UNDERSTAND THE GOALS AND MOTIVATIONS OF FARMERS

by

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Traditionally, agricultural development programs were planned from the "top down." That is, planners began with national policy goals which determined which agricultural commodities would increase national welfare. They then located those areas particularly suited to such crops and established research stations. These research stations supplied a package of recommendations designed to "attain optimal technical management of the commodity under the climate and soil conditions of the chosen area" (Collinson 1982:42).

The usual problem with this approach was that no one bothered to consult the farmers upon whose labor everything else depended. All too often, farmer objectives did not match national objectives, and agriculture did not develop along the lines envisaged by the planners.

Farming systems research (FSR) was explicitly designed to remedy this situation by informing national planners and research scientists of the "priorities and the economic circumstances of...farmers" (Collinson 1982:42). Thus, the impetus behind FSR originated from the need to see agricultural development from the "bottom up," from the client's point of view, and farming systems researchers have long appreciated the need to understand the values, rationales, and objectives that lie behind farmer behavior:

> The goals and motivations of farmers, which will of effort they will be willing to devote to improving the productivity of their farming systems, are essential inputs to the process of identifying or designing potentially appropriate improved technologies (Norman, et al., 1982:25).

However, an understanding of the "goals and motivations of farmers" depends on designing appropriate research procedures. This paper scrutinizes the FSR methodology in order to determine whether or not it can fulfill its stated objectives of providing the farmer's perspective. This examination focuses on the way in which FSR defines the social units of analysis employed in the study of a farming system, and it argues that the most important analytical units of analysis employed in FSR -- the farming system, the individual farm, and the recommendation domains -- are defined either according to the theoretical requirements of economic analysis or the practical demands of applied agricultural research. Using material from Botswana, Southern Africa, we maintain that FSR conceptual units of analysis systematically distort the economic goals and objectives of peasant farmers in one African country. Botswana is currently the site of a major FSR research program (see ATIP 1981).

The purpose of this critique is not to attack FSR in general or to call into question its most basic methodology. Rather, we wish to demonstrate that FSR procedures are deficient in one particular but very important regard, that of ascertaining the motivations of farm people. If there is a solution to this problem, it lies in the interdisciplinary effort. If many economists are ill-equipped by nature of their training and project responsibilities to understand farmer objectives, then it may be advisable to assign this task to other social scientists with appropriate professional backgrounds. Herein, we argue, lies one of the most important areas where anthropology can make a contribution to FSR.

The Role of Farming in the Household Economies of Rural Botswana

Farming systems research concentrates -- understandably enough -- on the analysis of farming systems. The concentration of FSR on agriculture may, however, have two unexpected and undesired results. First, it may encourage researchers to think of those who farm as primarily or solely farmers, and thereby underestimate the role of non-agricultural activities in the larger household economy. Secondly, an exclusive concentration on farming may ill-equip FSR to address one of the major issues in agricultural development in Africa: the withdrawal of labor from agriculture due to rural-urban migration. The economic organization of Botswana households clearly illustrates both of these problems.

In Botswana "farmers" and "farm families" do not derive the major portion of their income from arable farming. Instead, members of the family are dispersed physically and economically in order to take advantage of diverse income-earning opportunities. Individuals operating within the larger unit of the family calculate the marginal utility of their labor in different sectors of the economy, while "hedging their bets" in other sectors by retaining links

