphasize programs such as poultry and small ruminant production which lend themselves more easily to on-farm consumption than cattle. There is an integration of crop/livestock policies at the farm level, using credit and other facilities to ensure that those farmers whose production is for export also allow adequate resources to be used for their own domestic

consumption so as to raise the nutritional status of household members. Particular attention is to be paid to crop packages in the Integrated Agricultural Development Program (IADP) and their food crop components.

The Integrated Agricultural Development Program is the main program for developing smallholder agriculture in Kenya. It has two major objectives: (1) to alleviate poverty through mobilization of small-farm resources to increase food crop production so basic food needs can be covered without imports, and (2) to facilitate livestock production in small holdings through improved breed selection, husbandry, management of pasture, use of crop residues and the expansion of the production mix to include a wider variety of crops to supplement maize and beans which are the most important staple crops (Kenya, 1981).

It is recognized, however, that the circumstances of small farmers, their limited access to land, research, extension, cooperatives, marketing, credit, labor supply, and their limited range non-agricultural employment opportunities means that agricultural development policies and programs will need to be complemented by income supporting programs in other sectors of the economy.

Land Tenure System in Kenya

The land ownership pattern in Kenya is crucial since agriculture is based predominantly on private, smallholder farming, supplemented by large private, cooperative and public enterprises. Smallholder farming is considered the most suitable institutional structure to increase output and employment and to obtain increased participation in farm decision-making.

Land tenure refers to the rights to hold and use the natural resources found in the land profile unchallenged. In Kenya, land is held under three types of land tenure:

(1) Customary land tenure which stems from the indigenous land holding system practiced by various ethnic groups prior to colonialism. Under this system land was owned, held, or controlled by a family group, a clan, a chief or a group of elders. There was communal ownership and collective farming systems. Land which was under customary land tenure is now classified as Trust Land and is administered by the Commissioner of Lands on behalf of local authorities.

(2) The second type of land tenure is freehold land which is held by an individual with minimal use restrictions and there are no rents due. Individualization of land tenure functionally means the granting of freehold titles to household heads. Some of the factors that have led to individualization (freehold) of land tenure include the decline in community control over allocation of land because there is no more land to allocate due to increased settlement and fragmentation. This has been due to increasing population pressure within a limited land space. Another contributing factor is the breakdown of, or laxity in, tribal norms, leaving individuals free of social control and sanctions, and thus able to continually hold, use and apply for title deed without a higher traditional authority to dispute the claim (Mbithi, 1974). Land consolidation and registration policy also

contributed to the establishment of freehold tenure system. When land is registered, the title deed is given to one person, often the male head of household and it is usually expected that only one son will inherit the title deed and that the land shall not be subdivided further.

(3) The third type of land tenure is leasehold. Leasehold land use is subject to the terms and conditions of the lease. Rent is extracted annually by the leasor, usually the government. Once the land is leased or adjudicated to freehold, it becomes private property (Kenya, 1979-1983).

Approximately 57% of the land in Siaya and 82% in Kakamega are registered and privately owned (Kenya, 1980b). Farmers have been given freehold title to land to enable them to obtain loans from financing institutions, especially commercial banks. Land ownership and control is intimately linked with kinship ties. For most of the small farmers in Western Kenya, it provides the basic means of subsistence. Land inheritance patterns serve to preserve continuity of family name. In a case involving land dispute, one often hears statements, such as "my great grandfather settled here, he farmed this land and is buried here; I will continue to hold it for my children" (Ocholla-Ayayo, 1980). Thus, land is associated with the conceptio of responsibility to one's ancestors. Land remains a traditional form of wealth and prestige in the two communities. The landless are considered marginal and looked down upon by society. This is because land ownership serves as the basis of an individual's identity with his kinship group.

In a predominantly agricultural economy like Kenya, land ownership is such an integral part of life that even if an individual is employed in the urban areas, he must own a piece of land in the

rural area so he can be returning home occasionally to maintain ties and to perform obligatory kinship functions. Customarily, women do not inherit land but they acquire their husband's land rights upon marriage.

Western Kenya

About 85 percent of the small farmers in Kenya depend on subsistence agriculture for their livelihood. They carry out intensive mixed crop/livestock farming as a way of life, not just as a way of making a living. Small farmers in Western Kenya consume most of what they produce and produce most of what they consume. Over 80 percent of maize and beans produced in Siaya and Kakamega are consumed in the household (Kenya, 1977).

Surplus production is encouraged for the purposes of exchange either within the community market places or in large urban areas. However, farming behavior in the smallholder sector is far from economically oriented. Even when a small farmer sells his surplus produce in the neighborhood market, he seldom perceives farming as a business enterprise the way the large-scale commercial farmer does. A small farmer sells surplus produce to get money to buy goods and services which he requires to subsist rather than to enlarge his scale of operation.

In Western Kenya, subsistence agriculture is carried out in privately owned small holdings using simple farming techniques. Small farmers operate under a series of constraints, including land shortage, inadequate labor supply, lack of improved technology and other agricultural inputs. There is also the cultural constraint.

The agricultural activities of small farmers in Western Kenya are consistently integrated into the cultural values, belief systems and sanction mechanisms of the farming community. Their farming technology is often rationalized by a system of observances, such as taboos, rituals, observance, and prohibitions. Thus, the rejection or acceptance of a complex innovation such as a dual purpose goat will largely be a function of its social implications.

PART II

THE FINDINGS FROM A SURVEY OF FARMING SYSTEMS IN SIAYA AND KAKAMEGA DISTRICTS

Data presented in this report were collected from two sources: the Baseline Survey conducted by the Production Systems Project (Winrock International) in October-November 1980, and the small farm survey conducted by the Sociology Project (University of Missouri-Columbia) in October 1980-April 1981. Data from the baseline survey included an overall characterization of the farming systems in Siaya and Kakamega districts, and focused primarily on a description of livestock, crops, land and demographic characteristics of the farm household. The sociological survey and observational data focused mainly on the attitudinal factors and other socio-cultural constraints likely to influence farming practices, particularly livestock production.

A farming system is regarded as a unique arrangement of farming activities that the household engages in according to well-defined practices in response to the physical, biological and socio-economic environments, and in accordance with the household's goals, preferences and resources (Shaner, et al., 1982:16). These factors combine to influence output and production methods. The farming system in Western Kenya is primarily made up of crops and livestock subsystems.

Despite general similarities, there are significant differences in the overall farming pattern between Siaya and Kakamega districts. The two regions will be systematically differentiated throughout this discussion.

Cropping Activities

Siaya district is in Nyanza Province and Kakamega is in Western Province. The Luo ethnic group inhabits Siaya and the Abaluhya occupy Kakamega district. Kakamega district has a higher potential for agricultural production than Siaya, which is considered an agriculturally medium potential ecozone.

Due to increasing population pressure, the size of farms in Western Kenya has been declining in the recent past. Land pressure in Siaya district has been estimated at 186 people/Km^2 while in Kakamega district the estimate is about 294 people/Km^2 (Sands, 1983). The average farm size for Siaya and Kakamega is 1.09 and 0.98 hectares respectively.

