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**THE BEAN/COWPEA
COLLABORATIVE RESEARCH
SUPPORT PROGRAM (CRSP)**

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RESOURCE GUIDE
WOMEN IN AGRICULTURE

B O T S W A N A

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CONTENTS

Bean/Cowpea CRSP Women in Agriculture Series	1
Introduction to the Botswana Project and Resource Guide	5
I. Survey of the Literature on Small Farm Agriculture	7
Migration and Agricultural Development	7
Agricultural Production Systems	9
Agro-Ecological Zones	9
Demographic and Ethnic Distribution	12
Agricultural Production Data	15
Agro-Ecological Adaptations	16
Gender-Specific Farming Activities	21
Overview of Women in Botswana	21
The Division of Labor	22
Women's Roles in Bean/Cowpea Production and Marketing	29
Women's Other Responsibilities	29
Summary and Conclusions	30
II. Project-Specific Implications	31
Specific Project Objectives	31
Timely Planting	31
Reduced Tillage	33
Variety Screening Program	34
New Cultural Practices	35
New Harvesting Technique	35
<u>Alectra vogelii</u> Resistance	36
Demonstration Plots on Farmer's Fields	36

Self-Evaluation Meetings	37
Additional Considerations	37
Women's Legal Status and Land	37
Compatibility of Beer Brewing and Cowpea Production	38
The Division of Labor	38
Cooperatives and Marketing	38
Drought and Food Aid	38
Use of Manure and Fertilizer	39
Summary and Conclusions	39
III. Education and Women's Organizations	40
The Educational System	40
Women's Organizations	42
IV. Selected and Annotated Bibliography	49

BEAN/COWPEA CRSP WOMEN IN AGRICULTURE SERIES

The Bean/Cowpea CRSP is a program of coordinated projects in Africa and Latin America that focuses on removing constraints to the production and utilization of beans (Phaseolus vulgaris) and cowpeas (Vigna unguiculata). Funded by a Title XII grant from USAID/BIFAD, the goal of the program is to support research and training which will ultimately result in a reduction of hunger and malnutrition in developing countries.

In many of these areas, beans and cowpeas are staple foods that provide the major source of protein and an important source of B vitamins in family diets. Usually produced on small farms for household consumption and sale, these basic food crops have not benefited from the kinds of research and extension efforts accorded to crops grown for export purposes. Consequently, yields tend to be low due to high insect and disease infestation, depleted soils and drought. Often much of the meager harvest is lost during storage.

In many parts of the world the primary responsibility for the production of beans, cowpeas and other crops grown for family consumption rests with women and children. While women's roles in agriculture vary by country and region, women generally play a major part in seed selection, planting, weeding, harvesting, storing, processing and preparing food crops. These factors combine to pose a special challenge to development efforts, suggesting both a need to direct attention to the constraints faced by small farmers and at the same time to recognize that, in many contexts, a majority of these farmers are likely to be women.

A total of eighteen projects, eight in Africa and ten in Latin America, are included in the Bean/Cowpea CRSP. All involve collaborative research between investigators located at host country (HC) institutions and at US universities and institutes. A wide range of research interests is reflected in the program; all address the small farm context and many focus on agricultural and food preparation tasks usually carried out by women. Included in the program are projects designed to:

1. Increase bean and cowpea yields through developing disease and insect resistant, drought tolerant or high nitrogen fixing varieties which incorporate locally desirable traits (color, texture, taste and cooking characteristics).
2. Facilitate the processing of beans and cowpeas through the development of technologies that are suitable for use at the household and village level.
3. Investigate and where possible remove the anti-nutritional factors and increase the protein content and digestibility of beans and cowpeas.
4. Address storage losses and preparation constraints such as the hard-to-cook phenomena in beans.

In addition to the research objectives, each project has a training component tailored to HC bean and/or cowpea research needs. This includes opportunities to participate in formal degree programs and in short-term

training courses. Interactions among researchers from the various projects in the CRSP have resulted in an integrated approach which promises to yield realistic and viable solutions to the problems confronting small farmers.

Since its inception, the Bean/Cowpea CRSP has incorporated a strong Women-in-Development (WID) focus and has included a WID Specialist on its Management Office staff. While specific objectives vary by project, certain WID concerns are of program-wide significance. These include:

1. Assuring that gender issues are taken into account in information gathering. This requires an awareness of the ways in which this variable influences resource allocation, decision-making processes and the division of labor within farming households. Such a focus is important in Latin American contexts where women's participation in agriculture has often gone unrecorded and is especially significant in many African areas where women have access to their own fields and are responsible for providing for their family's sustenance. In both situations data gathering must encompass male and female work roles if workable solutions to the problems confronting small farmers are to be devised.
2. Ascertaining that agricultural innovations (be they improved seed varieties, new techniques or technologies) are appropriate to the small farm context and that these innovations do not result in the progressive marginalization of women in the agricultural sector or increase their already heavy work loads.
3. Encouraging the participation of women in the projects as researchers, technicians and students. Over the long run, such efforts are likely to result in the diminution of male biases in research and hence lead to more equitable and successful development efforts.

Overall, the perspective is one which situates small producers within the wider socio-cultural and economic context and draws attention to how a consideration of gender differences within households and society will result in achievement of project objectives and ultimately in improved nutrition and health status.

As part of this effort a series of Women in Agriculture Resource Guides is being prepared to provide Bean/Cowpea CRSP Principal Investigators (PIs) with an overview of the HC small farm sector and women's roles in agricultural production, processing and marketing. These handbooks are designed primarily for researchers in agricultural and food or nutrition-related disciplines who may be unfamiliar with the social science literature on the area where their projects are located.

Relying on secondary source materials, the objectives of the guides are, first, to present a description of the local farming systems with emphasis on women's work roles. The amount and quality of information on women in agriculture is highly variable. A large number of studies exist for some developing countries while in others few investigations have been conducted. Second, a discussion of the relevance of the available information to the specific project objectives is provided. Where studies are not available, suggestions

are made as to what kinds of data on women's roles would be most appropriate to gather. In all cases, PIs are urged to gather more information on women's roles in farming through consultations with HC researchers and farmers, first-hand observations and interviewing. Where there are plans to conduct on-farm trials, these may provide an opportunity to clarify which members of the household are responsible for the various production tasks. A third objective is to provide information on education and to identify, where possible, women's organizations in the HCs and researchers in both the HC and the US who can serve as sources of information and as consultants. Finally, an annotated bibliography of the literature on women's roles in agricultural production, food processing and preparation in the HC is included.

The first Resource Guide in this series was prepared on Cameroon where the University of Georgia and the Institute of Agronomic Research, Government of Cameroon have a Bean/Cowpea CRSP project entitled "Pest Management Strategies for Optimizing Cowpea Yields in Cameroon." The second Resource Guide, presented here, is on Botswana. It was prepared by Ms. Nancy Harn and Ms. Brenda Nkambule-Kanyima for the Bean/Cowpea project "Development of Integrated Cowpea Production Systems in Semi-Arid Botswana" which is under the direction of Colorado State University and the Ministry of Agriculture, Botswana.

For further information on the Bean/Cowpea CRSP and its Women in Development component, contact:

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INTRODUCTION TO THE BOTSWANA PROJECT AND RESOURCE GUIDE

This second in the series of Resource Guides has been prepared on Botswana where Colorado State University and the Department of Agriculture of the Government of Botswana are collaborating on a project entitled "Development of Integrated Cowpea Production Systems in Semi-Arid Botswana." The principal goal of this project is "to provide Botswana farmers with an acceptable package of recommended practices for cowpea growing and harvesting including improved varieties and implements as required to realize higher yields and other benefits of the research to be conducted under the proposed scheme."

Detailed project objectives include:

1. Devise a set of practices whereby planting of cowpeas can begin immediately at the start of the rainy season to take advantage of natural mineralization of soil nitrogen.
2. Evaluate the merits of reduced tillage with simple tools primarily in marginal territory having near-desert conditions.
3. Initiate a continuing variety screening program during the term of the contract period with selection criteria based on acceptable appearance, roughness of seed coat and flavor.
4. Arrive at innovative, sound cultural practices for cowpea production adjusted for certain sets of environmental conditions, limitations of investment capability, shortage of labor and improved returns on labor cost.
5. Devise a harvesting technique whereby whole plants are collected, dried and stacked prior to threshing at a central site so avoiding repeated pickings in the field.
6. Incorporate resistance to Alectra vogelii into the Blackeye cowpea cultivar so that cowpea growth is facilitated.
7. Test the acceptability of research findings for private farmers on demonstration plots
8. Receive suggestions and opinions concerning program activities and findings from government agronomists to maintain high program efficiency by holding self-evaluation meetings.
9. Address the needs of female farmers taking into account the low availability of capital they have for investment in agricultural implements and machinery and considering that greater input of labor in any aspect of agricultural production is not feasible.

In summary, the project has a number of objectives which, according to the proposal, recognize the particular issues which constrain female farmers in agricultural production.

Bearing this point in mind, the following Resource Guide and annotated bibliography should provide specific information to the Principal Investigators and their staff so that they can be appraised of ways in which prior findings of social science researchers may enhance achievement of project objectives.

The Guide is organized in the following manner: Part I, the literature survey, is divided into three sections. The first presents a brief historical overview of migration as the issue which has received the most attention in the literature on agricultural development. The second describes various factors related to the agricultural production systems practiced in Botswana. The third focuses specifically on the position of women in Botswana and their role in agriculture. Part II considers this literature as it addresses project goals and objectives. This section also indicates areas of research which have received little attention and which bear further exploration. Part III discusses levels of educational achievement in Botswana and provides information on women's informal and formal organizations. The Guide concludes with a selected annotated bibliography as it applies to agricultural production in general and women in particular.

I. SURVEY OF THE LITERATURE ON SMALL FARM AGRICULTURE

Migration and Agricultural Development

Labor migration is the dominant theme of the literature on Botswana. Although there are two foci--rural-urban migration and migration to the mines in South Africa--the conclusions drawn by most authors discussing either of these are the same, i.e., that the withdrawal of various members of the household from the rural areas has had a number of deleterious effects on agricultural production.

Prior to any detailed discussion of these effects, it must be noted that cropping activities do not constitute a major source of income in Botswana. Only 5% (4.45 million hectares) of Botswana receives adequate rainfall and is suitable for crop cultivation, but only 10% of this area is actually cultivated since there is a high evapo-transpiration rate--a cause of crop failure. The ecology and climate favor ranching and herding, with cattle outnumbering people by three to one in 1983. Income from livestock provides over 80% of all earnings in the agricultural sector. The uneven distribution of cattle ownership and the privatization of grazing land have fostered out-migration from rural areas in search of employment either in the cities of Botswana or in the mines in South Africa. Remittances from mine laborers (estimated to number 50,000 people in 1983) add considerably to the income of many families in Botswana.

Historical analysis within the context of the political economy of Southern Africa indicates that Botswana has functioned as a labor reserve for South African mines and cities since early in the 19th century. More recent literature indicates a reversal of this trend as South Africa no longer employs the number of expatriate Africans it once did. The return of migrant laborers has resulted in more competition for jobs and for pastureland, a demand for more equalized income distribution and the need to develop cropping enterprises.

Alverson (1979) examines how migration has effected rural modes of production and posits that the opportunity cost of expanding agricultural production in light of the overall political and economic situation is high compared to the lower costs involved in moving elsewhere to work for a wage. He notes that:

1. The proportion of the total population involved in arable production is declining, mainly due to labor migration.
2. Towns and large villages are experiencing a growth in population, not necessarily due to natural increase but due to the influx from the more outlying areas.
3. Pressures on land are increasing due to demands for more grazing and arable land, perhaps brought about by the expansion of capitalist production of cattle and crops.
4. Variation in yields and areas cultivated is attributable to the reduction of on-farm labor and the restructuring of the social relations of production.

5. Within households there are changes in the rights and privileges of access to the means of production.
6. The contribution of agricultural production to total household income is not uniformly significant.
7. The ability of the land to produce is declining due to changes in herding and cropping practices.

Other authors have outlined additional effects of migration on agriculture: Behnke and Kerven (1983) found that less than one-quarter of farm dwelling units are solely dependent upon agriculture and that two-thirds of these units obtain more than 40 percent of their income from off-farm labor. Bell (1980) contends that individual household members perceive obtaining a greater advantage by migrating than by staying on the farm and trying to increase production. Brown (1980) posits that Botswana was converted into a labor reserve for South Africa during the colonial period but that wages paid to migrants were never sufficient for them to become fully proletarianized. Thus, a dual dependence on mine wages and rural production led to the semi-proletarianization of the peasantry. This continues to characterize the Botswana economy and agricultural production today.