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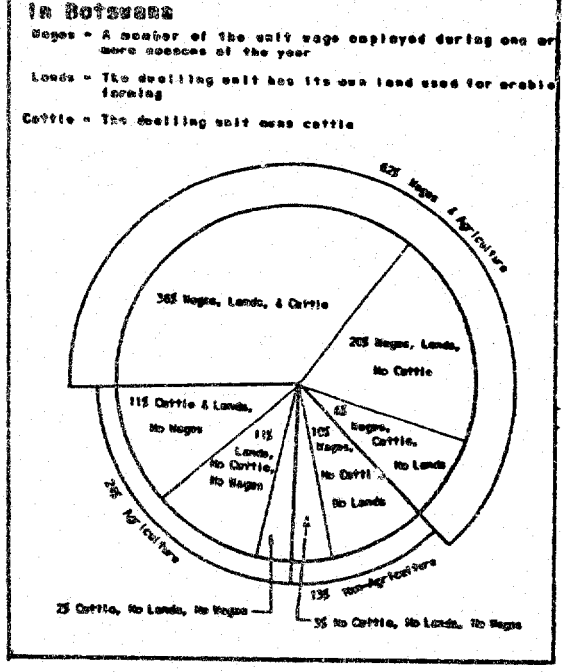
therein. These linkages provide both immediate and long-term security and enable the individual to gamble in a risky economic and ecological environment (Kerven 1982a).

The pervasiveness of this system of dispersed risk can be judged by the results of two recent national surveys conducted in Botswana. The National Migration Study conducted in 1979 found that the majority of rural dwelling units had a wage employed member during the year (see Kerven 1982b:561-564), and less than one quarter of all farm dwelling units were solely dependent upon agriculture (Figure 1).

Furthermore, an earlier rural income study revealed that two-thirds of all rural dwelling units in Botswana obtained over 40% of their total income from off-farm employment (RIDS 1976). According to this study, the proportion of rural household income obtained from crop farming ranged from nine percent of the total household income from the poorest 50% of all households, to four percent of the income of households in the 60-95% highest income.

If one is to introduce agriculture researchers to "the farming family — their objectives and goals" (ATIP 1981:10), then the preceding results strongly suggest that arable farming may not be the major concern for many farming families in Botswana. While FSR researchers may be concerned with measuring and increasing farm income, farmers are concerned with stabilizing and increasing their entire income, much of which may come from non-farm employment. Therefore, in order to understand "farmers' goals and objectives," FSR researchers



must adopt the viewpoint of farmers and attempt to see how diverse income sources are combined, consumed, and invested.

Standard assessments of farm economies achieve this perspective in only a limited way. Conventional methods begin with limited calculations of income lost or made annually by the farming enterprise of the farm family. While usually recognizing the existence of what is termed "off-farm employment", these studies minimize the importance of the wage sector by treating wage employment of family farm members as a residual activity, in the context of the farming enterprise.

It is misleading, however, to frame the household economy in terms of how it contributes to or interferes with the farming enterprise. To the contrary, it is frequently the farming enterprise that is secondary to and subservient to the organization of the overall household economy, and to ignore this fact is to hide from agricultural researchers and project managers one of the most pervasive reasons why technologies.

In a rural economy such as that found in Botswana, the acceptability of a farming innovation cannot be adequately judged solely by its technical and economic impact on farming. It must also be assessed in terms of its positive or negative contribution to the household economy as a whole. This will especially be the case when technical innovations require additional labor or capital that could be invested elsewhere, for example, in the search for urban jobs or in the education of children.

The need to combine an analysis of agricultural income and urban wage income is not, moreover, a problem peculiar to Botswana, and should be a matter of general concern to all those involved in FSR. The pattern of domestic economic diversity and labor migration described here for Botswana has also been documented over a wide area of Africa (reviewed in Eicher and Baker 1982:223-234).

The trend in many poor nations throughout Africa points to a deteriorating income differential between subsistence agriculture and urban wage employment (Eicher and Baker 1982:223-234). Because FSR is a practical, problem-oriented research method, FSR projects are likely to be implemented in precisely those nations where the agricultural sector stagnates relative to urban wage markets. Far from being a peripheral issue, rural-urban migration and the flight of the young and able-bodied from worsening economic conditions in agriculture may be one of the major problems that FSR must confront in contemporary Africa. It is essential that it develop standard field techniques fitted to this task.