Small farm households are dependent on subsistence production to meet basic food consumption needs. The major food crops are maize, beans and sorghum, often intercropped during the long rains which come in March through May. Other important food crops include sweet potatoes, cassava, finger millet, bananas and vegetables. The staple food of the area is "Ugali" served with greens, meat or fish. Fish is available in sufficient quantity in the neighborhoods around Lake Victoria. Beef, however, is a fairly expensive dish. The average small farm household serves beef about three times a month. Most of the maize (528-843 kg) and beans harvested are primarily consumed on the farm. The surplus produce is usually sold at the local market, and some are kept as seeds for the next planting season.

Native varieties are used for all crops. Crop yields in Siaya are among the lowest in Kenya (Kenya, 1980c). The principal constraints to crop production are water availability, quality of soil, poor management knowledge, inadequate labor supply, and occasionally

lack of timeliness in planting and weeding. Sands (1983) has reported that maize and bean yields in small holdings in both districts are higher per unit of land as a result of intensive use of labor. Yields in Kakamega, partly because of higher rainfall, have been reported to be higher than in Siaya. The main cash crops of the area are tea and coffee in Kakamega and cotton, groundnuts and sugarcane in Siaya. Most of the cash crops are not found on small farms. Cash farms either have specific cash crops or produce more food crops than required for household consumption. About 73 percent of the farms in Siaya and Kakamega are subsistence operations where the primary purpose of production is to meet family consumption needs. Wolf (1966) has suggested that the small farmer aims at subsistence, not at profit. The profit motive is subordinate to other considerations, such as local prestige, social recognition, and traditional ceremonies.

Since the profit motive is subordinate to other considerations, some small farmers, particularly in Siaya, are content with what they have. Farmers in both districts differ in terms of their opportunity to become acquainted with new practices and also in their individual receptivity toward change. Many consequences flow from this phenomenon of limited aspirations. In general, unless a farmer feels the desire to have more material wealth sufficiently to strive for it, there will be little motivation on his part to innovate. Part of the reason is that the social structure limits the scope of interpersonal interaction mainly to the primary groups--family, village and clan members--which accord the small farmer his needed status without requiring him to earn

it by adopting a hybrid seed corn or a grade cattle where an indigeneous variety was raised before.

Livestock Systems

Livestock production is a subsystem within the overall farming system. The system comprises all components required for production, including the interactions between crops and other household enterprises, and the physical, biological and socio-economic environments. In general, livestock husbandry is considered a secondary enterprise within the mixed crop/livestock production system.

The baseline survey data indicate that there are fewer numbers of farms with ruminant livestock than crops. Table 1 shows the distribution of farms by presence of livestock and district.

Table 1.1. Percentage of Farms With Livestock by District.

FARM HOUSEHOLDS	KAKAMEGA (%)	SIAYA (%)	TOTAL (%)
With Livestock	60	60	60
Without Livestock	40	40	40
Total (N = 80)	50	50	100

Out of the 80 households in the small farm sample, 60% of the farms had livestock and 40% owned no ruminants. The number of farms with livestock are equally distributed in both districts.

The most common livestock include cattle, sheep, goats and poultry. The average livestock farm has about three cattle, several sheep and goats and about 15 native chickens. The overall ruminant

livestock prodution, particularly goat production, is considerably lower in the study areas.

Cattle, which are a higher status animal than goats, are kept primarily as a source of liquid capital to be sold when cash is needed to pay school fees and purchase other essential goods and services. In the traditional farm household, cattle remains an important status symbol. The wealth and prestige of a person is judged by the size of his stock, regardless of quality.

In Siaya, more than in Kakamega, cattle is commonly used for marriage to pay bride-wealth. Thus, larger herds of cattle are required to meet bride-wealth payments involving plurality of wives (polygyny), but also, by the same token, larger herds require more wives and children to tend them. Cattle are also used for ploughing (oxen-ploughing) the fields. Other uses of livestock include the provision of meat, milk and manure.

Only cattle are milked. Cattle milk is usually consumed in tea by household members. A small proportion (20-30%) is sold, usually to a neighbor. The remainder is fermented and served as yogurt or sour milk. Elderly women, particularly in Siaya, are generally prohibited from consuming milk--which is considered as food primarily for males and children. Drinking goat milk is unknown in the surveyed households. Occasionally, goat milk is mixed with local herbs and consumed as a form of medicine. There are several food taboos which influence the kind of diet that is or is not socially acceptable to women. For example, goat meat is associated with constipation, leprosy and other health problems. Those farmers who currently raise goats (15%) in Siaya and (2.5%) in Kakamega do not raise them primarily for

on-farm personal consumption. Like cattle, goats are kept as a source of liquid capital and for ceremonial purposes. Despite their role in the community social fabric, goats are considered a low status animal whose production is at variance with tradition.

The principal socio-cultural constraint to goat production is the inherent cattle bias. Because of its low status, most farmers do not consider goats an important part of livestock husbandry. Despite its potentiality, none of the farmers interviewed considered incorporating dual purpose goats into the farming system a worthy undertaking. For most of them, goats are viewed as ritual animals to be slaughtered or exchanged at weddings, funerals, births, and circumcision. Management priorities are thus geared toward cattle production rather than increasing goat production. Changing the perceptions regarding the role of goats and the consumption of goat products would be a formidable task.

Poultry are also common and found in about 83% of the farms. They are primarily native chickens. The average number of birds per household is 7-10 chickens in Kakamega and 10-15 in Siaya. Poultry are primarily kept for personal consumption but some are sold when the need for cash arises. Again, in accordance with the traditional norms, older women are prohibited from consuming chicken. Chicken is usually slaughtered for a special guest, friend or relative, such as a son-in-law.

Crop-Livestock Interactions

The interactions between crop and livestock production systems are fairly weak in both districts. Grazing on unimproved fallow land is the predominant feeding method. Crop residues or

forages are rarely brought to tethered livestock, especially sheep goats and calves.

The principal form of interaction includes use of oxen for ploughing, manure for fertilizer to increase crop productivity, and crop residues to feed livestock. Crop residues commonly fed to livestock include maize stoves, sorghum stalks, and banana leaves. Poultry are occasionally fed spoiled maize, sorghum and finger millet grains.

Lack of strong interactions between the two subsystems is due, in part, to limited resources and farm management ability as well as competition with other on-farm enterprises. For example, a typical farm house in the villages of Western Kenya is plastered with cow dung and thatched with grass. Maize and sorghum stalks are frequently used as firewood.

CHARACTERISTICS OF THE FARM HOUSEHOLD

One of the defining characteristics of the small farm production system is that the family is the basic unit of production and consumption. The entire organization of the farm unit is determined by the size and composition of the household. The farm is operated and run by the farmer, his wife (wives) and children with a minimum of outside labor.

Family Size and Composition

The average family size is 4.65 in Siaya and 7.95 in Kakamega. Table 1.2 shows the distribution of household composition in the survey area.

Table 1.2. Distribution of Family Composition by District.