Murray (1980) states that due to labor migration the conjugal unit (husband/wife) within the household is disintegrating although ties with relatives in the rural areas are being maintained. This breakdown has severe consequences for the remaining household members' abilities to maintain or expand levels of agricultural production. He states, however, that migrants circulate between town/mine and the rural areas and by so doing maintain social ties and ensure rights to land which may provide a form of social security in times of unemployment or retirement.

Men are not the only ones to migrate; several authors comment on female migration, especially to Gaborone, the capital. Bryant (1977) states that women form the majority of rural-urban migrants in Botswana and leave the rural areas for economic reasons. Movement may have been precipitated by the reduction in on-farm labor brought about by male migration. Cliffe and Moorsom (1979) argue that women who remain on the farm after male household members migrate to the mines in South Africa are left with the dual burden of caring for home and family, as well as carrying out all agricultural tasks including the management of herds. Unable to adequately meet their needs in agricultural production, women migrate especially to cities, believing they can fare better in selling their labor. Cooper (1979) found that women who migrate to the city are discriminated against in terms of the wages they receive and the type of work they do. As a result, many women participate in the "informal" economy, earning income through activities such as brewing and selling beer.

Although women migrate to towns for economic reasons similar to those of men, the structure of the rural economy enhances the probability of female migration. Izzard (1979) states that educating a daughter predetermines her movement to town since outside of farm labor there are few, if any, opportunities to earn income in the rural areas. Izzard also found that income from crops or farm labor is not sufficient to support and educate children. This

is especially true in the case of single mothers. Where no remittances are received from male migrants, the probability is high that unmarried mothers will migrate, leaving their children in the rural areas with grandparents or other relatives. Also, the presence of a relative or close friend in the urban areas will make a woman's choice to migrate easier since she will already have established a minimal network of relationships from which to draw support and assistance.

The issue of labor shortage is central to the approach these authors use in analyzing agricultural production. How women, in particular, cope with this shortage is not fully explored. There are studies which provide some insight into female strategies to activate assistance networks, but researchers have not asked the specific question--What means do female farmers employ to overcome their labor shortages? Furthermore, little has been reported on how remittances from urban/mine migrants are used to enhance production (except to hire labor or draught power). Research to elicit such information would enhance understanding of the impact of migration on agriculture.

What the literature does indicate is that the removal of male labor from agricultural activities has led to the social reorganization of production. Farm size has been reduced due to the inability of women to gain access to draught power and labor in a timely manner. Since more income can be earned in activities other than agriculture, both the number and size of farms have been reduced. Availability of inputs to these small-scale farms is determined by the income they generate, either from rural farm labor or from remittances. Monetization of the rural economy has relegated single female heads of household to precarious economic situations since many do not receive remittances nor do they have the full contingent of social resources a married woman has that permits the marshalling of kinsmen's and neighbors' labor at peak agricultural production periods.

With Botswana acting for the past 100 years as a labor reserve for the mines in South Africa, little attention has been paid to the development of agriculture. This trend is changing as a result of the reduction in foreign labor recruitment by South Africa. The implications of mine laborers returning to Botswana to seek employment, buy land or become cattle ranchers are far-reaching and will strongly effect the further reorganization of agricultural production.

With this brief overview of the relation of migration to agricultural production in mind, the following comments on agriculture and women's roles in farm production are presented.

Agricultural Production Systems

Agro-Ecological Zones

Essentially, there are three agro-ecological zones in Botswana: 1) the eastern strip extending from Kasane in northern Chobe District to south of Labatse in Southern District, where cultivation is suitable; 2) the Okavango Delta in Ngamiland District where a 16,000 sq. km. marsh covers much of the

area and where the possibility for irrigating 600,000 ha. exists; and 3) the Kalahari Desert, which dominates southern and western Botswana and is used primarily by pastoral and semi-nomadic hunting-gathering peoples.

The information which follows on climate is taken largely from Wilson (1978), Hinchey (1978) and Africa South of the Sahara (1984). Rainfall patterns correspond to these agro-ecological zones (see Figure 1). In the eastern strip, rains usually begin by the end of September and continue until April or May, with peak periods occurring in early November, late December to January and late February through March. Dry spells occur between these peaks and have a restraining effect on agriculture. Rainfall averages 500 mm annually with a 30% variability. The northern part of the strip receives about 650 mm and the southwestern portion receives about 200 mm. The eastern strip has the highest population density. This is attributable in part to the quality of the soil, which responds fairly well to application of fertilizer and allows for a high standard of crop husbandry.

The Okavango area has an average annual rainfall of 460 mm with peaks in December, January, February and March. The Okavango-Chobe swamps represent the only perennial surface water of any extent in Botswana. The water of Ngami Lake (about 18,000 million cubic meters) flows largely from Angola.

The remainder of the country, including the Kalahari Desert, constitutes the southwest arid zone. Rainfall here is generally less than 350 mm annually.

The recent drought follows a recurrent wet/dry cycle (see Figure 2) which has been described by Wilson (1978: 60):

Rainfall appears to be following a recurrent cycle with wetter and drier periods. Rainfall patterns appear in three cycles running simultaneously: the first is a short cycle extending over a period of about six to ten years. During this time there are a series of consecutive heavy (above average) rainfall years, followed by two or three years with a below average rainfall. From 1975 onwards there were four years of good rainfall, but the rainy season of 1978-79 was below average and it is suspected that this trend will continue for several seasons before there is an improvement.

This short cycle is suspected to be part of a much longer cycle lasting over hundreds of years, during which average rainfall and temperature may vary slightly upwards or downwards. This again is probably involved in the third cycle which extends over thousands of years. Research has shown that the Kalahari has been a semi-arid zone for millions of years and that during this time there have been some wet periods sufficient to cause the dried rivers to run and filling many pans with water to a considerable depth.

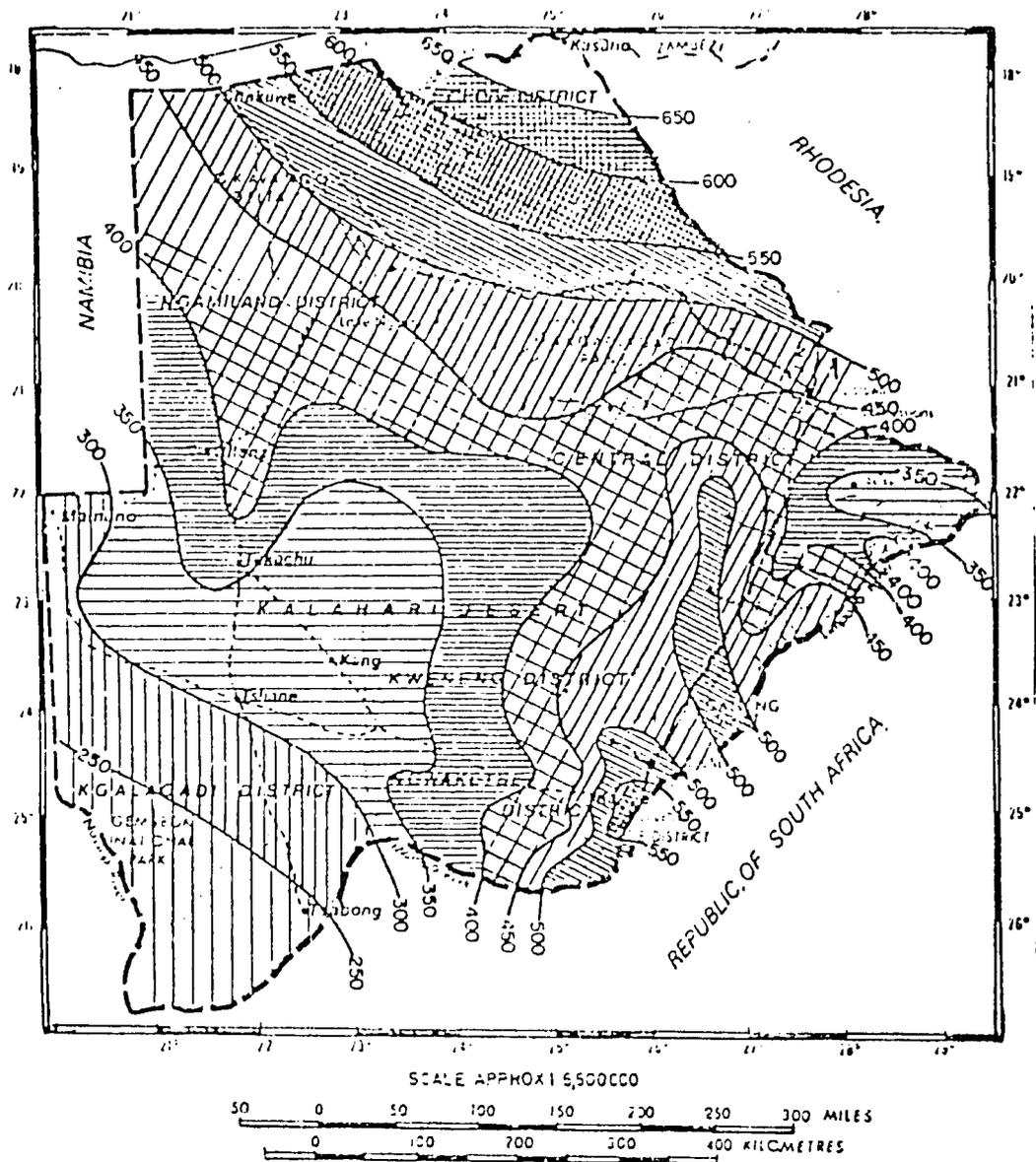


Figure 1. MEAN ANNUAL RAINFALL

RAINFALL IN MILLIMETRES

 Above 650	 400-450
 600-650	 350-400
 550-600	 300-350
 500-550	 250-300
 450-500	 Less Than 250

Taken from Madalon T. Hinchey (ed.). Proceedings on the Symposium on Drought in Botswana, National Museum, Gaborone, Botswana, June 5-8, 1978. Gaborone: The Botswana Society, 1979.

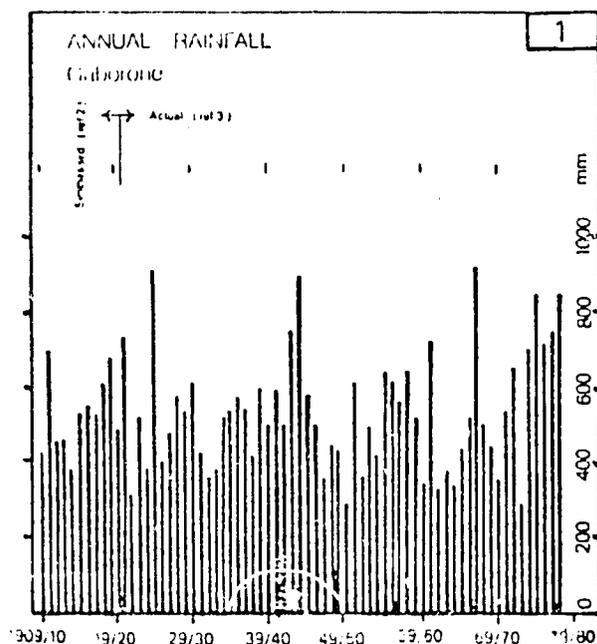


Figure 2. Annual Rainfall Patterns of Gaborone

Taken from B. H. Wilson. "A Mini Guide to the Water Resources of Botswana" in Hinchey, Madalon (ed.). Proceedings on the Symposium on Drought in Botswana. National Museum, Gaborone, Botswana June 5-8, 1978. Gaborone: The Botswana Society, 1979.

Wilson states that temperatures are the highest and most uniform during the summer months of December and January with mean daily maximum temperatures in the eastern strip at 31°C (81.8°F). In the winter months, air frost occasionally occurs, especially in the south and in the Limpopo Valley. Ground frosts are frequent in the southeast after mid-May.