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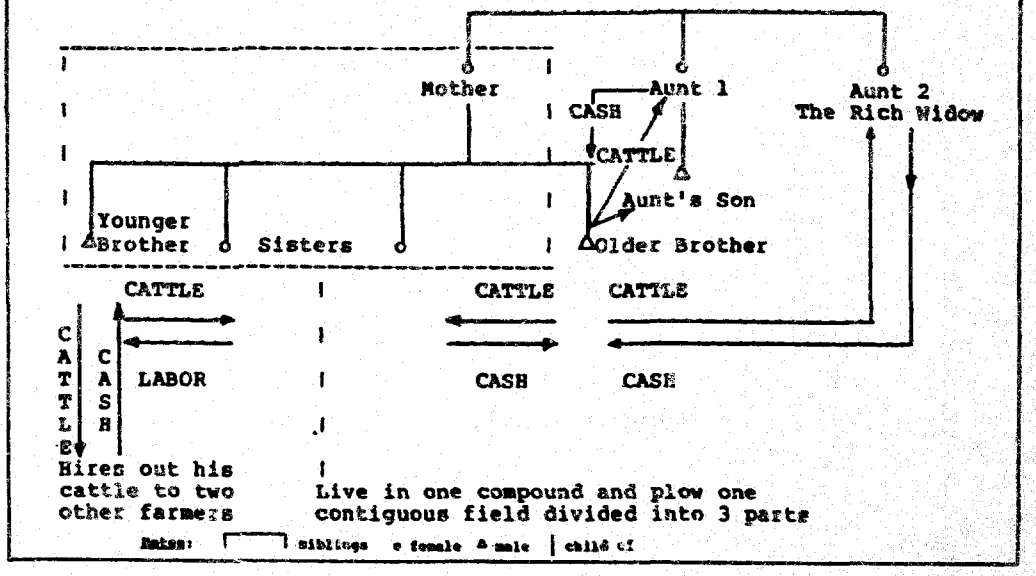
Thus far, we have noted that Botswana households combine urban and rural residences, wage employment and subsistence agriculture. A new set of methodological problems arises if we confine our attention to the rural areas and attempt to describe the social units which actively engage in agricultural tasks such as plowing, weeding, and harvesting. The assumption that African peasant farms are basically family farms runs through much of the development literature on farm management in Africa (see Upton 1973). Our material challenges this oversimplification, at least with respect to rural Botswana.

In Botswana, the rural component of many households cannot engage independently in crop farming because it lacks either the necessary resources or sufficient family labor. In many cases, these households overcome their inadequacies through a complex pattern of economic exchanges with other households, exchanges which enable a marginal family to continue farming.

In the following discussion, we present a concrete example of cooperation among close kin involved in farming. In this case, we ask the question, "Where is the family farm?" After presenting the ethnographic data, we will show why this question is of crucial importance to the application of economic analytic techniques.

Our case involves four adult siblings, two men and two women. The kinship relations within this sibling group and between it and neighboring kin are shown in Figure 2, which also outlines the economic exchanges which took place among these kin in order to plow their fields in a single year.

Figure 2: The Multi-Household Farm



Let us begin with the elderly mother of the four siblings. Mother lived with her younger son and two unmarried daughters in a single compound. She plowed no fields of her own, but her younger son and two daughters plowed one continuous field which was divided into three parts and owned separately by each sibling. These three co-residents cooperated closely in plowing activities, with the brother providing cattle in return for the labor of both sisters and their oldest daughters. This seemed to be a mutually beneficial arrangement since the brother had only small children and was, therefore, short on domestic labor.

The two sisters said, however, that their brother had not been able to plow enough for them in the previous season, and they had, therefore, called upon their older brother (not living in the same compound with them) for assistance. This older brother, in the draft hire business, worked on the same basis for his own two sisters, taking cash obtained from their beer-brewing income. At the same time, however, as the sisters were paying for hiring in animal traction from their older brother, their younger brother, with whom they lived, was hiring out his animal to other neighbors on a cash basis.