COMPOSITION	Average Number Per Household KAKAMEGA	SIAYA
Males	3.7	2.3
Females	4.2	2.4
Children of Head Living on Farm	4.6	2.2
Under 16 Years	4.7	2.3
16-40 Years	2.1	1.1
Over 40 Years	1.3	1.4
Three Generations Living in the Household	1.5	1.7
Average Family Size	7.95	4.65

The extended family system is a key feature of a rural farm household. There is a very high value placed on having large number of children which brings recognition to a woman. Having as many children as is physically possible is the ideal to which every family aspires. Children, especially girls, are a source of wealth and prestige because of the transfer of livestock and other gifts to the girl's family at the time of her wedding. In the absence of institutionalized security system, children are also viewed as an economic asset and insurance against old age. A large family undoubtedly makes the operations of a small farm labor-intensive production system relatively manageable. Children are viewed as essential to survival and status.

With an annual population growth rate of over 4.0 percent, Kenya is among the fastest growing countries in the world (U.S. Bureau of the Census, 1983). Anker and Knowles (1983:10) observe that: "Due to this high population growth rates, Kenya has a very young age distribution. Approxiamtely one-half of the population is below 15 years of age ..... As a result, Kenya has one of the highest

dependency burdens in the world... The economically active age group (16-40 years) was between 23-29% of the farm household, giving a dependency ratio of 2.8 for Kakamega and 3.4 in Siaya.

The average age of the head of the household is 49 years in Kakamega and 52 years in Siaya. Table 1.3 shows some of the characteristics of the head of household.

Table 1.3. Some Characteristics of the Head of Household by District.

CHARACTERISTIC	KAKAMEGA	SIAYA
Age (Mean Years)	49	52
Formal Education (Years)	2.0	1.7
Languages Spoken (Average Number)	2.2	1.4

There were 57% female heads of household in Kakamega and 55% in Siaya. This is primarily due to male out-migration to search for employment in urban areas. In the absence of a male head, rural farm households are run by women who traditionally have no farm related decision-making powers. This is likely to slow down the adoption process, particularly in livestock production which is traditionally a male domain.

The overall literacy level of small farmers is low. Between 25-42 percent of the household heads had more than two years of primary education. About 75% of the heads of household in Siaya had no formal education compared to 55% in Kakamega. Illiteracy may impose constraints on the farmer's ability to adopt recommended farm practices. Among other things, it limits his or her exposure to the mass media.

Approximately 75% of the farmers in Kakamega compared to 60% in Siaya speak Swahili as their second language. English is rarely spoken. The first language is the farmer's vernacular, either Luhya or Dholuo.

Education for children has become a prerogative for most families. This is reflected in the government's policy to provide free primary education up to standard four and up to standard seven by 1983. Table 1.4 indicates the proportion of school attendance.

Table 1.4. Percentage of Children Attending School by District.

SCHOOL LEVEL AND SEX	KAKAMEGA (%)	SIAYA (%)
Children Attending Primary School	82.5	67.5
Males Attending Secondary School	22.5	12.5
Females Attending Secondary School	15.0	5.0

Fees in secondary schools are usually high (800-2000 ksh) depending on the type of school. This prevents children whose families have limited resources from continuing beyond primary level. An increase in the number of children attending school makes them less available for farming activities.

Labor Supply

Much of the labor required for field crops and livestock activities is drawn from family members. Household labor is usually allocated on the basis of age, sex and other relationships that are dictated by custom and practical considerations. Labor on food crops is primarily demanded in the form of peaks and troughs according to the agricultural season.

Kenyan women have traditionally been responsible for all the planting, weeding and harvesting of food crops on the farm. They also have the responsibility of fetching water from streams, gathering firewood, preparing family food and conserving surplus for the times of drought and shortage. However, ploughing, the care of livestock, and all major management decisions including selling, buying, slaughtering and treatment are reserved for the male head of household. Table 1.5 shows the distribution of female labor contribution on cropping activities.

Table 1.5. Percentage of the Female Labor Contribution in Cropping Activities by District Carried.

CROPPING ACTIVITIES	KAKAMEGA (%)	SIAYA (%)
Digging	62.0	57.0
Planting	60.0	66.0
Weeding	60.0	69.0
Harvesting	61.0	71.0

Female labor contribution on crop production is significantly higher on farms where adult males have migrated to look for wage employment elsewhere. About 17% of the husbands were working off the farm at the time of the survey. Increased male out-migration has led to an increased take-over of male agricultural tasks by women. However, livestock production is traditionally a male activity. This traditional role definition has tended to persist despite growing male out-migration from the farms. Major decisions concerning livestock management continue to be made by men. Since traditional norms prohibit women's role in livestock production, they may be much less

willing to participate in decisions concerning improved livestock practices. And yet, if dual purpose goats are to be incorporated in the farming system, women will have to assume responsibility of caring for them. This is one of the dilemmas arising from a cultural-lag process.

Table 1.6. Percentage of Household Members Working 30+ Days Off the Farm by District.

	KAKAMEGA (%)	SIAYA (%)
Husband	17.5	0.0
Other Household Members	30.0	17.5

While the adult males are absent, women have only unmarried daughters, young sons and aging relatives to rely upon for help with all farm tasks. Child labor contribution in farm activities is enormous particularly during school vacations. Children and young adults provide the extra labor needed during peak planting and harvesting times when everyone in the household must work for long hours everyday. The tasks normally allocated to children include herding livestock, guarding field crops against birds and animals, fetching water from streams, fetching firewood, and child care (e.g., babysitting). Table 1.7 shows the distribution of household labor on livestock activities.

Table 1.7. Percentage of Household Labor in Livestock Activities by District.

	KAKAMEGA (%)	SIAYA (%)
Males	5.0	45.0
Females	35.0	35.0
Children Under 16 Years	20.0	7.5

Labor shortage at periods of peak demand is one of the constraints to crop production, especially when children are away at school and the men are in urban areas (e.g., Kisumu, Nakuru, Mombasa, Nairobi, etc.). Most households cannot afford hired labor. About 33 percent of the households hired some labor for weeding and harvesting. Labor on livestock is usually drawn from the family pool. Exchange of labor is another means by which households cope with labor shortages during peek season. Weeding and harvesting are by far the most important activity for which labor is exchanged.

Household labor is not always available for farm use only. A large proportion (45%) of the family's working time is spent on non-farm activities. The major consumers of farm time include visiting friends and relatives in the neighborhood, going to market places, participating in community activities, attending church, weddings and funerals. In Siaya, funeral ceremonies usually last for three or more weeks depending on the social status of the family (or the deceased).

The Social Structure

The social structure of a community and interpersonal relationships have important implications for the success of any development program. History is replete with examples of programs that have failed because they ignored the social context in which change must occur. Social groups are aggregates of people who develop feelings of belonging, associate more closely with each other than with outsiders and which influence the thinking, feelings and acting of its members. Who belongs is generally known to all. In the closely knit groups like the family, members develop feelings of obligation to, and concern for, the welfare of each other; also they care for and help each other. Expectations of what each is to do on behalf of others develop and in turn what can be expected of others. People received favorable recognition (love, respect and esteem) for doing what is expected and lose status and receive unfavorable recognition for failures to conform. They may even be punished for serious dilections. Fellow members are more accessible to each other than to outsiders and communication tends to be freer, more frequent, and more frank. In the closely knit groups fellow members trust each other more.

The small farm household in Western Kenya has a system of norms that prescribe appropriate behavior patterns for each member of the family. The norms governing appropriate behavior have emerged through socialization and social interaction processes and they have developed out of the values and beliefs that people hold about the way things should happen. For example, there are norms concerning husband-wife relationships and the relationship between parents and children. There are also norms governing role definitions within the household.