According to the 1973-78 National Development Plan, about 84% of the land surface is covered with Kgalagadi sand which supports a low, savannah-type vegetation (see Figure 3). The sand is of aeolian origin and can extend up to 120 meters in depth. Rainfall is normally held within the top few meters and is lost largely through evaporation and transpiration. Water held in the upper sand layers is adequate to support plant life with many plants able to stand long periods of drought. It is uncertain at this time what the effect of the most recent drought is on vegetation and crop production.

Demographic and Ethnic Distribution

According to the 1981 census, 80% of Botswana's population of 936,600 live in the eastern strip where there are reasonably fertile soils. Seven of the eight Botswana tribal groupings live in this zone. Rainfall is sufficient to produce good pasturage and to permit arable agriculture.

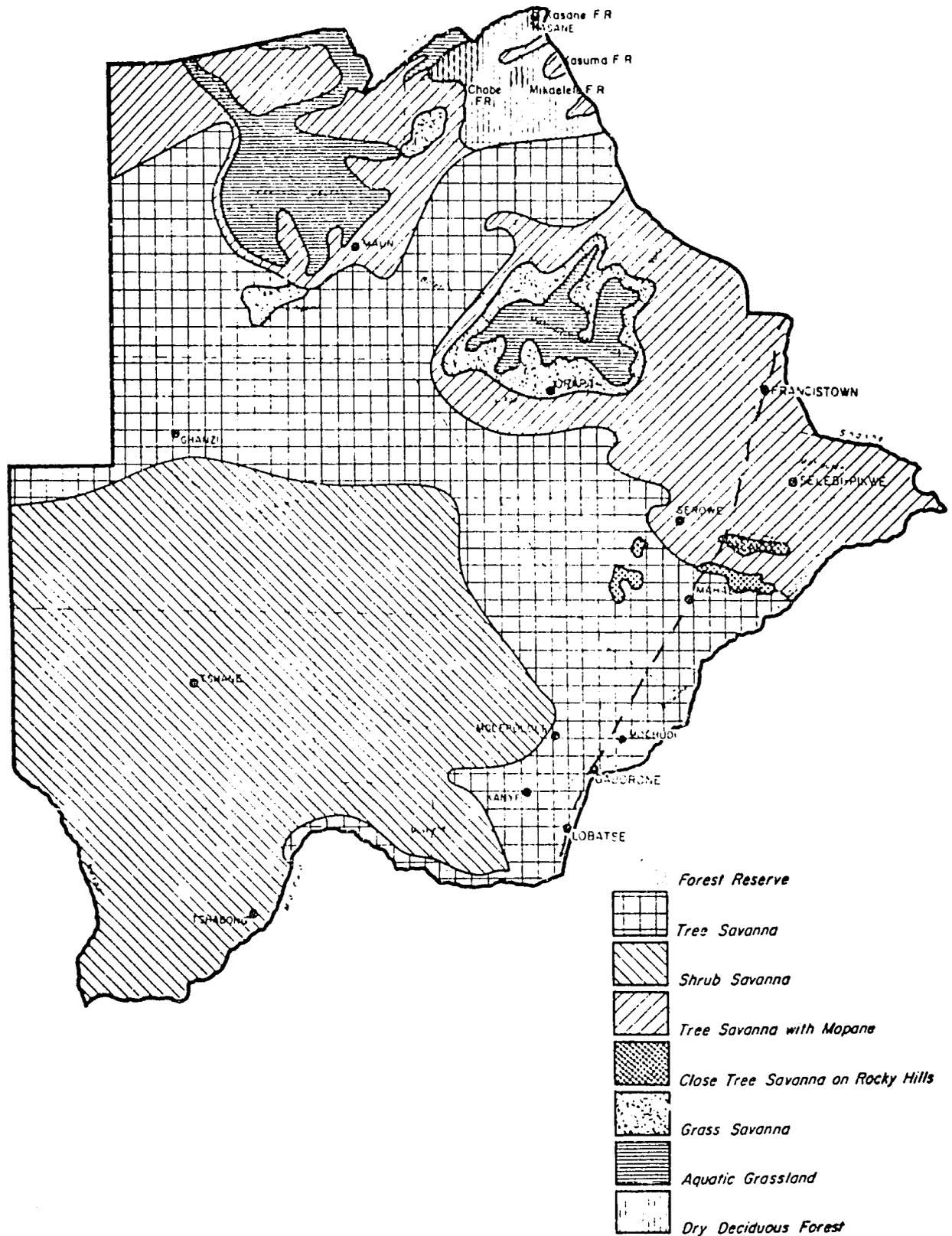


Figure 3. Vegetation Zones

Botswana. Ministry of Finance and Development Planning.
National Development Plan 1973-78, Part I. Gaborone:
 Government Printer, 1973.

Population distribution according to district is as follows:

Population by Census District
(1981 Census, Preliminary Results)

Barolong	15,600	Kweneng	115,600
Central	321,900	Lobatse	19,000
Chobe	8,100	Ngamiland	68,200
Francistown	31,100	Ngwaketse	104,000
Gaborone	59,700	North-East	36,700
Ghanzi	18,700	Orapa	5,200
Jwaneng	5,400	Selebi-Phikwe	30,200
Kgalagadi	24,000	South-East	30,900
Kgatleng	42,300		

Africa South of the Sahara, 13th ed. 1983-84.
London: Europa Publishers, 1984: 226.

Information on characteristics of the people living in some of these districts can be found in the following: for Kweneng see Alverson 1979, Odell 1977 and Solway 1979; for Kgatleng see Arntzen 1983, Brown 1980; and for Okavongo see Belien 1978, Sutherland 1980.

Although there are difficulties in reporting births and deaths, Family Health Care (1978) reported that the population growth rate is 2.6%, the mortality rate is low (17.5 per 1,000 in 1975-80) and infant mortality is also low (97/1000 births). Fertility was reported at 6.5 births per woman and women of child-bearing age comprise 20% of the population. Customarily, women do not conceive again until their last child has been weaned at about 18 months.

The Tswana (Batswana) constitute the largest ethnic group in the country comprising over 50% of the population. They live primarily in the eastern strip in Chobe, Central, Northeastern, Kgatleng, Kweneng and Southern Districts. Once mainly pastoral, the Tswana have become mixed farmers and cattle ranchers. Chiefs were the traditional heads of local-level political organization and had control over delineated geographic areas which contained several villages. The chief's ward was located in the center of the village with other families and kinsmen of lesser rank occupying surrounding wards. Village population reached as high as 30,000. With the changes brought about by migration both the size and spatial organization of Tswana villages have been altered.

The chief in Tswana society has been described as the symbol of unity who is ruler, judge, maker and guardian of the law, repository of wealth, dispenser of gifts, leader in war, priest and magician of the people. Many of these functions were altered during the protectorate period although some areas remain where chiefs have remained powerful. This is especially the case where they have gained an economic advantage and have expanded their cattle herds.

In conducting agricultural research, the community's political organization should be given consideration. In certain instances, research may be enhanced by enlisting the assistance of such traditional political leaders. For example, members of a local chief's ward (a mid-level political/administrative unit) might be more willing to cooperate if it is known that the chief is willing to participate.

The Kalanga, discussed by Werbner (1975), are the second largest ethnic group, numbering approximately 80,000 people. They are primarily agriculturalists, living around Francistown, to the northwest beyond the Nata River and to the northeast well into Zimbabwe. They were formerly part of the larger group of Bamangwato, a conglomerate of peoples welded together over decades, whose headquarters are at Serowe. Other Bamangwato are primarily cattle herders owning over 47% of the national herd. Cattle ownership, however, is not evenly distributed: 7% of this population own 51% of the tribe's cattle and 35% own none at all.

The Herero, discussed by Vivelo (1974, 1977), live mainly in the Ngami Lake area, throughout Ghanzi District and in Francistown. They were pastoralists but this lifestyle is changing as a result of mixing with other populations. Originally, the Herero came from Namibia and Angola.

Various San groups (a generic term referring to a linguistic classification) inhabit sections of the Kalahari and are traditionally hunting-gathering populations. Some of the San divisions are the Sarwa (Basarwa) who live in Ghanzi, the Xubisa in the Hanahai Valley, the Plasiba and the Kgalagadi in the higher veld west of Molepolole to the Namibia border and throughout Ghanzi District. Specific population statistics for the Herero and the San are not available.

Agricultural Production Data

The Bean/Cowpea project in Botswana seeks to enhance the production of cowpeas in a number of ways. While it would be useful to have current production statistics, available data are not highly reliable. For instance, publications by the Botswana Division of Planning and Statistics, Ministry of Agriculture (1971) and Purcell and Webster (1977) present production tables which disaggregate "beans" and "peas." Actually all "peas" listed are varieties of cowpeas, while "beans" listed are also cowpeas with the exception of mung (Phaseolus aurlous) and tepary beans (Phaseolus acutifolius). Tables which present aggregated data for beans, peas and pulses must also be regarded with caution because of possible miscategorization.

The Livestock and Crop Survey, prepared by the Botswana Ministry of Agriculture Statistics Unit (1979), is a continuation of a series of annual surveys conducted since 1967 on all traditional farms in the Agricultural Administrative Regions and on all of the freehold and commercial farms in the country. Certain cautions concerning the use of the data are mentioned in the publication. The authors note that the standard error for district estimates of crop production is very high, that district totals might be misreported because farmers living in one district may actually farm in another, and that some 2,000 farms were not taken into account since they were considered too

marginal. Tables present the following information: a summary of traditional, freehold and total crop estimates according to crop category; a description of cattle farms, total number of cattle and average size herd by size of cattle holding; information on crop farms, area planted to specific crops by districts and regions, and area harvested to specific crops by districts and regions; planting and harvesting statistics for beans and pulses; and a diagrammatic presentation of bean and pulse production by region.

The Farm Management Survey Results written by Fox in 1981 for the Ministry of Agriculture, documents trends and variations in weather effecting crop and livestock production. Data were collected at seven stations and were stratified by station and by male and female farmers with and without adequate draught power. A finding particularly relevant to this Resource Guide was that female farmers with inadequate draught power had higher crop incomes than similar male farmers and that male farmers with adequate draught power had incomes from crops about double that of female farmers with adequate draught power. The latter is attributable to the fact that 31% of female farmers used tractor power alone as compared to 12% of male farmers, thus increasing females' variable costs to 56% greater than those of males. Tabular information presented in the study falls into several categories: area, production and yield of selected crops; average prices for these crops; average area planted to specific crops and yields; rainfall recorded at collection stations; production per hectare and average planting date of selected crops; variations in yield for certain crops in accordance with the use of animal or tractor power; labor utilization in accordance with the same; average farm prices of selected crops and a crop enterprise budget for farms which produce beans.

Agro-Ecological Adaptations

Cattle and Ranching--The primary income-generating activity for the agricultural sector is cattle herding. Over 80% of income in the agricultural sector comes from livestock. In 1983, the national herd was estimated to be 3 million head. In 1981, it was estimated that there were 1 million goats and sheep in addition to cattle (Africa South of the Sahara [1984]).

Tswana-speaking people have historically been herders but have incorporated various cropping practices as a result of contact with more sedentary populations. Families value having cattle for several reasons. Bailey (1982) indicates that they are used as draught power in arable agriculture, that they are sold to meet immediate cash needs when migrants are out of work or when crop yields are insufficient to cover basic household costs, that they constitute part of the family diet (both meat and dairy products) and that they are a storehouse for the accumulation of wealth. In 1971, Campbell found that cattle were not killed for daily food but were killed as part of a feast cycle commemorating particular events or to emphasize important relationships. In such contexts, sharing the meat from a slaughtered cow is a means of illustrating a person's position in society.

Sharing cattle is also an important means of cementing relationships. The practice of mafisa, or lending cattle to others to use for draught power, milk and to build herds (a person who receives mafisa cattle can keep offspring), is discussed by several authors. Kooijman (1980) indicates that mafisa helps to

de-emphasize wealth in that several head are lent out and thus do not "visibly" belong to a single owner. Witchcraft accusations against those who had accumulated too much wealth in the form of cattle were common in Bokaa where Kooijman conducted her study. In accumulating cattle, owners are usually more interested in quantity rather than quality. Kooijman reports that their prestige value remains high. The Rural Income Distribution Survey (1976) of the Government of Botswana notes that owners of cattle are taxed on a per head basis. Consequently, there is a monetary aspect to lending cattle to neighbors, friends and kinsmen: the burden of taxation falls on the person in whose kraal they are located rather than on the actual owner. Gross underreporting of the number of cattle owned is a problem for government tax collectors.