Now, one may ask a question essential for determining labor and income factors: Where is the family and where is the farm in this example? Does the farm consist of the elderly mother (who is too old to take any practical interest in farming) and her three co-resident children? In this case, it seems odd that the fields of a single farm would be divided by three owners and that the farm would simultaneously hire in and hire out draft power. Or, alternatively, are there three farms, one for each sibling? In that case, it would seem odd that three separate farm families would live together in one dwelling unit, under the tutelage of a senior relative. Or, finally, are there two farms: one for the younger brother, with his own cattle and land, and one for the two sisters, who combine to brew beer and exchange these earnings for agricultural inputs? And let us not, of course, forget the helpful older brother who lives elsewhere but plays an equal part in the

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farming decisions and in actually doing the work for the two sisters.

The Family Farm as Firm

The preceding case material illustrates the extent to which individual households are not discrete entities, a situation documented by nearly every social study of Botswana's countryside (Alverson 1979; Cooper 1982; Kooijman 1978; Massey 1981, among others). In rural Botswana, as in many other parts of the world, the smallest units of biological, social, and economic reproduction are encompassed within larger units which both sustain them and restrict their freedom of action.

The resulting forms of social organization pose a challenge to current FSR analytical procedures, which fail to recognize the fluid and overlapping nature of household and farm organization. It is now necessary to relate these deficiencies in FSR analytical techniques to the problem of appreciating "the farmer's point of view."

In FSR, the economic analysis of farm performances is implicitly based on the theory of the firm. However, Botswana households do not look or act like business firms, and — unlike proper industrial firms — appear to have fuzzy, shifting, or even nonexistent boundaries. It is, of course, exceedingly difficult to do input-output analysis on a unit with no clear ins or outs.

Ambiguities arise because of the nature of the social environment within which these households operate. In an industrial economy, it is fairly easy to distinguish families or households from other economic units. Households are governed by kin relationships and rules, not by cross calculations of short-term costs and benefits. Economic relations are generally reserved for dealing with the impersonal, market-based "outside world" in which the family operates as a self-contained entity.

However, a household operating within a social system such as is found in rural Botswana does not so much confront an impersonal outside world as an ever-widening circle of kin and neighbors with whom economic relations must be established. Inversely, the family itself functions as a basic unit of production, unlike most industrial families. Family-type relations are, therefore, extended to the "world-at-large," while economic-type relations penetrate the domestic environment, and there is no obvious change in the tone or quality of social and economic relations within and among households.

In this setting, it may be in the interest of individuals not to limit their options by declaring unequivocal allegiance to an immediate set of kin, thereby distancing themselves from other potentially useful kin (see Comaroff and Roberts 1981). With respect to defining the family or its farm, the needs of economically motivated actors and economic analysis are at cross-purposes. The very issues that economists wish to clarify in order to get on with their work are precisely those issues which actors strategically obscure in order to advance their own interests.

To create an artificially tight definition of the household in such societies is not, therefore, merely to "tidy up" the data; it is to systematically misconstrue the long-term economic environment in which individuals operate, and to ignore the way in which individuals manipulate their social environment. Such manipulation underestimates the social dimensions of economic behavior and restricts economic analysis to a narrow calculation of the relative efficiency of different productive techniques. It does not allow agricultural researchers to recognize the "goals and motivations of farmers".

Farmer Typologies, Target Groups, and Recommendation Domains

The problems which arise in the analysis of household economies are often compounded in the economic analysis of entire farming communities or regions. Again, the requirements of the research program override attempts to view community organization from the participants' point of view. In this case, distortions result, not from the formal requirements of economic analysis, but from the need to communicate the results of this analysis in a way that is immediately useful to technical agricultural scientists and administrators.

FSR seeks to disaggregate farmer groups operating within a project area according to how the farmers fit into a "farmer typology". The different categories which comprise a farmer typology are then labeled either "target groups" or "recommendation domains". These categories are intended to represent homogeneous sets of farms or farmers who share similar problems and possess similar resources for solving these problems. On a regional basis, different target groups may reflect different farming areas or different ethnic groups, with their particular styles of farming and food preferences. Within a single community, however, the criteria of "similar problems and

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that each target group will, in fact, represent an economic class, based on differential access to the means of production.