Kenya is a patriarchal society. Equality within marriage is not customary. A husband normally exercises considerable authority over his wife (wives) and children. Wives are expected to be obedient, faithful and subordinate not only to their husbands but also to their parents and in-laws.

On the other hand, the relationship between parents and children is usually one of absolute control in one direction and fear-inspired respect in the other. Older members of the family are treated with much respect and their advice is often sought on various issues. The established social structure serves to reinforce family stability.

The small farm community is characterized by a strong interpersonal interaction where relationships are strengthened by face-to-face contacts. Effective interaction occurs within primary groups and between homophilous groups. People of the same age, sex, marital status, and socio-economic background tend to interact more effectively than those who are dissimilar in these attributes. Interaction with outsiders follows a similar pattern. Small farmers interact mostly with other farmers of similar characteristics, such as language, religious beliefs, ethnicity, size of farm, number of stock, family size, political affiliation, etc. More effective communication would be expected to occur between a farmer and an extension agent when they share common meanings, language and other personal and social characteristics. "Birds of a feather flock together" (Rogers and Shoemaker, 1971).

Interaction within the household and with the larger community occurs most frequently on the basis of primary, personal and intimate relationships. Outside social networks are limited among the farmers interviewed. Only a few of them belong to any farmer organizations,

such as the cooperatives. The farmers interviewed displayed strong ethnic loyalties. Each ethnic group has developed and carefully guards its cultural heritage. There is also a strong commitment to and dependency on family ties and kinship obligations.

Kinship relationships consist largely of reciprocal rights and obligations. Since a farmer's welfare rests primarily with his family and relatives to whom he could turn in times of need, interpersonal relationships exert considerable pressure on farmer's decision-making power. A person's obligations are reciprocated by his kin's obligations to him. The enforcement of these reciprocal rights and obligations constitutes the means of social control.

ATTITUDES OF FARMERS

Attitudes predispose people to think, feel or behave in a certain way. They do not ensure that they will act accordingly. Many things about their situation even about themselves and certainly the things they encounter on the way make a difference. But people do often respond in terms of what they believe a situation to be quite aside from what it actually is. Some of the things about their actual situation we have already noted. Others that intervene between where they are and may want to go will follow a look at attitudes.

A primary purpose of this portion of the study was to determine the attitudinal factors which may influence the adoption or non-adoption of farming practices. Each respondent was asked their opinion about a series of statements to determine some of the attitudes that might influence behavior. The attitudinal statements were taken from previous studies in other non-industrial countries. The statements were pretested in Western Kenya and modified to fit that culture. The

farmers were asked to respond in terms of whether they strongly agreed, agreed, disagreed or strongly disagreed with each statement. For the purposes of analysis in this paper, the two categories of strongly agreed and agreed have been combined and are referred to as agreed. The total of the other two categories, disagreed and strongly disagreed, are reported as disagreed. The statements are divided into the following sub-categories: plans for the future, power and success, kinship, orientation and participation, farming practices, and sources of farming information.

Two samples were selected in each of the two communities. The small farm sample was the basic unit used for the farming systems study and was a random selection of farmers in sub-areas of Kakamega and Siaya. The livestock farm sample included farmers who owned livestock and who were selected by the Kenya government veterinary agent. The livestock sample was in areas adjacent to the small farm sample.

In total there were considerable and consistent differences between how farmers in Kakamega and Siaya responded. Kakamega farmers tended to be more oriented to change and those in Siaya more traditional in their inclinations.

Plans for the Future--Small Farm Sample

Farming practice adoption by individual farmers is frequently associated with an orientation for the future. Farmers must be willing to make plans in order to see the possible outcomes of their new practice adoption. One of the values underlying sustained development is that the people develop management ability and a resource base to deal with a situation in which they find themselves. Pertinent to this

value is the belief that man is, at least partially, capable of controlling his own destiny.

Although the farmers in both areas seem to recognize that this is possible they are by no means optimistic about the wisdom of planning for the future or the consequences that might follow. Farmers in Siaya were far more skeptical than those in Kakamega. Seventy percent of the Siaya farmers thought planning only brings unhappiness because plans are so hard to fulfill. Most (85%) held that the secret to happiness and being content is accepting "what comes your way" compared to 55% in Kakamega who expressed the view that making plans for the future might be beneficial in the long run.

Siaya farmers were heavily oriented to the present while those in Kakamega were future oriented. Thus 70% of the first thought that conditions being as they are, an intelligent person ought to think only of the present without worrying about what is going to happen tomorrow. Conversely only 20.5% of the Kakamega farmers felt this way.

Power and Success--Small Farm Sample

There were two statements about power and success with which the vast majority of the respondents in both communities agreed. These were that for a person to succeed they must have determination and ambition and also that the control of their community was in the hands of a small group of people. The two communities disagreed on how to get ahead in the world. Those in Siaya were much more likely to believe that it would be very difficult for a farmer or a son of a farmer to get ahead and more likely for a son of a businessman to succeed. Further the people in Kakamega were not too sure whether wealth was a principal means by which a person should be evaluated.

Increased Western influence has led to a change in the traditional conception of what constituts wealth. Though traditional forms of wealth such as the size of family, the number of livestock and the size of landholding are still significant, there is a growing recognition on the part of the farmers that formal education is one of the keys to success.

Kinship--Small Farm Sample

There was a very strong difference between the two communities in regard to how they responded to kinship patterns. Farmers in Siaya were more strongly oriented towards kinship than were most people in Kakamega. For example 52.5% of Siaya farmers the Siayans thought that only a relative would be depended upon for help when in trouble and that you should pick a job which was close to home. This suggests a strong family orientation in Siaya and less of such an orientation in Kakamega. It also suggests a more closed community in which it would be more difficult for an outsider such as an agricultural extension agent to be accepted.

The vast majority (77.5%) of Siaya farmers seem to take a "beware of strangers" stance. About half of them feel that only a relative can be depended on for help when in trouble. Farmers in Kakamega are more trustful of others, strangers included, and are much less inclined to feel that only relatives can be depended on for help. Only 41% expressed a distrust for persons they don't know well and about 18% felt that only relatives can be depended on in case of trouble. But in neither area were relatives preferred over others as hired laborers. Many farmers usually consider it difficult to negotiate a formal contract or engage in an exchange relationship with

relatives in a way that transcends kinship obligations and expectations.

For implementing changes in farming, farmers often need to contact off-farm agencies for needed supplies and services. Only one, the government operated extension service, was dealt with in the "trust" context. For sure a desired condition for all is for the potential users of their product to trust them. Fortunately, government extension agents had achieved a high position of trust among farmers in both Siaya and Kakamega.

Two-thirds of Siaya and 97% in Kakamega indicated a trust for these agents. In Kakamega the locational chief and village religious leader were almost off the list as best choices of farm information. Furthermore only 10.3% thought what their fathers did was better than extension agents advice. Likewise in Siaya 12.5% would mark off religious leaders and 30% the village chief as best choices. Even though they were less confident than Kakamega farmers in placing father's way of farming over the government agents advice, 37.5% did so. Thus it was that even in the most conservative area of this study the vast majority valued professional advice over experience of the past as the better guide for farming. This was an enviable, but distressingly, responsible position for a government agricultural adviser to be in.