Because rainfall is unreliable in most parts of Botswana and pastureland is generally several kilometers distant from the homestead, when local watering holes or streams dry up, cattle are brought to cattle posts for grazing. Hjort (1978) states that historically cattle were brought to the posts when the chief of the local Tswana group indicated. Men and boys would depart for the cattle posts, while women and girls would go to the fields for the duration of the crop-growing season, from November through June. Since political structures have been severely altered as a result of colonialism, migration and the impingement of capitalism, chiefs no longer have the same powers, and more people decide independently when to depart from the villages to undertake their respective tasks. Kooijman (1980) notes that nowadays more people in Eokaa stay on their fields throughout the year and that this has led to village fragmentation.

Much attention is paid to the use of cattle in the payment of bridewealth. Schapera (1953, 1978) found that even though missionaries had banned the practice, Tswana Christians still exchanged cattle for wives in the 1930s and 1940s. Kuper (1982) notes that there are four types of cattle-wife exchange all involving political hierarchy, headship of domestic groups and linkages with the ancestors. Building herds for future payment of bridewealth also is important. Kooijman (1980) found that upon birth a cow is assigned to both male and female children, and parents see to it that these cattle are properly cared for until the children are grown.

While most ethnic groups in Botswana keep cattle, the passage of various laws and the favored status of certain people within a given community has led to their uneven distribution. Bailey (1982) found that following the major drought in 1965/66 the national herd had doubled. He reported, however, that within Eastern Botswana only half of the rural households had cattle after the drought. Colclough (1980) found that at least 45% of all households did not have cattle and another more affluent 40% had less than fifty. This means that 15% of cattle owners own approximately three-quarters of the national herd.

Peters (1983) provides particular insight into how the concentration in cattle ownership has occurred in one area. In the 1920s, groups of cattle owners in Kgatleng District formed syndicates to jointly dig and manage boreholes or deep wells. Although these were located in communal pastureland, the result of syndicate members having access to these water resources was the privatization of the grazing land. The de facto control of water rights and pastureland has provided syndicate members greater access to resources. Herds

belonging to syndicate members are better fed and thus command higher prices on the market. With more financial resources, members are able to exert control over greater portions of pastureland. Smallherders who are not syndicate members are forced out and must bring their cattle to graze closer to the homestead. This has had disastrous results on the environment.

Evidence suggests that the enactment of the Tribal Grazing Land Policy (TGLP) has worked in favor of large herd owners, many of whom are government officials. Hitchcock (1980) analyzes the law's effect on the Nkwato people in the east-central Kalahari. Prior to its implementation, residential and arable lands were divided according to ward affiliation, and pastoral zones were divided for use by several wards. Access to land was through membership in a social group which was hierarchically stratified with a chief and his family at the apex. Members of certain San groups--the Kgalagadi and the Sarwa--were treated as serfs and could not own cattle. Water was accessible to all who required it. Sinking a borehole or well required permission of traditional authorities but, once it was granted, the person who made the capital improvement had sole rights of access. These practices were changed as a result of the TGLP. Portions of land were designated as either commercial or communal. Previous occupants of communal land were forced off their property and resettled, thus making more land available for commercial cattle ranchers. The populations who suffered the most were those formerly in the serf status since they depended upon others for rural employment or upon access to wide expanses of land for hunting and gathering.

Hjort (1978) makes the point that government programs to improve herding practices, enhance the quality of livestock and expand marketing systems have largely benefitted the economic elite of the cattle industry. He notes that many in this group are government officials.

Cropping--The next most important income-generating activity after migration and cattle herding is crop-growing. Lucas (1981) states that it is considered the third largest source of income for families in the 15-50 percentile range of household income, but one of the least important for households in the 1-10 percentile group. Brown (1980) asserts that agriculture is viewed only as a secondary activity due, in part, to water shortages and unreliable rainfall. This is supported by the findings of Behnke and Kerven (1985) who state that one-quarter of all farm dwelling units are solely dependent upon agriculture, while two-thirds obtain more than 40% of their income from off-farm labor.

In Ommen's economic summary in Africa South of the Sahara (1984), he states that only 5% of Botswana enjoys adequate rainfall and has suitable soil for crop cultivation. As noted previously, there is a high risk of crop failure in the arable areas due to inadequate rainfall, poor soil and high evapo-transpiration rates. Principal crops include sorghum, maize, millet and cowpeas. In 1982, only 12,000 metric tons of food crops were grown. This constituted less than 20% of that harvested in 1981. The low production rates were due to the severe drought that most of Southern Africa was experiencing at that time.

While the literature indicates some willingness on the part of farmers to increase production, the 1973-75 Rural Income Distribution Survey (RIDS) found

that prices paid for grain by Botswana's official marketing boards are inadequate to induce farmers to grow more. Hudson (1977) found that a high proportion of the bean and pea crop was sold because farmers were able to get higher prices for legumes than for grain staples. Additionally, Cliffe (1979) notes that maize, a less drought-resistant crop, is increasingly preferred over sorghum. He argues this change in dietary habit came about because the most commonly available sorghum meal is factory-produced and is regarded as inferior to the hand-ground meal. Thus, cropping practices may change as a result of a wide range of factors.

Since droughts occur frequently and severely effect agricultural production, over the years much food aid has been distributed. Cliffe (1979) reports on an FAO study that revealed 30% of rural households depended at one time or another on food assistance and on food-for-work programs. The poverty of rural agriculturalists can also be seen in the sharecropping arrangements of many peasants. Comaroff (1980) found that in the Tshidi chiefdom in the Barolong Farms area, peasants who were unable to harvest a surplus had to establish disadvantageous sharecropping arrangements with those who were more prosperous. This was especially the case for women who, in many instances, are compensated in kind rather than in cash for their labor.

In the past, not only did chiefs indicate when cattle should be taken to the posts, they also advised when it was time for family members to leave their homesteads to cultivate the lands. According to Werbner (1975), fields may be as far as 35 miles from the village. Colclough (1980) reported that, if cattle were not sufficiently fed while at the cattle posts, difficulties would be experienced in using them as draught power when cultivation began.

With regard to the agricultural cycle, Mahoney (1977) describes the pattern followed by the Birwa. From July-September, land clearing and fencing take place; October-December is the ploughing and planting period; January-May is the growing and ripening season which includes weeding. During May-July, harvest takes place. The month of harvest, of course, is dependent on the crop, the time of planting and rainfall.

Cultivation practices are commented upon by several authors. Curtis (1972) details the technical practice of ploughing among some Tswana groups in the Manyana area. He found that ploughing and planting involve a single operation with maize, sorghum, bean and various cucurbit seeds broadcast together on the field. Then the mouldboard plough, which requires between six and eight cattle, is used to turn the soil and cover the seeds. This practice is conducive to the growth of quick grass. As a result, a two-stage operation was introduced in which the soil is first turned and then the seeds are planted. This helps choke the effect of weeds and eases the hoeing burden.

The timing of planting is crucial to yields in Botswana. Gollifer (n.d.) found that seed-bed preparation and planting are of no consequence unless done at crucial points. He describes the tillage systems in which a mouldboard plough is used in autumn before soils dry up and while oxen are still in good condition to break open soil surfaces, allowing rain to penetrate the soil and reducing run-off. Autumn ploughing allows spring rains to easily penetrate the soil and enhances the preparation of seedbeds and early planting.

The literature also provides information on crop rotations and preferences. Gollifer states that crop rotations in the dryland areas are as follows: sorghum, sunflower, sorghum, cowpeas, sorghum and maize. Kooijman (1980) reported that in Bokaa, some 40 km from Gaborone, almost 93% of the households surveyed planted their fields in sorghum, millet, beans and small quantities of maize, sweet reed, squash and watermelon. She also noted that "Beans are the only crop which are primarily grown for sale as the market price is relatively high." (Due to the confusion in nomenclature for "beans" and "cowpeas" it is possible that the author is referring to cowpeas.) Lucas (1981) found that the importance of sorghum as a regional crop increases as rainfall increases (600 mm) and as the number of males present during the ploughing season increases. Cowpea production is more important in arid areas (300-400 mm of rainfall) and decreases when more males are present in the ploughing season, although this varies considerably by size of land holding. Mahoney (1977) found that sorghum and maize are the principal crops among the Birwa and that these are normally planted on farms less than two hectares in size. Werbner (1975) found that in eastern Botswana, among the Kalanga, sorghum and bulrush millet constitute the staple crops for both high and middle veld farmers. Other crops include maize, sweet cane, groundnuts, beans, pulses, potatoes and, especially in the high veld, finger millet and, in swampy areas, rice.

Concerning other agricultural practices, Kooijman (1980) notes that weeding is done only once and is usually begun when weeds are well established. In surveying farmers' attitudes toward the Integrated Farming Pilot Project, Merafe (1979) found that there was an awareness that weeding twice or more would result in higher yields. Norman and Baker (1984) noted that if ploughing were done at the first spring rains or during the preceding winter, the labor burden would increase since double weeding would be necessary. It is likely that the need to weed twice or more as a result of changes in cultivation practices would create a bottleneck in farm operations done by women. Finally, Lucas (1981) found that fertilizers and chemicals are not used by small farmers, with the exception of those in the Barolong Farm region who are primarily commercial farmers.

Hunting-Gathering--A different adaptation has been made by hunting-gathering populations. While the term "Bushman" appears in the literature denoting a number of ethnic groups who practice hunting-gathering, the term is derogatory and was generated by those who did not understand these peoples' complexity. Some of the ethnic groups in Botswana who practice hunting-gathering are the Basarwa, !Kung, San and Kgalagadi. Draper (1975) notes that some of these have been sedentarized and that, in the process, certain changes have occurred. The division of labor has become more rigid and the wide variety of foods formerly eaten as a result of gathering techniques is no longer available. She states that the diet of sorghum, maize, squash, melon, etc., does not offer the same rich nutritional variation as was available in more nomadic times. Hitchcock (1978) found that a class relationship has developed between the Tswana and some hunting-gathering populations. The Basarwa, as an example, became serfs to the more hierarchically-organized Tswana. They were not allowed to own cattle or land and thus functioned as laborers. As a result of land tenure changes, hunters and gatherers have become increasingly dependent upon rural employment opportunities generated by members of other ethnic groups.

While each ethnic group's agricultural practices vary, it should be borne in mind that these are set within an intricately-woven network of kinship and productive relationships. To consider farm problems from a purely technical viewpoint, without taking into consideration the range of behaviors, cultural practices and human relationships involved, is to dismiss the human dynamic in the production enterprise. The strategies employed to deal with ecological, social, political and economic environments have been outlined in a general fashion. Consideration will now be given to micro-level adaptations and womens' roles in agriculture.

Gender-Specific Farming Activities

Agricultural production is a function of many variables, including the composition of the labor force, access to land and implements, ecological constraints, management capabilities and the broader socio-cultural and political-economic milieu. This section presents several authors' views on women's agricultural participation. It begins with an overview of the position of women in different ethnic groups and then considers them in light of each of the variables listed above.

Overview of Women in Botswana

Schapera's classic ethnography (1953) on the Tswana outlines the position of women in the 1930s when the author did his fieldwork. He notes that there were rank and social class differences among the Tswana as well as sex and age differentiation. Women were treated as perpetual minors under the guardianship of their fathers, husbands or other male relatives. As members of male headed households, women were responsible for all crop production, as well as for repairing the walls of any structures on the compound, fetching grass and thatching roofs, preparing food and making beer, looking after fowl, hauling water, wood and earth, collecting wild edible plants, doing the housework and child rearing. Historically women did not plough since handling cattle was the task of men. In fact, among most Southern Bantu populations, women were regarded as a source of danger to cattle (Kuper 1982). When agricultural tasks were too onerous for household members to complete on their own, work parties were called by the male head with females responsible for preparing food and drink for the workers. Many community-wide work parties were organized on the basis of gender-based age regiments and were utilized in public works programs designed by the colonial government or by chiefs and other traditional political leaders. According to Alverson (1978), age regiments were common among Bantu-speaking people in Southern Africa. They were based upon tribal-wide groupings of men and women who came to maturity at about the same time. Those from noble and commoner families were included. Initiation rites were performed with males and females segregated into their own sets. Deference behavior was practiced by those in lower, younger grades toward those in older grades. Although age sets cross-cut political hierarchies, high ranking clan members may have been appointed as age-set leaders, thus enhancing traditional political structures. Age sets functioned on a local level particularly for warfare, public works, hunting, policing of executive decrees, entertainment, etc.