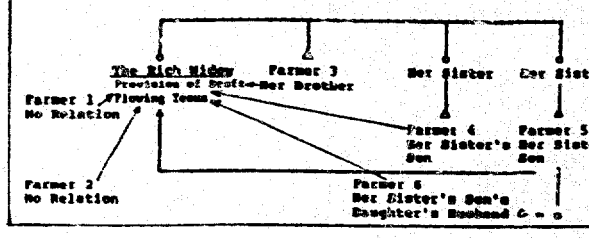
The total picture of a community composed of target groups may, therefore, present a valid profile of the variation in production factors. Nevertheless, this may be a profile which obfuscates the economic and social interdependence of the community under study and interferes with any attempt to understand the economic goals and objectives of the community members.

In order to illustrate this point, let us examine another example of the social organization of farming in rural Botswana. This case involves the plowing arrangements of an old matriarch whom we call the Rich Widow. Six different households helped the Rich Widow plow her fields, and all did so on a hire basis for cash. All these farmers were neighbors and the majority were also kin (Figure 3).

The obvious question to ask in the case of the Rich Widow is, "How did she obtain all the cash and social leverage to get this many draft teams working for her?" The cash came from three different sources, as did the social leverage. In terms of cash, the Rich Widow had many children and grandchildren, six of whom were scattered in the urban areas of Botswana, had wage jobs, and sent money home to the Widow. As a second source of income, the Rich Widow brewed and sold a local variety of sorghum beer. As a third source of cash, the Rich Widow also operated a large cattle herd. She certainly had sufficient cattle to plow her own fields, but claimed that the cattle were kept too far away. Her social leverage also derived from three brewing, which turned her residential compound into a social center for surrounding farmers, from the fact that she had a large number of kin living around her, and from the fact that she was rich.

The Rich Widow had been able to establish her influence over a cluster of farms for which she served as the focus of local social and economic life. This cluster was not legally recognized by the wider community, and it lacked both a formal political structure and definite boundaries; it was, however, recognized and referred to by name among local farmers.

It is instructive to compare the composition of this cluster of cooperating farms with the composition of a typical FSR target group. Target groups are in theory made up of a homogeneous set of farms. Farmers gathered around the Rich Widow were recruited on the basis of kinship and residential propinquity and was heterogeneous in terms of the farming techniques and the available resources on individual farms. This heterogeneity was, moreover, exploited by farmers whenever they sought to solve farming problems which could not be handled on an individual farm basis. The rationale behind cooperative agreements among farmers was to put together households with complementary levels or different kinds of farming resources. With regard to plowing, farms without cattle sought farms with sufficient draft, farms with a labor surplus sought labor-deficient farms where employment was possible, and farmers in need of cash sought those who were willing and able to pay cash for services. The general pattern was for multi-household production units -- regardless of the particular



agricultural activity -- to cut across "target groups".

Farmer typologies were developed in FSR in order to identify groups of farmers who shared common farming problems and, hence, might be interested in similar technical solutions to these problems. However, the desire to find technical solutions to farming problems reflects the "goals and motivations" of agricultural research more than those of farmers. In fact, an appreciation of the interactions among different kinds of farmers may be an important element in understanding both the economic circumstances and the full impact of technical and economic change on a farming community. The case material presented here suggests that technical innovations which demand the use of more draft power, family labor, or cash will inevitably bring about realignments in cooperative relationships. These realignments would probably lead to reductions in production on some farms and increases on others. From the point of view of innovative farmers (or of project personnel who have a vested interest in such farmers) these changes might appear to be unqualified improvements. From the point of view of the community as a whole, these innovations might, on the other hand, entail a simple redistribution of productive capacity among farmers with no net increase in prosperity.

In sum, analysis in terms of supra-household cooperative networks would encourage re-

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of the project's impact upon the capacity of a community as a whole to increase production. The linkages between economic classes of farmers which comprise these supra-household systems are as fundamental to the production process as are the individual household linkages. It is difficult to conceive of how typologies which "freeze" isolated families into separate productive classes could promote an appreciation of the community organization which ultimately sustains agricultural activity in these locations.