Trust, Orientation and Participation--
Small Farm Sample

The farmers in Siaya were much more likely to place higher emphasis on personal relations. For example, three out of four of the respondents in Siaya said that you could only trust people who you knew

really well, while less than one-half of the people in Kakamega agreed with that statement.

For those who see some utility in venturing out in pursuit of plans for improving their own situation, relations with outsiders might be necessary, inevitable and beneficial. Some degree of trust (of self and others) is a prerequisite for venturing out (taking initiative). The question posed here is not whether people will or won't venture out to achieve goals for this depends on many things, rather it is whether attitudes of trust or distrust will or won't incline them to actually seek solutions. Moving out brings new encounters. There are people in large groups and specific kinds of people with whom would-be achievers must interact.

Even though some move out (mostly to cities), farmers in both Siaya and Kakamega (73.4%) think it is better to live in a small community "where you know everybody". Cities are seen as cold and impersonal places where it is hard to make new friends (87.5% in Siaya and 74.4% in Kakamega).

Although farmers in both areas were more interested in local affairs than in national or international issues, a high percentage in both communities favored learning about what goes on outside of their own immediate locality. The "local-outside" balance in Kakamega is close. Thus to the question of interests in the news via newspapers and the radio their yes responses were as follows:

Kind of News	Kakamega (% Yes)	Siaya (% Yes)
Local	68.2	57.5
National	63.1	40.0
International	61.5	48.0

In response to a question of whether they discussed political (sometimes or often) problems with their friends, their "yes" responses were 47.7% and 25.0%, respectively. Thus it was that a sizeable contingent in both areas were interested in becoming informed about matters outside of their local communities.

Life Chances

In a society where so much of one's life is lived with and in relation to associates close at hand and interpersonal communication prevails over the mass media for exercising influence and getting new ideas and information, what people think the local power structure can do to or on behalf of one is very important; also one's perception of the prospects and hazzards that may accrue from trying to improve one's situation. However, there appears to be little inclination to let anyone "off the hook" for not trying and least of all in Siaya. Eighty-two percent of the farmers in Kakamega and 87.5% in Siaya said the most important qualities of a real man are determination and driving ambition.

Nearly all (95%) of the farmers in Siaya and 87.2% in Kakamega think that ordinary people don't have much say in the way things happen and that the real power in their communities is in the hands of a few people. This to the farmers in Siaya makes the "right" connections seem to be very important. Ninety percent believe good connections are needed to get ahead in the world. Over 77% believe that businessmen have connections that make it easy for their sons to become successful; 75% believe the chances for the son of a farmer are slim. Farmers in Kakamega are basically of the same view but are more hopeful. Still

only 59% believed the way is easier for sons of businessmen because of connections and 46.2% as bad for the sons of farmers.

But whatever is done for you by others, farmers in both Kakamega (94.4%) and Siaya (85%), they say, is not because it is right (love of neighbor, so to speak) but because it is good business. This would seem to suggest that one has to make his way in a society where deals with the "right" people are necessary. What the possibilities and limitations are at the local level are probably quite well defined by the family and tribe. Beyond that, the way is not so clear. But even close to home care must be exercised. Some 58% maintain that one isn't wise to let friends know everything about your life for the reason that they may take advantage of you. Lack of mutual trust among some farmers is so pervasive that in some communities it has become a cultural trait. Farmers in Kakamega consistent with their tendency to be more trusting and open, only 30.8% would keep something about themselves secret from friends.

Although wealth is a consideration only 22% of the farmers in Siaya and 17.2% in Kakamega agree that it is the best way to judge the success of a farmer.

New Farm Practices

Half of the farmers in Siaya and 35.9% in Kakamega saw local farming methods as changing rapidly and a need for farmers to take risks which they see as required to get ahead (65% in Siaya and 71.4% in Kakamega). But the percentages implying that this applies to them were much lower. The proportion saying "Yes, I should change the way I farm to conform to changes going on in the area" were 40% and 48.7%, respectively. A considerable number (65% in Siaya and 48.5% in

Kakamega) saw new ideas as being suitable for big farmers but not for the small ones.

With 65% of the farmers feeling that success in farming is more dependent on God than the efforts of man and the same high percentage believing that a person has to take chances to get ahead, it would appear that cultivating the help of God might be seen as about as important as cultivating the land. With comparable percentages in Kakamega being 43.7% and 71.4%, respectively, launching out on one's own surely must have appeared to be less hazardous--unless of course divine guidance could be assumed.

Kakamega farmers, in contrast to their less well-off Siaya counterparts, were pretty much sold on new crop varieties. Only 2.6% would opt for the traditional and safer old ones. About 80% thought the new varieties were better than the old. Comparable percentages for Siaya were 37.5% and 40%, respectively. They were much less sure on both counts. Their ambivalence about both new varieties and the suitability of new farm practices generally for small farmers suggests a need for scrutiny of the new technology being offered to small farmers as they see it.

Sources of Farming Information

The majority of the farmers in both communities said they trusted government extension agents as sources of farming information. Almost all of the small farmers in Kakamega said that they trusted the government extension agents while only two-thirds of the people in Siaya said that. Again the people in Siaya were more likely to rely on traditional sources of farming information than were the people in Kakamega. But in both communities there was a distinct minority who

relied on non-professional farming information such as the locational chief, or the religious leaders.

Livestock Sample

The livestock sample was selected by a different method. These were livestock owners who were selected by the government veterinary agents to be in a study of livestock health. These farmers were different from the random sample of small farmers in terms of attitudes and beliefs. The pattern of differences in attitudes between the two communities tended to be the same, that is, the Kakamega livestock farmers tended to be more "modern" while the Siaya farmers tended to be more "traditional". The livestock farm sample tended to be somewhat less change-oriented than the small farmer sample. They were less likely to agree that making plans helped. They felt that a person needed to have good connections to get ahead more than did the small farm sample. And as an interesting change, they were less likely to agree that the best way to judge a man was by his wealth. This is probably a reflection that these were wealthier farmers. The people who own livestock in this area are more prosperous than the average small farmer.

At the other end of the scale they were more likely to think that new varieties were better than old ones, but to come right back and say that it was better to grow traditional varieties rather than new varieties. In conclusion, because of the considerable amount of variation between the two samples, it is difficult to suggest that the livestock farmers are similar to the total sample of small farmers. Rather, they do have distinctive differences although the pattern of differences is less than clear.

Willingness to Make Changes in Farming Practices

All of the respondents were asked what they would be willing to do to increase their farm income by 500 shillings per year. Most farmers were willing to make some changes although for many these were simply doing more of what they were already doing quantitative rather than qualitative change. The Kakamega farmers were more willing to obtain more credit than were the Siaya respondents, more willing to expand their cattle production, but less willing to expand their poultry production or farm more land. This suggested that the Kakamega farmers were more willing to take risk in terms of credit while the Siaya farmers are more willing to try to expand their income by traditional methods such as increasing existing practices. Cattle production was the most preferred way of expanding livestock production. This was followed by sheep, and then lowest of all was expanding goat production with poultry falling in the middle of the array, except in Siaya where it was the preferred type of livestock to expand.