Comaroff (1977) has updated some of these earlier observations and notes that women are no longer under the close scrutiny of male guardians. Analyzing

traditional court cases among the Kgatla, he found that women now have legal rights and can present cases to the courts. If they win, they, and not their guardians, receive the compensatory fines. Since traditional courts are held in rural areas, fines are generally paid in cattle. These changes may be a result of labor migration as males often are not present to represent women.

The Division of Labor

Bond's study (1974) examines women's roles in agriculture in Botswana. As the first person to have studied this, she outlined the tasks women generally perform. These include: weeding, bird scaring, harvesting, threshing, storage and the care of pigs and poultry. When husbands are absent, women make all decisions regarding crop operations, and when husbands are present, a free exchange of ideas on farming practices takes place. In a survey of 204 rural households, she found that women performed between 47.7% and 73.6% of all crop activities and 81.6% of the operations after ploughing. Where there are no males present, women must hire men or depend on relatives to clear the land, plough and help with planting.

In addition to their agricultural tasks, women perform an array of domestic activities. More than half of their time is spent in household labor including food preparation, washing, grinding corn, fetching water, collecting and chopping wood, collecting wild fruit and vegetables, brewing beer, shopping, house building and caring for infants and children.

In his survey of the rural economy, Campbell (1971) found that women did the "necessary work of keeping the family alive" while men did the "prestigious" work. Similarly, Koussoudji (1979) reports that the gender-based division of labor results in women being assigned chores that require little capital and that are characterized by low productivity while the more capital intensive chores are allocated to men.

Cooper (1979) adds to the list of tasks women perform in rural areas by noting that they care for sheep and goats. He also argues that migration has resulted in a renegotiation of the division of domestic labor. Kooijman (1980) found that the traditional division of labor, women responsible for cropping and men responsible for herding, has resulted in young males being reluctant to participate in cropping activities even though their family's fields may have expanded. She also notes that since there are few other means available for them to support their children, women cultivate to provide for their families.

In summary, the literature indicates that migration has strongly affected the division of labor; it has added to the tasks women perform and to the burden of their work. With males away, females must carry out their traditional agricultural and domestic chores, in addition to the tasks which men once performed (Cliffe 1979). Women's work is especially difficult where there are no male kin to assist with land clearing and ploughing. In this context, innovations adding to women's work will have little chance of adoption, while those reducing their chores and drudgery are more likely to experience a high level of acceptance.

Certain other changes have occurred in rural production practices as a result of labor migration. Because these offer specific micro-level insights which have a bearing on the CRSP project, they are singled out for consideration here.

Matrifocal Households--Cooper (1979) discusses a three-generational matrifocal chain of relationships which constitutes a labor base for agricultural production and for females who migrate to urban areas. In this chain, a female head of household living in the city relies upon her mother in the rural area for the support and sustenance of her children, sending her remittances for the care of the children. These rural child caretakers, in turn, send vegetable produce to their daughters thus establishing a mutual dependence between female migrants and their rural parents.

Izzard (1979) defines matrifocality as a situation where children are not necessarily affiliated with their father's kin and where, in terms of domestic relations and child rearing, the mother and maternal kin predominate. She notes that increased matrifocality corresponds with the declining social and economic importance of the father figure within Tswana society.

A differentiation can be made between de facto and de jure female headed households. The former represent cases where females remain as farm managers and laborers while men are away. The latter arise as a result of females having children out of wedlock. Koussoudji (1979) suggests that de jure female headed households are characteristic of a particular stage in the life-cycle. Most males who migrate are in the 20-40 age group and often defer marriage until after labor migration at about age 40. It is unclear from the report whether these males choose women who are the same or younger in age. Peters (1983) makes a similar assertion, stating that female headed households represent a stage in the domestic life cycle and that the changing meanings ascribed to "marriage" must be considered from the Tswana perspective within the domestic group itself.

Although the matrifocal household is variously defined, in Botswana it generally consists of a woman, whether "married" or not, who is responsible for daily household maintenance and for the majority of the agricultural tasks. Where there is a male, whether it be a husband, a father, a brother or an uncle, women depend on him for the performance of certain agricultural tasks. If he is a wage earner, he may be relied upon to a certain extent for monetary inputs.

To illustrate the complexity of relations and agricultural work roles, Behnke and Kerven (1983) cite a case in which an old, non-farming mother is the senior member of a household which contains her youngest son, two daughters and their children. The daughters and the son farm their plots, but hire animal traction from the eldest son who lives elsewhere, while the younger son hires out his own traction to other farmers. The younger son also provides draught power for his sisters in return for the labor of these sisters as well as the labor of their eldest daughters. The women brew beer to pay the eldest son for animal traction. This example illustrates the different strategies employed by various members of the matrifocal unit to support the household.

Income Generation and Remittances--Based on data from the Rural Income Distribution Survey, Brown (1980) found that some 50% of the country's population depends on remittances primarily from migrants to South African mines. Fortman (1980) argues that these do not substantially increase the incomes of female headed households and that this has resulted in at least 54% of these households earning below the poverty line set at P395/ year. Since remittances are often not reliable sources of income, women have had to find ways to earn cash for their families. They have devised a number of income-generating activities in rural and urban areas.

Rural women may work as agricultural laborers. Cooper (1979) notes that, in certain instances, payment received by women is in kind or in reciprocal assistance rather than in cash. Males on the other hand, usually are paid in cash.

Formerly, women brewed beer to share with participants in rural work parties, but more recently this has become an important income-generating activity. Curtis (1979) found that beer-brewing intensifies from September through November, the interim between harvesting and ploughing/planting. In Maryana and Mankgode, sorghum beer is brewed and sold for cash. By converting the sorghum into beer, women can increase the value of a poor sorghum harvest by at least 100%. This income is used to pay taxes, school fees or to purchase stock--traditionally male responsibilities.

Grant (n.d.) notes that to generate income a family may sell cattle to the Meat Commission. This option, however, is seldom open to female headed households since they generally do not own surplus cattle. Hudson (1977) also has outlined several income generating activities, but does not separate them according to gender: sale of maize, sorghum and millet, beans and peas as well as small stock; and employment either in the full-time "modern" or in the tertiary and subsistence sectors (e.g., seasonally employed agricultural laborers, beer brewers, petty commodity producers, etc.).

Koussoudji (1979) found that female headed households receive some income from remittances, but that the bulk comes from their labor. Even when incomes are combined, female headed units have lower earnings than male headed ones and much of female income is derived from employment as field laborers. The author notes that pregnancy and child care obligations limit these activities and increase the time it takes to perform them. Lucas (1981) found a discrepancy between male and female wages--men earned 49 Rands for agricultural work during 1974-75, while women received only 28 Rands. The tasks performed were not specified. He attributed these differences to the fact that rural wage rates do not increase with age for female laborers as they do for males. He also found that women's peak earning period coincides with their child-bearing years.

Considering the available options, it appears that beer brewing is the most profitable income generating activity for females. This has implications for the CRSP project, especially with regard to women's time and task allocations. Since beer-brewing is a year round activity, which intensifies from September through November, competing activities may not receive the attention they require. In addition to the actual brewing, women are responsible for sorghum

cultivation and spend time in planting, weeding, bird scaring, harvesting, threshing and grinding. Labor taken away from these tasks may result in lower yields. Given the returns generated from sorghum beer brewing, women may not be willing to divert their attention from this crop to participate in activities that will not produce a comparable return.

Labor Requirements and the Agricultural Cycle--Female and male headed households confront a number of constraints in agricultural work. Some are attributable to the absence of males at crucial periods and others to the decreasing number of household members who are available for farm work. Allison (1978) found that children who once were responsible for certain agricultural tasks are now attending school. Bell (1980) posits that once educated, the propensity to migrate increases since there are few rural job opportunities.

Bell also reports that males who migrate to urban areas often return on weekends to work on the farm and to maintain social ties. The ability to do so depends on proximity and earnings; in the absence of an adequately paying job, frequent trips home are not possible and farm work and management fall to spouses. In cases where females migrate, Bell found that mutually supportive networks of social relations are created.

As farm managers, women encounter a number of problems. Bond (1977) reported that they are often ignored by male extension agents. In an effort to remedy this, the Ministry of Agriculture created the post of Agricultural Officer, Women's Extension. While the government's effort to meet the needs of female farmers is laudatory, problems of access to information, labor and draught power continue to confront them.

Brown (1980) found that in Kgatleng 35% of her sample of 210 households were de jure female headed. Widows comprised 20% and single women 15%. Many did not own or hold cattle, tended to plough late or not at all and lacked sufficient labor power for hoeing and bird scaring. Colclough (1980) states that a high proportion of households with no cattle are female headed. Such households also plant a smaller number of hectares and own fewer implements. Thus, households which do not have sufficient cattle for draught purposes are unable to plough in a timely fashion, cannot adequately cultivate holdings and may become dependent on food aid to supplement yields.

Mahoney (1977) has outlined gender specific tasks carried out during the agricultural cycle. Land clearing and fencing are undertaken by men, July through September. When males are not available, hired laborers or relatives assist. The ploughing and planting season, October through December, requires labor and draught power intensification. Mahoney states that most households lack some or all of the equipment and/or labor necessary to plough and that, as a result, various strategies are employed. These include arranging work parties and borrowing or renting equipment and/or animals. Work parties are often constituted on the basis of reciprocity and may result in the postponement of planting for some of the participants and, hence, in reduced yields. May through June, women's work intensifies with weeding, scaring birds, building threshing floors and preparing storage facilities as major tasks. If female household labor is insufficient, a woman may be hired for the duration of the agricultural cycle. Harvesting occurs between May and July and is conducted by women who are also responsible for various food processing and storage operations.

Describing cropping practices among the Yeyi in the Okavango Delta, Sutherland (1980) states that micro-ecological variations have given rise to differences in the social organization of production. In the wet valley system, he found that ploughing is done by oxen teams. On the northern side of the valley, two men team up to plough each other's fields with the senior having his ploughed first. In this same location, women are prohibited by custom from ploughing. Sutherland also notes that peak labor demands vary by area. In the Sandybelt, where the swidden cultivation system (shifting cultivation) is practiced, more labor is required for weeding. Also, drought resistant crops, such as millet and sorghum, are planted and require more labor during harvesting and threshing than maize which is grown in the better watered valley areas.

The literature reveals that two crucial elements in the agricultural cycle are draught power and labor. A brief discussion of practices developed to cover shortfalls in these areas follows.

The traditional mafisa system entails wealthier owners lending cattle to kin and members of other social networks. Alverson (1979) notes that mafisa is conducted between Tswana men; women do not receive mafisa cattle. Consequently, female household heads have developed other means of gaining access to draught power. Comaroff (1977) analyzed one of these. He notes that women who are single household heads with children may sue the fathers of their children for support on the basis of breach of marriage promise. The fines are often paid in cattle.

Behnke and Kerven's (1983) case study, discussed earlier, illustrates exchange relationships between brothers and sisters. In return for ploughing and/or use of draught power, women brew and sell beer to pay for their brother's assistance. Also, a woman's female children may be "loaned out" as laborers in return for draught power. Curtis (1972) reports on a case where a widow sent two grandsons to work for two oxen owners and thus had two spans at her disposal at planting time. This arrangement guaranteed her sufficient draught power, and its timeliness was critical. Cattle were loaned or hired out only after the owner's ploughing was completed. In studying the social organization of ploughing, Curtis reports that those who "plough alone" must have sufficient draught power at their disposal and the ability, at the cost of offending the family norms of cooperation, to avoid obligations. He concludes that the ability to plough is dependent on wealth or social ties.

Fortman (1981) found that over 50% of female headed households owned no cattle, and of those that did, some 60% had fewer than the six to eight needed for ploughing. In these households, cash to hire draught power or a tractor came from brewing beer or other means of income generation. The author notes that while women do plough, caring for children and other household chores makes this almost impossible. Obtaining labor may be difficult since female household heads usually are able to pay only low wages.

Kooijman (1980) examines another way for women to gain access to cattle. A cow in the family herd is given to children upon their birth. When the children grow up, responsibility for the cow and its offspring is transferred to the sons and daughters. Unfortunately, no information is provided on whether women's cattle are incorporated into their husband's herds, or whether

they are maintained separately. More generally, Koussoudji (1979) notes that women may own cattle, be bequeathed them, win them in a court case or buy them, but do not have access to them through traditional mafisa lending.