Conclusions

This essay has examined three basic analytical categories employed in FSR: the farming system, the individual farm, and the target group. It has been argued that these units of analysis consistently impede the attempt to understand the goals and economic motivations of farmers in Botswana.

By focusing attention primarily on agriculture activity and income, researchers tend to underestimate the importance of wage employment as a result of outmigration of some rural farm family members. Also, the concept of the family farm exaggerates the economic isolation and self-sufficiency of individual households and promotes a distorted interpretation of the nature of economic relations within and among households. Finally, farmer typologies categorize farming communities in such a way as to suggest technological solutions to farming problems, a restricted point of view not necessarily shared by farmers.

These implications should not be interpreted as a rejection of FSR methodology. The practical benefits resulting from the economic analysis of household decision-making are beyond doubt. Farmer typologies are also useful as a tool for communicating the results of farming systems research. The problem is that these otherwise useful tools can interfere with an attempt to understand the farmers' point of view.

A simple solution to this dilemma is to place these tools in the hands of one member of a FSR team and to entrust another member of the team with the responsibility of uncovering the goals and objectives of farmers. We presume that the professional credentials of anthropologists qualify them for this latter role.

The incorporation of anthropologists into FSR projects requires adjustments in both anthropological method and FSR field procedures. From the point of view of the other disciplines on a FSR team, anthropologists are asked to accept formal survey techniques as the dominant mode of research and to accept the limitations on individual research flexibility that such techniques entail. From the anthropologist's point of view, FSR field procedures have to incorporate a greater sensitivity for local conditions.

In this concluding section we suggest several practical steps that can be taken in order to incorporate an anthropological point of view into FSR field methodology. These changes are extremely modest and would require no alteration in the overall FSR scheme of research. They would, however, substantially increase our ability to routinely come to some understanding of the priorities, tions of peasant farmers.

Collinson has divided farming systems field research into three stages: an exploratory survey, a formal verification survey, and on-farm testing and experimentation (Collinson 1982:16-25). Modifications reflecting the issues raised in this paper could appropriately be incorporated into the formal survey stage.

Initially, construction of the sample survey would select dwellings as the primary sampling units. Axiomatic to sampling procedure is the requirement that the sampled unit be a discrete isolate which can be formally defined for purposes of data manipulation and can be readily identified in the field. As we have discussed, dwellings more aptly fulfill these conditions whereas families, households, or farms do not, being composed of multiple and overlapping layers of allegiance, cooperation, membership, and residence.

The selection of dwelling units would follow accepted FSR practice in that: i) they would be randomly selected within different recommendation domains/target groups, ii) the fields immediately associated with these dwelling units would serve as the sites for agronomic trials. The only departure from standard practice would be the redefinition of the primary sampling unit, as dwelling unit rather than household or family farm. Using a dwelling unit rather than "family farm" or "household" eliminates the need for a cumbersome definition of these latter units. These definitions may often bias the research process at the very beginning. From the anthropological point of view, sampling by dwelling units would

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permit definition of the critical social units involved in farming to grow out of the study, thereby reducing the temptation to define these units **a priori**.

Having identified the primary sampling unit and its currently resident members, data collection would then spread out from this central point to include both rural and urban dwelling units with economic ties to the initial, randomly chosen unit. In other words, entrance into the social system would be on a random basis, while subsequent probing out from these points of entry would not.

In those rural areas where cooperating farmers tend to form tight geographical clusters, purposive sampling could be undertaken easily and cheaply. Rural-urban linkages, on the other hand, might be studied best through in-depth questioning of the members of rural dwellings already included in the sample. The alternative, involving tracing absent migrants or other associated family members over long distance, may be justified in terms of cost effectiveness only if limited to a small sub-sample of surveyed units (Byerlee, et al. 1976).