In the livestock sample, the preference differences between various types of livestock were not as great, and in fact, goats were given the highest rating in Siaya while cattle was given the highest in Kakamega. Sheep, goats and poultry all had the same agreement in Kakamega. In both samples, it was a minority who were willing to expand goat production. The highest was about 40% of the livestock sample in Kakamega willing to expand goat production and only one-fourth in Siaya. Since the livestock sample included only goat owners, it is interesting that less than one-half of the goat owners in either

community were willing to expand their herds to increase their farm income. This number dropped to one-fourth in Siaya.

Planning Changes in Farming Operations

The respondents were asked what plans they had for making changes within the next three years in their farming operations. Two-thirds to almost three-fourths said they expected to work more hours on the farm. About one-half of the farmers in Siaya planned to grow more cash crops and almost that many planned to go to double cropping to intensify their farming operations. Slightly over one-third of the farmers planned to raise more livestock and around one-third planned to use more chemicals in their farming operations. These responses suggest that the farmers are not against change, they intend to confine the ones they make mostly to doing more or better what they are already doing, but they are constrained by availability of finances or adequate information concerning new farming practices.

There were other distinct differences in responses of the livestock sample. For some reason only about one-half of those farmers expected to hold onto their farms for their children nor did they plan to intensify their activity by working more hours nearly to the extent that the small farm sample did. They tended to be more likely to plan to buy more land, buy more machinery, rent more land, put up more buildings, and in Kakamega grow more crops and raise more livestock. Some of these differences were undoubtedly the result of the higher financial status of livestock owners.

The adoption of an agricultural innovation usually depends on a variety of factors. New ideas and farm practices often require considerable resource integration and well-developed infrastructure to

accelerate their adoption. Development of agricultural support infrastructure would include improving extension and information services, the marketing system, research activities, soil and water conservation programs, credit facilities, and transportation system to facilitate geographical mobility. Many of these services are not available in sufficient quantity or quality in the study area. Some that are do not render services on terms suitable to farmer needs.

The Way the Extension Service Operates

Both the characteristics of farmers and the type of agricultural extension services influence who does or does not adopt recommended farm practices. The current practice by the extension service in Western Kenya is to provide assistance to a small group of "progressive" farmers and to expect that the effect of such assistance will trickle down to small farmers.

Research and extension services have become disproportionately geared to the needs and interests of the progressive farmers. A study by Leonard (1973) indicated that the average extension agent in Kenya spent much of his time with a few progressive farmers. Not surprisingly, these farmers tended to be relatively well-off, have higher formal education, and usually grew cash crops in what is essentially subsistence agriculture. The small farmers in this study were aware of this Extension practice. Roling (1973) reported a very lopsided distribution of government extension services on the most progressive. Progressive farmers may not be those best suited to popularize an innovation. They are usually viewed as an elite group, and the social distance between them and small farmers might impede the

trickle down diffusion process. Working with progressive farmers to the relative disadvantage of the small farmers contributes to a widening gap between the "bigs" and the "littles", particularly when the technology offered is more suited to the needs of the progressive farmers. If the interests and needs of small farmers are to be served, special effort to orient both research and extension to the "littles" is required.

Farm Input Supplies

Small farmers in Western Kenya have limited resources and management knowledge. They are generally more inclined to adopt those farming practices which they can afford or are readily available. Most of them lack the economic means to try out new ideas and practices that require large cash outlay.

One of the major constraints to crop and livestock production is limited access to credit facilities and the market system. There is extensive literature on how credit programs in Kenya have primarily benefitted wealthier farmers and have not represented the most economical use of government resources in fostering agricultural development (e.g., through marketing system) (Heyer and Waweru, 1976; Muthama and Otieno, 1977; Meyers, 1982).

It may be that a farmer is ready to plant hybrid seed only to discover that the seed he needs is not available, the fertilizer has not arrived, or the credit he needs must be obtained on terms he cannot afford. The conditions under which inputs may be obtained, and the likely market situation may have significant influence on adoptive behavior.

Throughout the sample, hybrid maize was the only purchased input used for cropping. The seed was used by 90% of the farmers in Kakamega compared to only 40% in Siaya. The uncertainty of forces with which farmers in Siaya must contend inclines them to avoid risk and follow those ways they believe will produce positive, though meager, results than to try a new variety that might end in failure and endanger their whole existence. In addition, when the innovation is a staple food, texture and palatability become important considerations to the farm family. The only important sorghum variety in the area is Serena. It has been wioely adopted because it mature within a shorter period than the native variety.

The most common type of cattle in the study area is Zebu. None of the farmers in Siaya owned crossbred cattle or improved goats. About 17% of the farmers in Kakamega owned crossbred cattle. Ownership of improved livestock partly depends on farm size and economic status. We would argue, along with Hunt (1977), that the chain of causation runs from wealth to innovation.

There is very little use of chemical fertilizers on food crops. None of the farmers used chemical fertilizers at the time of the survey but a small proportion (20%) utilized composted manure to plant maize and beans.

Mass Media Exposure

The small farmers have a low literary level. They make little use of the mass media channels such as newspapers, farm magazines, bulletins, radios, etc. Most of these communication channels are not available in the small farm community. The majority of them rarely travel outside their immediate locality. Some of them rely heavily on interpersonal communication with peers both for information and advice. Since most farmers have little formal education, they are unlikely to relate abstract research knowledge transmitted through mass media channels to their own empirical situations.

Appropriate Technology

It is often said that lack of innovativeness on the part of small farmers is a function of technology inappropriate for village settings (Molnar and Clonts, 1983; Mbithi, 1974). An important factor affecting the adoption rate of any complex innovation is its compatibility with the cultural values, belief system, past experiences and needs of a farmer. An innovation to incompatible with the people's cultural setting might have low probability of being adopted, regardless of its relative advantage or affordability.

Farm mechanization must also be selective otherwise it might displace labor and lead to adverse changes in the traditional division of labor in the household.

The Process of Change

In the process of a small farmer making changes in his farming practices, there are conditions which intervene between where people are (in this case a Kenyan farm family) and what they want to ultimately achieve. The long range goals might be sending a son or

daughter to a university or improving the productivity of the farm. If the farm family is dependent on the land for its subsistence and if it has resources, the connection between the present situation and ultimate goal may not be direct. The long range goal achievement requires increasing the family's available cash to make it possible to send a son or daughter to college. This in turn presupposes changes in farm practices which may well require acquisition of supplies and services not previously accessible or available if so, in less quantity. The sequence may be acquisition of information, thought processes leading to a decision to use a new more productive crop variety, acquisition of the additional resources (services, credit or supplies) necessary to grow it, successfully growing it, marketing the surplus, and investing or at least saving part of the money from the sales, all looking to the day when it can be used to send the son or daughter to college. The points to be noted are: (1) that there is a sequence of things that must be done, (2) that there is a proper order for doing them, and (3) that decisions along the way are necessary. All represent intervening variables which must be dealt with in sequence and combinations through time. Thus, the additional concern with what sociologists refer to as process, i.e. doing what needs to be done correctly in the right order and combination.