As a risk-reducing strategy, families often expand their social networks to include other community members. Behnke and Kerven (1983) posit that communities constitute multi-household production units or supra-household cooperation networks. Findings by Campbell (1971) and Curtis (1972) support this. Campbell reports that lower income households have more complex and widespread kinship ties. In the Manyana area, Curtis commented on the practice of "putting in hands" or sharing work as a means of assuring access to labor on a community-wide basis. Hjort (1978) suggests that such community cooperation has undergone modification with commercial relationships and contractual agreements replacing familial ties and obligations as a means of assuring a labor supply.

Among the Birwa, Mahoney (1977) found a pattern of strong household interdependence. The production unit is a neighborhood set in which households are intertwined. Similar to Hjort, Mahoney notes that contracts provide the basis for cooperative relationships. He argues that these formal agreements are an essential means of limiting responsibility as friendships would be endangered if terms were not clearly delineated.

Murray (1980) also has called attention to the community's role in providing labor assistance. He found that extended families which constitute the core of a ward are highly durable, but that conjugal or nuclear families are disintegrating as a result of labor migration. Murray does not fully examine the effects of this on labor availability.

Access to Other Agricultural Inputs--Several authors address land tenure issues. Cooper (1981) found that women gain access to land in at least two ways: by inheritance from parents and by appeal to Land Boards or to tribal authorities. Hitchcock (1978) states that rights to land use are dependent on membership in a social group. Chiefs originally had the authority to allocate land, but in 1970 much of this responsibility was transferred to the Land Boards. These are elected and appointed officials operating at the local level. Hjort (1978) reported that greater land fragmentation has resulted from this change in part because land allocation is more politicized.

In 1970, Kuper found that women in Ghanzi and Kgalagdi Districts cultivated garden plots allocated to them by their husbands. Lucas (1981) states that fathers apportion land to their daughters upon marriage. This property can be inherited by their female children.

Lucas also describes various land tenure arrangements. Where chiefs still allocate land, female headed households reportedly have about 35% less area than do male headed households. He suggests this could result from labor and draught power shortages leading to land being left uncultivated. In these cases, it may be confiscated and redistributed by authorities. Thus, the ability to plough is likely to influence size of land holding and allocation patterns.

Peters (1983) examined how communally-held grazing areas have become private property resulting in diminished access to water resources for less wealthy cattle owners. Sutherland (1980) comments on tenure arrangements among the Yeyi of the Okavango Delta. In the North Valley, land titles are inherited from father to son. A titleholder may loan plots to others. In the Sandybelt, however, where shifting cultivation is practiced, land rights are less clearly delineated. Short-term fertility and diminishing productivity require frequent movement. Where long-term fertility is maintained in wet valley cultivation, interest in retaining the site is greater and tenure rules are more fully developed. Further information on changes in land tenure practices is found in Werbner (1982).

Access to mechanized equipment, seed and innovations transmitted by extension agents, etc., is also explored in the literature. Colclough (1980) describes a tool carrier (Makgonatsotlhe) which can be attached to sweeps, planters, cultivators and scotch carts, and which uses donkeys as draught power. How extensively this is used and whether women have access to it are unknown. Gibbon, et al. (1974) discuss the same implement but call it the "versatool." While noting it can be used to cultivate cowpeas, they also offer no information on its adoption.

Fortman (1981) states that women seldom use tractors. When animal draught power is unavailable, those with the necessary financial resources hire a tractor and driver to prepare fields. Hjort (1978) indicates that many tractor owners were once chiefs and that many have profited from their positions and are now economically advantaged.

Lucas (1981) reports that inputs such as fertilizers and chemicals are not used by small farmers, except in the Barolong Farm region where crops are grown commercially. The amount of equipment a household has at its disposal is strongly related to the number of adult males on the farm, amount of rainfall and size of plots. Fortman (1980) found that poorer households, especially those headed by females, may have insufficient seed on hand for planting. In part, this is attributable to their inability to fully utilize land during the previous growing season and the consequent failure to harvest a crop sufficient for household consumption and seed requirement needs.

As noted above, Fortman (1980) found that extension services do not fully address the problems of labor shortage and lack of draught power which are major constraints for female headed farm households. Bond (1977) discusses reasons why extension efforts are not producing desired results. Although the Ministry of Agriculture has made a concerted effort to hire female extension agents, it appears that women's extension receives a relatively low priority. Outside-funded agricultural projects and vacation schedules require the reorganization of work loads. Agents must perform normal extension tasks as well as specifically address female farmer needs. The approach is also problematic; instead of offering farmers new ideas, agents wait for clients to articulate needs. Moreover, many male extension agents do not perceive females as decision makers even though many are heads of household and responsible for all farming activities. Thus, the structure and procedures of extension services prevent female farmers' needs from being adequately addressed.

Women's Roles in Bean/Cowpea Production and Marketing

The literature makes little mention of these food crops. Commenting upon strategies to ensure adequate nutrition during severe drought periods, Grivetti (1978) lists the food crops planted by the Moshaweng Tlokwa, a Tswana agro-pastoral society in Tlokweng, Southeast District. Of 126 holdings examined, 44% planted cowpeas, 27% planted tepary beans and 15% planted peanuts. Practically all households (99%) planted one or more of sixteen varieties of sorghum, while 40% planted one or more of six maize varieties. Lucas (1981) notes that cowpea production is greater in arid areas receiving 300-400 mm of rainfall. Production decreases when more males are present in the ploughing season, although land holding size influenced these patterns. Norman and Baker (1984) indicate that a regional survey on cowpea cultivation practices and utilization is to be undertaken in order to gather further information.

Cooper (1979) reports that women sell beans and groundnuts in urban and rural markets. He notes that one woman grossed P90 from bean and groundnut sales, but that she grossed P228 from maize and sorghum sales. Unfortunately no information on quantities sold nor on what was done with profits was presented. The 1971 government marketing investigation reported that farmers sold surplus of beans and cowpeas to traders who in turn sold them in South Africa.

Women's Other Responsibilities

Household Tasks--Women are responsible for many non-agricultural activities. Chief among them is firewood collection. In Kgatleng District, Arntzen (1983) reported that if donkey carts or sledges are used for transporting wood, men are often involved. This suggests that if a labor-saving device is available, women may not have access to it. The frequency of firewood collection varies from daily to once a month depending on the means of transport, season and household size. Distances travelled range between 0-9 kms per round trip, each trip taking between 1 and 4 hours. In Bokaa, Kooijman (1980) found that cattle may also be used to pull sledges on which firewood, crops and water jugs are carried, but it was not clear if women have access to this equipment.

Bond (1974) reports that more than one-half of women's time is spent in household labor. Tasks include food preparation, washing, grinding corn, fetching water, collecting and chopping wood, collecting wild fruits and vegetables, brewing beer, shopping, house building and child rearing.

Health and Nutrition--Women have the responsibility of maintaining the health and nutrition of household members by preparing and providing food. Grivetti (1978) found that certain foods are needed in particular phases of the household development cycle. Women, as cultivators of these foods, must ensure crop availability at these times. He notes that in the Eastern District, women are fed special diets during pregnancy. These include dishes prepared from stewed green leaves, especially those from domesticated or selected wild cowpea species. Great quantities of green-leafy vegetables are served to mothers in the months after delivery, but ingestion of all legume seeds stops until children have been weaned.

The Family Health Care Report (1978) indicates that the major causes of morbidity in Botswana are respiratory and gastrointestinal ailments. Malnutrition was reported to be uncommon, but chronic undernourishment is more prevalent. It would be useful to know more about food needs in relation to the household developmental cycle and the incidence of malnutrition. Little, if any information, is available on child weaning practices.

To supplement women's ability to maintain the health and nutritional levels of their families, the Government has instituted several types of supplemental feeding programs. Stevens (1978) found that school feeding programs may not be reaching the most needy since children who attend are most likely to be relatively well fed. In considering the "vulnerable group" feeding program--food supplied to pregnant women, nursing mothers, pre-school children and TB out-patients--the author questions whether the distributed food is actually consumed by those who receive it.

Ulin (1976) explored maternal and child health resources in Thamaga, a village in southeastern Botswana. She found that use of traditional vs. modern medical resources depended on the symptoms manifested by the patient. Most women attended a prenatal clinic, but they did so because of illness or discomfort which coincided with pregnancy and continued to deliver their babies at home. With the exception of small pox vaccinations, most women did not have their children immunized.

Summary and Conclusions

The Botswana literature addresses three issues: the effect of labor migration on the national and local-level political economy, demographic changes resulting from labor migration and shortages of inputs that constrain rural female headed households. Several authors outlined the strategies used by such households to overcome constraints, but rigorous comparative research on differences between male and female headed households is absent. Information is available on the reduced acreage poor and especially female headed households cultivate, but there is no indication of how much land is allocated to each crop, the quantities harvested and the marketing channels used by small-scale producers.

The lack of research on agriculture reflects the relatively low status it occupies in the hierarchy of income-generating activities. Yet, it is crucial that such information be gathered. Migration to South Africa is decreasing and will be negligible in the next decade as the result of a shift in that country's employment policies.

Most of the existing studies have focused on the eastern arable strip where water sources are more reliable. The inhabitants here are primarily Tswana, a people studied by anthropologist Schapera in the 1930s and on whom follow-up work has been conducted by Comaroff. However, for other sections of the country and other ethnic groups, a blend of anthropological and agricultural production data is not readily available. Information from these disciplines incorporating a variety of ethnic groups in different locales would offer needed insight into the social organization of production. Given the poverty of many rural households, it would be useful to examine the role played by friendship, kinship and other social bonds in survival strategies.

The points in the existing literature which are relevant to the goals and objectives of the CRSP project are outlined in the following section.

II. PROJECT-SPECIFIC IMPLICATIONS

As previously stated, the overall project goal is "to provide Botswana farmers with an acceptable package of recommended practices for cowpea growing and harvesting including improved varieties and implements as required to realize higher yields . . ." This broad goal includes several specific objectives which provide the organizational structure for this section. Information indicating issues of relevance to each objective and potential problems areas is presented.

Specific Project Objectives

Timely Planting: Devise a set of practices whereby planting of cowpeas can begin immediately at the start of the rainy season to take advantage of natural mineralization of soil nitrogen.

Some of the issues needing consideration in meeting this objective are discussed by Hjort (1978). He found that, to a certain degree, chiefs continue to influence the timing of sowing and harvesting. Their powers may stem from traditional patterns of authority or may result from ownership of the means of production. In many communities, they own and control plough teams and tractors. To better grasp the role these social and economic factors play in determining planting time, the local political-economic organization deserves investigation.

Kerven (1984) considered issues related to the timing of planting that effect female heads of household. Not all of these experience the same constraints to agricultural production. Some women have devised strategies which enhance their ability to plough on time and thus to harvest adequately. Disadvantaged households lack timely access to draught animals, labor, tools and technological inputs.

Formerly, Tswana women were prevented from handling cattle because cattle were regarded as a male responsibility and it was believed that women could pollute them (Kuper 1982). As a result of labor migration and changes in the local-level political economy women now use animals to plough. They still are not recipients of mafisa cattle, though, and so must gain access to these animals by other means. In part, this may explain why more women than men hire tractors and drivers for ploughing. It is of significance to the project to discern the means disadvantaged households use to overcome lack of access to draught power and to obtain cash to hire tractors.

Where draught power is available when needed, other problems may arise. Norman and Baker (1984) indicate that ploughing at first spring rains or during the preceding winter would result in women having to weed twice rather than once and, hence, increase their work loads. Thus, any package the project develops would have to take into account labor and draught power requirements throughout the agricultural cycle.

More information concerning women's agricultural tasks at the outset of the rains is needed. A number of questions deserve investigation. Are women responsible for planting both vegetable and staple grain crops? How is the balance between these established? Is the timing for planting vegetables different from that of staples? How do market considerations influence planting strategies?