This combination of random and purposive sampling accomplishes two things. First, random sampling preserves the credibility of FSR in the estimation of technical scientists, statisticians, and economists working in the planning units of national ministries or on agricultural research stations. On the other hand, additional purposive sampling permits researchers to trace significant interactions involving the farming system, and to identify the different units of production and consumption associated with farming.

It is at this point that traditional anthropological field techniques would come into full play. By tracing linkages out from the initial dwelling unit, the techniques outlined here would permit the researcher to pursue the structure and organization of farming along lines revealed by the community under study. As we have argued here, the distinctive aspects of local social organization may serve as our most reliable guide to understanding the economic circumstances, goals, and objectives of farmers.

Endnote

1. Some of the ideas and research results expressed in this paper arose out of an integrated study of the social and agronomic aspects of draft-animal plowing in Botswana, during 1981-82. This research was jointly conducted by Roy Behnke, a social anthropologist; Clive Lightfoot, an agronomist; and John Lesothlo, a sociological assistant in the Botswana Ministry of Agriculture. The results of this research project were presented in a paper entitled "Methodological Issues Relating to On-Farm Agricultural Research in Botswana," authored by R. Behnke, C. Kerven, J. Losothlo, and C. Lightfoot (in Clive Lightfoot (ed), A Collection of Papers Relevant to Farming Systems Research in Botswana, Agricultural Technology Improvement Project, Ministry of Agriculture, Botswana).

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household participation in commercial agriculture and/or labor migration, two of the most significant features of socio-economic change in East Africa, lead(s) to greater material wealth and, over time, to the development of a distinctly more favored socio-economic class of well-to-do peasant (or "Kulak") farmers. At the same time, we often read that commercial agriculture generate poor nutrition, partly because of changing cropping and consumption patterns, and partly because of changing patterns of household labor allocation. The implication, that wealthier strata of the community may suffer most from malnutrition, is counter-intuitive and is not borne out by numerous studies in non-African settings that stress the relationship between household wealth and good child nutrition. What, then, are the linkages among commercial agriculture, labor migration, wage employment, wealth, and child nutrition? Reviewing some of these issues in a critical assessment (Fleuret and Fleuret 1980), we concluded that commercial agriculture and attendant socio-economic change could seriously endanger the nutrition of children in participating households. However, these conclusions were based on literature generated, for the most part, in Latin America and Asia; the African literature lacks studies that seek to demonstrate the relationships that may exist between nutritional status and such potentially-significant variables as wealth differences, landholdings, employment characteristics, domestic division of labor, commercial agriculture, crop diversity, and so forth. Beginning in January 1981, Anne and Patrick Fleuret initiated a program of research designed to clarify precisely these issues. Before considering the preliminary results of this work, it is appropriate to speak briefly of the research site itself.

II. Setting

The Taita people live in the Taita Hills and adjacent plains of Coast Province, Kenya. The hills themselves are by arid and largely unpopulated plains. Only the plains areas immediately adjacent to the hills support any human population, and most of these are Taita people who have migrated permanently to the lowlands within the last 30 years due to high population densities and increasing competition for land within the hills. Although the hills have been settled for several hundred years, the plains prior to about 1950 were exploited for their plant and animal resources and used as pasture for livestock, but not regarded as a fit habitat for permanent human residence.

The Taita Hills rise to a maximum elevation of 2200 m, with the majority of the population living in areas 1000-2000 m above sea level. The Taita recognize three agro-ecological zones: the high, cool, and wet areas above 1700 m; the intermediate warmer and drier zone between 1000 and 1700 m; and the arid plains. Households attempt to maintain farm plots in all three zones in order to satisfy their cultivation, herding, residential, and foraging needs, and to manage the risk of seasonal crop failure due to poor growing conditions in any one zone. Although government consolidation and registration of farmlands together with official and unofficial resettlement of hills people to the plains has altered this traditional pattern to some extent, it is still the case that most households have access to land in at least two of these zones and a good working knowledge of the cropping conditions obtaining in each.

The data presented below are derived from research conducted among a sample of 270 households evenly distributed among four communities. Ipe-

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