IMPLICATIONS FOR APPLIED RESEARCHERS AND CHANGE AGENTS

The normal reaction after reading such a report is to ask "so what?" What does it mean? This section will at least attempt to answer that question. Two points will be assumed: (1) an applied action orientation wherein people are interested in seeing social changes occur; and (2) the major proposed changes are in small ruminant (primarily goat) husbandry.

The small farm system in Western Kenya is a relatively efficient system which has been carefully developed after years of practical experiences. It has been fine tuned and become more sophisticated from the farmer's perspective by these experiences. The margin of error which can be tolerated in changing practices is small. The farmers are small, and the population pressure is high. The economic and other resources, farm or non-farm, are very limited. Since most farms are of a subsistence type, the farmer may be risking his/her very livelihood if he/she attempts to make major changes in his/her farming practices. But at the same time, the farmers are willing to make changes.

The following conditions are a summary of those presented earlier. Some of the conditions are favorable to the adoption of the new practices concerning goats and some are constraints to the adoption of such practices. The possibility of the practice being a dual purpose goat was the final determination as to whether a condition was favorable or a constraint.

Favorable Factors

1. The Government of Kenya has agricultural policies and programs favorable to small farm development. These include applied research and extension programs dedicated to increasing agricultural production among small farmers.
2. Relatively stable social and economic conditions.
3. Small farmers who are achievement motivated and willing to make changes.
4. Considerable freedom in the buying and selling of land.
5. Belief by many farmers in the necessity of making changes in farming practices.
6. Considerable trust (or very little hostility) towards government extension agents as a source of farming information.
7. The goats, though low status animals, are an accepted, but restricted, part of the farming system. There are almost no cultural taboos prohibiting the keeping of goats.

Constraints

1. Land shortage and population pressure.
2. Inadequate labor supply which is decreasing as more children go to school.
3. Lack of appropriate improved technology to go with the introduction of a dual purpose goat.
4. Very limited contacts by small farmers with extension or agricultural organizations.
5. Extension programs aimed at progressive farmers with a heavy dependence on the "trickle down" diffusion.

6. Inadequate credit system to provide capital for adoption of new technology.
7. Lack of infrastructure to provide the necessary supplies and services to small farmers.
8. In many households, the male who has the traditional decision making authority has migrated to an urban place and left the female without the authority but with the responsibility of running the farm.
9. Many taboos, rituals and beliefs which may be frequently a factor in the acceptance or rejection of almost any type practices.
10. A very large ecological variation which necessitates many different farming practices and proposed innovations.

Livestock Constraints

1. Livestock production is given secondary preference to crop production. Minimal crop/livestock interaction.
2. Goats have lower status than cattle.
3. One primary reason for keeping goats is as a source of liquid capital which means they may be sold or bought fairly frequently and not kept and bred for herd improvement.
4. Goats are frequently used only as a ritual animal to be slaughtered or exchanged at weddings, funerals, births, or circumcisions.
5. Numbers of animals are more important than quality of individual animals.
6. Grazing is confined mainly to unimproved fallow land. Cut and carry to confined animals is not generally

practiced. Cut and carry may be required for dual purpose goats.

7. Milking, up to now, has been generally confined to cattle.
8. Use of milk is traditionally confined to children and males.
9. Goat meat is associated with some negative health characteristics in the minds of many small farmers. These may carry over to the dual purpose goat.

The list of constraints is much longer than the list of favorable factors. This does not mean the task of introducing new farming practices concerning goats is impossible. It does suggest, however, that it will be much more difficult to introduce a dual purpose goat than a new maize variety. The introduction of a dual purpose goat will require the introduction of several innovations at the same time: feeding and breeding practices, care of milk, animal health practices, etc. Since this is much more complex than changing a variety or any other single practice, great care should be taken in the development of the innovation program including both research and extension. Any new practice must be carefully tested and adjusted to the many micro economic, socio-cultural, and ecological conditions in the area. Failure in the introduction process to take these factors into consideration could make any future diffusion of such innovations much more difficult.

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APPENDIX

A BRIEF NOTE ON DATA COLLECTION

The data described in this report came from two separate samples. The first is the small farm systems survey supervised by Michael Sands and Collette Suda. This is described in Sand's Ph.D. thesis entitled, "Role of Livestock on Smallholder Farms in Western Kenya: Prospects for a Dual Purpose Goat". The sample included 80 small farmers of whom very few were livestock owners. The decision was made to enlarge the sociology portion of the survey to an additional 79 goat owners in order to get a better sample of their attitudes and opinions. These respondents were the owners who resided near the original sample and had been a part of the animal health study. It is important to note that the two groups are not the same in characteristics. While socio-economic data are not available on the animal health sample, field observations indicate they are larger and have more wealth than the small farm systems survey.

ATTITUDES OF FARMERS IN WESTERN KENYA

Small Ruminant CRSP
Department of Rural Sociology
University of Missouri-Columbia

SMALL FARM SAMPLE

	% AGREEING WITH STATEMENT	
PLANS FOR THE FUTURE	KAKAMEGA	SIAYA
Making plans only brings unhappiness, because the plans are hard to fulfill.	33.3	70.0
With things as they are today, an intelligent person ought to think only about the present, without worrying about what is going to happen tomorrow.	20.5	70.0
The secret of happiness is not expecting too much out of life, and being content with what comes your way.	48.7	85.0
POWER AND SUCCESS		
The most important qualities of a real man are determination and driving ambition.	82.0	87.5
A person needs good connections to get ahead in the world.	53.8	90.0
Businessmen have good connections that make it easy for their sons to become successful.	59.0	77.5
The best way to judge a man is by his success in his wealth.	43.6	75.0
The control of this community is in the hands of a small group of people, and an ordinary citizen has not got much to say about the way things happen.	87.2	95.0
The son of a farmer does not have a very good chance of becoming wealthy.	46.2	75.0
KINSHIP		
When you are in trouble, only a relative can be depended on to help you out.	17.95	52.5

	% AGREEING WITH STATEMENT	
	KAKAMEGA	SIAYA
If you have a chance to hire somebody to work on your farm, it is always better to hire a relative instead of a stranger.	41.0	45.0
When looking for a job off the farm, a person ought to find a position in a place located near his family even if that means losing a good opportunity elsewhere.	20.5	70.0
ORIENTATION AND PARTICIPATION		
You can trust only people whom you know well.	41.0	77.5
It is not good to let your friends know everything about your life, for they might take advantage of you.	30.8	57.5
People help persons who have helped them not so much because it is right but because it is good business.	74.4	85.0
In general, life is better in small communities where you know everybody.	73.4	87.5
People in a big city are cold and impersonal; it is hard to make new friends.	74.4	80.0
Do you often discuss political problems with your friends? (Often or Sometimes)	47.7	25.0
Are you interested in following local news in the newspapers and on the radio?	68.2	57.5
Are you interested in following national news in the newspapers and on the radio?	63.1	40.0
Are you interested in following international news in the newspapers and on the radio?	61.5	48.0