Other labor issues may need study. The literature indicates that, under traditional systems, men herded cattle and women grew crops. When swidden agricultural methods were employed, men were also responsible for clearing new lands. It is unclear how, or if, this division of labor has been modified. Bond (1974) reports that between 47.7% and 73.6% of cropping tasks are performed by women and that 81.6% of operations after ploughing are their responsibility. No indication of task and time allocation by gender or crop is presented. Where planting practices differ, i.e., broadcasting vs. row planting, is there a change in labor allocation? How do time requirements change with different planting practices? A farm household time allocation survey would yield micro-level information useful in making specific recommendations. Such a survey is especially advised if the project intends to introduce early-maturing cowpea varieties. Knowing in advance which activities conflict with the cultivation needs of these new varieties could contribute significantly to the approach used in advocating their adoption.

Particularly relevant is a study by Alverson (1984) comparing traditional practices with changes which the Integrated Farming Pilot Project (IFPP) wanted to institute. Since many of these changes concern the timing of inputs, planting and availability of labor, a summary is presented here.

IFPP Package

Traditional Practices

Winter (dry-season) ploughing or sweeping to kill weeds and reduce compaction of soil, thereby reducing water loss through evaporation and transpiration.

Ploughing only after the first summer rain, with planting immediately thereafter.

Regular crop rotation but omission of a grass phase in the cycle. (Grass does not add much humus because of termite activity and the high temperature of the soil.)

No specific information given on this aspect of traditional practices.

Use of precision tools (either ox-drawn or tractor-drawn) in ploughing, planting and weeding.

The single-blade plough is the only tool used; seeds are broadcast.

Application of fertilizers (250 kg super-phosphate per hectare for sorghum and 250 kg 2-3-0 per hectare for maize.)

No fertilizer is used, except manure intermittently.

Planting after first rains in November.

Planting after farmers feel the rains will continue.

Harvesting immediately at maturity to reduce loss from birds and insects.

Harvesting depends, as does ploughing, on labor availability.

A comparison of the IFPP "package" with traditional practices reveals that the IFPP system requires more labor (150.58 hours of bird scaring vs. 28.18 hours in the traditional system--a woman's task), a greater capital investment and higher use of purchased inputs. Fertilizer makes weeds grow faster and necessitates double weeding, work women perform. Alverson also reports that traditional methods of hand broadcasting associated with timely ploughing after the ground is wet increased yield by almost 100%. This suggests that radical changes in agricultural practices may not be necessary to increase production.

Another labor availability issue concerns the effect of sending children to school. The school calendar and the location of fields in relation to villages may prevent children and young people from assisting in agricultural production and cattle herding. If this is the case, how do families compensate for this? What strategies are employed to obtain sufficient labor for peak production periods? Under what circumstances are communal work parties organized or is labor hired? What is the role of local-level cooperatives? Do they deal with cash or food crop production and what might their role be in addressing labor and draught power constraints?

The existing literature and the questions posed above suggest the kinds of considerations that need to be taken into account in meeting the project's first objective. The effect of introducing a set of technical practices to enhance timely planting has a number of potential consequences that deserve study before the "set" is designed. While requiring time and resources, the initial investment in gathering the necessary socio-economic and agronomic information should result in recommendations which will be adopted and which will result in increased yields without undue increases in work loads.

Reduced Tillage: Evaluate the merits of reduced tillage with simple tools primarily in marginal territory having near-desert conditions.

This objective has both technical and social components. Regarding the former, Gibbon, et al. (1974) evaluated a minimum tillage system using the "versatool." Gollifer (n.d.) found that, in dryland farming, primary tillage breaks the soil surface, allows rain to penetrate and reduces run-off. He notes that reduced tillage techniques requiring less draught power need to be devised. The social component concerns the role of gender in tool use. Women tend to use hand hoes and relatively simple implements while men generally have access to more technologically sophisticated inputs. In more traditional communities, women were prevented from using cattle-drawn draught power. Due to changes in the political economy, however, some have been delegated ploughing responsibilities. These tasks are difficult and may be dangerous during pregnancy and lactation. If the project develops new tools, a pilot study to determine their availability and use by women is advisable.

The local availability and cost of adopting new inputs also bear consideration. The issues are analogous to those raised concerning draught power. Is the tool available for use at the right time? Does it have to be rented or borrowed? Is its use compatible with pregnancy and early child care responsibilities? Cost must also be taken into account especially given the limited cash resources of most households. Ascertaining at what point in the production cycle surplus cash may be available could be useful in promoting adoption of implements (after harvest when some crops have been sold,

immediately prior to the advent of the new agricultural cycle when income from beer would be highest, etc.).

If new inputs are to be introduced through extension agents, then improved educational strategies and methods need to be devised. The literature indicates that agricultural extension agents tend not to be very aggressive in presenting information. Moreover, they often overlook female farmers. Thus, a commitment to improve presentation techniques and to include female farmers would be highly desirable.

Since this project objective addresses the needs of farmers in dry-land areas, it may be advisable to conduct base line data surveys in the zones of potential implementation. As noted earlier, prior research has concentrated on the better-watered eastern strip, while minimal attention has been paid to the Okavango (see Belien [1978]) and to the semi-desert regions in the west. More background information may be necessary concerning the occupants of these areas and their agricultural practices.

Variety Screening Program: Initiate a continuing variety screening program during the term of the contract period with selection criteria based on acceptable appearance, roughness of seed coat and flavor.

While little has been written on acceptability criteria of cowpea varieties, Grivetti (1978) presented information on the food base, preservation techniques, food storage, cooking methods, dietary practices and food distribution of the Moshaweng Tlokwa in Southeast District. Here 44% of the sampled 126 holdings planted cowpeas. The leaves of several wild and domesticated plant species (presumably some of which are cowpeas) were cooked, sun-dried and/or stored for winter use. He reported that freshly harvested and sun-dried vegetables as well as unhulled legumes are stored in burlap or leather bags. If a family has a cracked pot which is no longer serviceable as a water or cooking container, it may be used for storing small quantities of grain, legumes or wild seeds. Concerning cooking, all legume varieties are boiled whole in the pod. The shells then are split, seeds consumed and pods discarded. During periods of food shortage, however, pods may be eaten. Because all legume dishes are referred to as dikgobe, it is difficult to ascertain the specific legume being eaten. Beans are consumed mixed with boiled maize flour and cracked maize kernels. Cowpea leaves are commonly stewed and served with meals as green vegetables or as relishes.

Concerning dietary practices, the author found that the main meal is prepared at mid-day, at which time meat, stiff porridge and green vegetables are eaten. The remainder is consumed at dinner time. Children are breast-fed for about one year and are weaned on thin gruels or porridges prepared from sorghum. Pregnant women, especially, include green-leafy vegetables in their diets. Large quantities of cowpea leaves and other similar vegetables are ingested by mothers after delivery.

While this study peripherally addresses the project's screening program objective, additional information would be beneficial. For instance, if cowpea varieties are selected by women for specific cooking, taste and appearance characteristics, then these should be determined. Does one variety have a longer cooking time? This would mean that women would have to collect more

firewood and spend more time on domestic chores. Who in the household is responsible for cooking? Mothers, daughters? Are certain cowpea varieties preferred for certain occasions or stages in the life cycle? Information on how varieties and portions of the plant (leaves, pods, etc.) are prepared should be useful in variety selection. Hamilton (1975) estimates legume consumption per person per year to be 24.3 kgs or 66 gms/day. These include cowpeas, jugo and mung beans which are eaten at lunch and dinner.

The decision to plant a particular cowpea variety may also be related to how well it stores. For instance, the Government found (1976) that a severe storage problem occasioned primarily by weevils exists throughout Botswana. Hamilton (1975) reported that the three most widely grown crops in Kweneng District were sorghum, maize and cowpeas. Wood and manure ash are commonly used insect preventatives in storage. Damage to stored cowpeas is reportedly higher than for the other two crops. Cowpeas are kept in sacks on kitchen or storage hut floors. These studies give some indication of storage problems, but more information is needed to address project objectives. For example, are both the leaves and beans stored? How? How are they dried beforehand? What varieties are more weevil or insect resistant in storage?

Additional criteria to consider in screening include cowpea consumption patterns relative to stages in the life cycle. For example, studies indicate that women consume green-leafy vegetables during pregnancy and lactation, but do not eat beans during these periods. A family nutritional behavior or practices survey could provide information on cowpea varieties preferred by women during stages in the life cycle. Thus, in designing a screening and acceptability survey many socio-cultural and nutritional variables can be taken into account.

New Cultural Practices: Arrive at innovative, sound cultural practices for cowpea production adjusted for certain sets of environmental conditions, limitations of investment capability, shortage of labor and improved returns on labor cost.

This objective addresses issues that have received consideration as production constraints. Alverson (1984) presents the best overview of the consequences of certain production "packages" which, at first glance, may appear to address most constraints. Outside of identifying actions which the Government of Botswana could take (e.g., subsidizing rural labor and extending credit facilities to the more needy and to female farmers), no solutions to the constraints are presented in the literature. As the bibliography in Section IV indicates, one of the strengths of the literature is the detailed information on labor and draught power shortages and the means farmers have developed to overcome these. Particularly insightful are works by Alverson (1979, 1984), Behnke and Kerven (1983), Bond (1974), Brown (1980), Colclough and McCarthy (1980), Cooper (1979) and Fox (1981).

New Harvesting Technique: Devise a harvesting technique whereby whole plants are collected, dried and stacked prior to threshing at a central site so avoiding repeated pickings in the field.

Little attention has been paid to cowpea harvesting practices. Grivetti's study (1978) on nutritional practices does provide information on consumption

of different parts of the cowpea plant. He found that leaves are harvested at one time, while the beans/pods are harvested at another. In certain households, leaves are used by pregnant and lactating women and beans are not eaten at all; in fact, certain plants are chosen for their leaves rather than the type of beans they produce. If the project intends to design a whole-plant harvesting technique, then care should be taken to assure that this does not reduce women's nutritional intake at certain critical life cycle points and that appropriate storage methods are devised to prevent losses.

The issue of who has access to technology designed to reduce labor needs at harvest time deserves examination. The comments made above concerning tool use are applicable here. Also, the project proposes a "central site" for drying and stacking. It would be worthwhile to determine how women would regard this proposal. The location of such a site could create problems in that no land is really "free" and homestead spatial distribution allows room for only small-scale drying activities. Should the whole village put its harvest in one location, physical space might be a problem and the issue of who controls the area could be cause for dispute.

Most importantly, it may be physically impossible to use a cowpea-specific harvesting technique due to planting practices. In order to reduce the risk of crop loss, farmers often broadcast a seed mixture of cowpeas, sorghum, millet or maize at different times. Design of a harvesting technique for cowpeas is predicated on acceptance of row planting, a practice which may not be in the best economic interests of marginal farmers, many of whom are women. Research to identify ways these farmers might be convinced that changes in planting practices would reduce risk is necessary prior to designing implements. The comments made above concerning accessibility are critical to the introduction of a whole-plant harvesting technique: are the poorest, most marginal, often female, farmers going to have access to the new techniques and technologies?

A further issue concerns the use of plant residue for cattle fodder. When cattle are brought to the fields for use as draught power they are often allowed to browse where crops have already been picked. Unless plant residue is discarded in a central place, uprooting the whole cowpea plant might necessitate household expenditure on cattle fodder. It is thus important to ascertain planting and dietary practices before introducing changes in harvesting techniques.

Alectra vogelii Resistance: Incorporate resistance to Alectra vogelii into the Blackeye cowpea cultivar so that cowpea growth is facilitated.

No data relating to this objective were available. Reference is made to the section on variety screening, above. Where preferences for certain varieties have been established, the characteristics of importance may need to be included in the Alectra vogelii-resistant cultivar.

Demonstration Plots on Farmer's Fields: Test the acceptability of research findings for private farmers on demonstration plots.

Research elsewhere in Africa indicates that field testing is usually conducted with male farmers and often ignores the role of women in planting,

weeding, harvesting and processing. Fortman (1980) reports that agricultural researchers traditionally have performed their field tests on research stations. She urges that they move off the station and on to farms to discern the specific problems encountered by women in changing agricultural practices. This suggestion is also applicable to the CRSP project. Gaining access to farms headed by females may be difficult for cultural reasons; however, this is not insurmountable and should not prevent the inclusion of these households since they are most likely to be disadvantaged and in need of information. Kerven (1976) suggests that another field testing strategy involve the entire community so that researchers could more fully understand how such a social unit is mobilized in development projects.

The strategy advocated in selecting farmers for on-farm demonstrations is to focus on women as they are the principal bean and cowpea producers. Women with and without males as heads of household should be included in any on-farm research conducted by the project, as studies indicate they confront different types of production constraints.