	% AGREEING WITH STATEMENT	
	KAKAMEGA	SIAYA
FARMING PRACTICES		
New varieties are generally better than old ones.	79.5	40.0
Is is better to grow the traditional varieties of maize rather than take a chance on an unknown new variety even though the new variety may yield more?	2.6	37.5
New farming ideas are O.K. for big farmers, but not for small farmers.	48.5	65.0
Methods of farming are changing rapidly around here.	35.9	50.0
Farming is changing in this area and I should change the way I farm.	48.7	40.0
If a person is to get ahead in farming they must take chances.	71.4	65.0
Success in farming is more dependent on God than on the efforts of man.	43.7	65.0
SOURCES OF FARMING INFORMATION		
I don't trust government extension agents.	2.6	32.5
The way my father did it (farming practices) is better than any government agent can tell me.	10.3	37.5
The best person to ask about what to do in farming is the village chief.	5.1	30.0
The best person to ask about what to do in farming is the village religious leader.	0.0	12.5

ATTITUDES

LIVESTOCK FARM SAMPLE

	% AGREEING WITH STATEMENT	
PLANS FOR THE FUTURE	KAKAMEGA	SIAYA
Making plans only brings unhappiness, because the plans are hard to fulfill.	65.1	80.6
With things as they are today, an intelligent person ought to think only about the present, without worrying about what is going to happen tomorrow.	17.2	51.6
The secret of happiness is not expecting too much out of life, and being content with what comes your way.	75.8	70.9
POWER AND SUCCESS		
The most important qualities of a real man are determination and driving ambition.	86.2	82.3
A person needs good connections to get ahead in the world.	100.0	96.8
Businessmen have good connections that make it easy for their sons to become successful.	55.2	71.0
The best way to judge a man is by his success in his wealth.	17.2	22.5
The control of this community is in the hands of a small group of people, and an ordinary citizen has not got much to say about the way things happen.	41.4	0.0
The son of a farmer does not have a very good chance of becoming wealthy.	51.7	61.3
KINSHIP		
When you are in trouble, only a relative can be depended on to help you out.	37.9	25.8

	% AGREEING WITH STATEMENT	
	KAKAMEGA	SIAYA
If you have a chance to hire somebody to work on your farm, it is always better to hire a relative instead of a stranger.	20.7	19.1
When looking for a job off the farm, a person ought to find a position in a place located near his family even if that means losing a good opportunity elsewhere.	72.4	77.4
ORIENTATION AND PARTICIPATION		
You can trust only people whom you know well.	72.4	80.6
People help persons who have helped them not so much because it is right but because it is good business.	79.3	83.1
In general, life is better in small communities where you know everybody.	81.1	83.3
People in a big city are cold and imperonal; it is hard to make new friends.	68.9	71.0
Do you often discuss political problems with your friends? (Often or Sometimes)	58.3	44.2
It is not good to let your friends know everything about your life, for they might take advantage of you.	76.9	61.3
Are you interested in following local news in the newspapers and on the radio?	89.2	77.4
Are you interested in following national news in the newspapers and on the radio?	81.1	74.2
Are you interested in following international news in the newspapers and on the radio?	65.5	54.8

	% AGREEING WITH STATEMENT	
	KAKAMEGA	SIAYA
FARMING PRACTICES		
New varieties are generally better than old ones.	93.1	80.6
Is is better to grow the traditional varieties of maize rather than take a chance on an unknown new variety even though the new variety may yield more?	34.5	47.4
New farming ideas are O.K. for big farmers, but not for small farmers.	44.5	74.5
Methods of farming are changing rapidly around here.	80.0	93.3
Farming is changing in this area and I should change the way I farm.	90.0	63.2
If a person is to get ahead in farming they must take chances.	90.0	92.6
Success in farming is more dependent on God than on the efforts of man.	37.9	61.3
SOURCES OF FARMING INFORMATION		
I don't trust government extension agents.	16.2	38.7
The way my father did it (farming practices) is better than any government agent can tell me.	17.2	31.3
The best person to ask about what to do in farming is the village chief.	3.4	22.6
The best person to ask about what to do in farming is the village religious leader.	6.9	28.0

WILLINGNESS TO MAKE CHANGES TO INCREASE FARM INCOME BY KSH 500 PER YEAR

SMALL FARM SAMPLE

	% WILLING TO DO SO	
IF THE CHANGE REQUIRED:	KAKAMEGA	SIAYA
Obtaining more credit.	46.2	27.5
Farming more land.	53.9	67.5
Using more labor.	33.3	42.5
Expanding cattle production.	53.9	32.5
Expanding sheep production.	28.2	30.0
Expanding goat production.	23.1	17.5
Expanding poultry production.	35.9	60.0
Expanding crop production.	94.9	92.5

WILLINGNESS TO MAKE CHANGES TO INCREASE FARM INCOME BY KSH 500 PER YEAR

LIVESTOCK FARM SAMPLE

	% WILLING TO DO SO	
IF THE CHANGE REQUIRED:	KAKAMEGA	SIAYA
Obtaining more credit.	28.6	48.4
Farming more land.	57.1	45.2
Using more labor.	40.7	39.0
Expanding cattle production.	46.4	16.1
Expanding sheep production.	39.3	19.4
Expanding goat production.	39.3	26.0
Expanding poultry production.	39.3	35.5
Expanding crop production.	96.4	87.1

PLANNED CHANGES IN FARMING OPERATIONS

SMALL FARM SAMPLE

	% PLANNING TO DO SO	
WITHIN 3 YEARS, PLAN TO:	KAKAMEGA	SIAYA
Buy more land.	20.5	7.5
Intensify farming operations (double cropping)	30.8	47.5
Hold on to my farm for my children.	87.2	90.0
Use more chemicals (fertilizers, herbicides and insecticides)	38.5	30.0
Buy machinery.	0.0	2.5
Rent more land.	23.1	7.5
Build more buildings.	10.3	42.5
Grow more cash crops.	30.8	50.0
Raise more livestock.	38.5	37.5
Seek off-farm employment.	2.6	17.5
Work more hours on farm.	64.1	72.5
Retire from farming.	2.6	22.5

PLANNED CHANGES IN FARMING OPERATIONS

LIVESTOCK SAMPLE

	% PLANNING TO DO SO	
WITHIN 3 YEARS, PLAN TO:	KAKAMEGA	SIAYA
Buy more land.	17.9	35.5
Intensify farming operations (double cropping)	70.4	83.9
Hold on to my farm for my children.	50.0	41.9
Use more chemicals (fertilizers, herbicides and insecticides)	46.4	32.3
Buy machinery.	7.1	16.1
Rent more land.	40.7	41.9
Build more buildings.	46.4	38.7
Grow more cash crops.	46.4	35.5
Raise more livestock.	53.6	29.0
Seek off-farm employment.	3.6	6.7
Work more hours on farm.	21.4	3.3
Retire from farming.	7.1	19.4

MIGRATION PATTERNS

SMALL FARM SAMPLE

	KAKAMEGA (%)	SIAYA (%)
Respondents who believed most young people moved away from village.	97.4	60.0
Households who have had members who migrated.	64.1	55.0
Large city as a destination of migrants.	30.8	40.0
Reasons for migration:		
Marriage	52.2	17.4
A job.	78.3	69.6
To go to school.	4.3	4.3
Migrants who came back to visit.	95.7	82.6
Visits were for holidays and other special events.	78.2	82.6
Migrants who sent or brought items to respondents.	65.2	73.9
Large cities are a good or bad place for people from this village to live?		
Good place	30.8	22.5
Bad place	5.1	22.5
Neither	12.8	30.0
Both	46.2	15.0