Self-Evaluation Meetings: Receive suggestions and opinions concerning program activities and findings from government agronomists to maintain high program efficiency by holding self-evaluation meetings.

Giving demonstration farmers an opportunity to voice opinions about what they have been doing and the changes they have made to ensure production and harvest of new cowpea varieties is recommended. These meetings need to be considered in light of time availability, political and social participation and traditional perceptions of women participating in public meetings. It may be useful to allow women the opportunity to voice opinions in small peer groups or individually to an interviewer.

Additional Considerations

Several other considerations that relate to the project deserve mention.

Women's Legal Status and Land

Schapera (1953) described women's legal positions in Tswana society and Comaroff and Roberts (1977) discussed changes in their legal status occasioned by migration. It is unclear how pervasive these are and how they affect the various jural roles ascribed to women. For instance, women who win court cases are often paid fines in cattle. Have they, as a result, become more involved in cattle herding? Do they purchase more cattle to augment their herds or are their cattle integrated into a male kinsmen's herd? These issues have a direct bearing on women's access to, and ownership of, draught power.

Related to the above is the issue of land ownership. While Cooper (1979) found that women can inherit land, be granted rights by Land Boards or petition traditional authorities for a plot, it is unclear how extensive these practices are. Kooijman (1980) found that, for Bokaa, land or asset ownership by females is very low. Also required are data concerning the relationship between land-owning and decision-making. Presumably, ownership by or allocation of land to

a male household head implies that he decides which plots are to be planted in certain crops. Does this same pattern hold when there is a de facto female household head? If there is a direct link between land ownership and on-farm decision making, then more micro-level information is needed on women and land tenure.

Compatibility of Beer Brewing and Cowpea Production

The literature on women's income generating activities suggests that beer brewing is of paramount importance. Proceeds are used to pay for children's school fees, purchase seed and food, provide for the birth of a child, etc. If early-maturing cowpea varieties are introduced, the timing of required agricultural tasks should not conflict with beer brewing. If this is not feasible, efforts should be made to ascertain if the net return from cowpea sales is comparable. Otherwise, it is unlikely that women will divert attention from an assured form of income generation.

The Division of Labor

Although some attention has been given to female headed households, a more thorough analysis of the division of labor in these households would be useful. Questions to explore might include--how are traditional male tasks accomplished in households where there are no resident men? What strategies do women employ to have their fields ploughed, especially if they have no draught power? To what extent are such households more disadvantaged than others? Is there a critical point at which women abandon independent farming and migrate or turn to other income-generating activities such as sharecropping or full-time beer brewing? What other strategies are developed to insure them social reproduction? If women decide to migrate, how is the unit of production redefined?

Cooperatives and Marketing

Since obtaining sufficient labor and draught power is often problematic, what group strategies have been generated to alleviate these constraints? Have cooperatives or mutual assistance organizations been organized to grow and sell crops? If these are active, what is the extent of women's participation in them? Does participation alleviate asset and labor shortfall problems? How?

Since cooperatives are often organized to market crops more effectively, do such arrangements exist for cowpeas? According to the survey published by the Botswana Government in 1971, most of the cowpea surplus was sold in South Africa. Given the political economy of Southern Africa, does this practice still continue? Do local markets exist? Are local-level cowpea prices comparable to those published by the Government or those obtainable in urban areas? Who markets cowpeas? Such factors may influence household time and task allocation, in part determining whether it is worthwhile for farmers to alter existing cowpea cultivation practices and acreage.

Drought and Food Aid

Because of Botswana's cyclical drought conditions, some 30% of households have relied at one time or another on food aid. Has this had any long-range

effect on cropping patterns? For example, does the availability of food-aid millet reduce the amount cultivated, thus releasing land for planting in other crops?

Use of Manure and Fertilizer

While chemical fertilizer use is not widespread, Lucas (1981) and Alverson (1984) note that manuring is practiced in several areas. No information is available on this practice and whether manure is used on all planted land or simply for lands in staple crop production. Presumably, there is a relation between number of animals owned and manuring. It is likely, however, that grazing and cropping lands are not contiguous thus necessitating transport of manure from pasture or kraals to fields. Lack of a wagon or scotch cart could create difficulties in applying manure at appropriate times. More information on this topic would be useful.

Summary and Conclusions

For project success, two points regarding agriculture in Botswana are of crucial importance. The first concerns the central role of women as the principal cowpea producers and, the second, the conditions of resource scarcity experienced by many farmers. Many households lack labor and draught power at crucial points in the agricultural cycle. In part, this is due to their precarious economic situation but it is also an outgrowth of the social organization of production, kinship ties and class relationships. Production strategies employed to ensure family survival vary by gender, stage in the domestic life cycle, political and socio-cultural practices. Economic and physical resource constraints, government policies and climatic factors are also important. While not all are of equal relevance to the CRSP project, these variables provide the broad context in which decisions regarding crop production are made.

The literature on migration indicates that improvements in the agricultural sector often result from actions taken in other sectors. Current studies indicate that remittances and other resources gained from labor migration have already been reduced; South African mine owners are hiring fewer expatriate workers. It is likely that this action will have drastic effects on cropping and ranching practices in Botswana. The return of male migrants to rural and urban areas will once again alter the social organization of agricultural production. The decline in remittances to rural households makes even more urgent the need for the CRSP to achieve its objectives.

An important step toward the achievement of these objectives will result from addressing the central issues raised in this Resource Guide. Perhaps the most crucial area of study concerns the social organization of agriculture production. How is production organized to ensure minimum yields of any and all crops? Do male and female headed households manage production differently? Is use of particular tools gender related? What strategies do households employ in satisfying labor and draught power needs? Have cooperatives been formed to meet these and marketing needs? What roles do women play in cowpea production and marketing as compared to other vegetables and grain crops? How

do gender-specific cropping patterns effect yield? Are monetary returns from cowpea sales as attractive as those received from other activities? Has the growing number of returned male migrants produced an additional effect on agricultural production?

This type of information on the social, economic and political parameters of agricultural production should form the basis for technical interventions designed to increase cowpea production. Such an approach should permit the project to achieve its overall goal of generating minimum cost means of enhancing cowpea production to improve the nutritional status of Botswanan families.

III. EDUCATION AND WOMEN'S ORGANIZATIONS

The Educational System

The educational system in Botswana is patterned after that of England. At the end of primary school, students must take an examination attesting to their competence in several subjects before going on to secondary school. This pattern is repeated after four years of high school education, and if students are successful in these examinations, they achieve an "O" level pass. If the pass is high, students may then go on to "A" level studies which are more specialized. After passing "A" level examinations, they then are eligible for university education.

Because boys frequently remained home to care for cattle, girls traditionally outnumbered them in primary school. In implementing universal primary education, enrollments of both sexes have increased thus exerting pressure on the Government to augment the number of spaces available in secondary schools. Girls have not done as well on the first level exams as boys, and Brown (1980) found that this was a major reason for the boys out-numbering girls in secondary schools. Additionally, females drop out of school due to early marriages and pregnancies. Once a woman has had a child, she cannot re-enter the formal education system. The only options open to women for vocational and technical education are adult education classes and participation in a Brigade.

Adult education for women is offered at a number of training centers throughout the country. Courses generally focus on domestic science, with some attention being paid to women's needs in agriculture. Higgins (1981) evaluates one program offered by the Ministry of Agriculture and Bond (1977) describes how women's groups were formed for training in vegetable gardening, dress-making, fruit tree care, grain storage and the like as part of the Integrated Farmer Pilot Project in Pelotshetlha.

There is a strong desire by women to improve their agricultural skills. The Ministry of Agriculture Women's Extension is trying to meet this need through training centers, but Sheffield, et al. (1976) note that there is a

bias against training women in agricultural subjects at the more formal educational institutions. In a case study of St. Joseph's College, the oldest secondary school, it was reported that girls were not allowed to take agricultural courses and instead, were directed to domestic science. This had implications for income generation as boys grew vegetables and raised small ruminants to sell while no such avenues were available to girls.

The Brigades offer practical training in construction and carpentry, textile fabrication, farming, engineering, dressmaking, etc. Van Rensburg (1978) describes them as non-governmental organizations operating under the control of local trusts, overseen and funded by a Ministry of Education coordinating committee. Originally designed in the 1960s to provide primary school leavers with practical skills, the Brigades have been expanded to include adult education and training programs, some especially for women. To facilitate their participation, child care may be provided.

Higher education takes place in several institutions. Formerly a part of the Swaziland and Lesotho university system, the University of Botswana is now independent. Agricultural students still receive their training in Swaziland, although there is now a plan to upgrade the level of education at the College of Agriculture in Botswana to make it a part of the university system.

Specific information on institutions of higher education in Botswana follows.

Universities

University of Botswana
P/B 0022
Gaborone BOTSWANA
Tel. Gaborone 51151

Until recently, higher education was provided by the University of Botswana and Swaziland, which was comprised of two university colleges--one at Gaborone, Botswana and the other at Manzini, Swaziland. Botswana now has an autonomous higher education system through the University of Botswana which provides instruction in humanities, science, economics, social science and education. It includes the Institute of Adult Education and the National Institute for Research in Development and African Studies.

Affiliated Institutions

1. Lobatse Teachers' Training College
Box 96
Lobatse
2. Serowe Teachers' Training College
P/B 9
Serowe

3. Francistown Teachers' Training Colleges
P/B 24
Francistown

Other Colleges

1. Matsha Community College
Martin L. Bryram
Boipelego Education Project
P/B 005
Gaborone BOTSWANA
2. Tutume Community College
P. O. Tutume
Via Francistown

Women's Organizations

Women in Botswana have needs, interests, experiences and concerns that have led them to organize in particular social, economic and political fashions.

Women's organizations did not originate with Botswana's independence in 1966. Long before that groups were formed for collective labor such as weeding, harvesting, house building and village projects. As some activities were seasonal, these groups were often informal. Formed from families living in close proximity to one another, groups often served social service type functions.

Historically, age regiments were important social organizational structures. Male regiments cut across kinship and local-level political boundaries. Both male and female regiments were engaged in work for the benefit of the village, district or national leaders. Female regiments generally performed agricultural and home-building tasks.

While it is uncertain how much effect age regiments continue to have on social organization, interviews with representatives of Kgatleng and North East Districts indicate that women do cooperate to perform certain social functions. They organize to raise funds to help one another. When members' children marry, women's groups take the initiative in clearing the area where the marriage is to take place and, on the day of the wedding, the group prepares food or brews beer. The degree to which women engage in cooperative labor in agricultural production and other enterprises deserves further investigation. Literature on women in other parts of Africa suggests that such groups may provide an important vehicle in development efforts.

In the mid 1970s, the Government undertook to identify problems faced by women in rural areas. As discussed earlier, within the Ministry of Agriculture, there are female extension agents and cooperative extension personnel (Women's Bureau) who operate at the village level in an effort to ease women's agricultural burdens. Within the Ministry, the Women's Bureau focuses on the social and economic integration of women in development efforts.

Occasionally females are selected from village cooperatives to participate in agricultural training programs that emphasize ways to broaden traditional skills into commercial activities. Training programs might focus on literacy, nutrition, health care and leadership.

There is a central "umbrella" organization, operating through the Ministry of Home Affairs, the Women's Affairs Unit (WAU), which acts as a coordinating body for many women's groups. Women's organizations are not legally recognized unless they have a constitution and are registered under the Societies Act with the Ministry of Home Affairs.

Although informal organizations remain important, there are many formal ones. Details on the most relevant of these are presented below.

- Name of Organization: Botswana Council of Women (BCW)

Address: P. O. Box 339, Gaborone, Botswana

Executive Committee: President, Vice-President, Chairman, Secretary Liaison Officer, Treasurer

Year Established: 1965

Objectives: To develop good citizenship among women; promote mutual understanding between different cultures; encourage high standards of living through self reliance.

Membership: 250

Activities: Organize seminars for urban and rural women; hold meetings to discuss social problems; take part in Government-sponsored events, participate in community activities such as building of nursery schools, clinics, bus shelters, restrooms; organize home and hospital visits; encourage women in home gardening and vegetable growing; undertake fund raising activities to promote projects for the advancement of women.

National or International Affiliation: Member of International Council of Women

Branches in Country: Throughout Botswana

Paid Staff: One
Publications: Annual Report

The BCW is the most active of all women's organizations, serving most of Botswana. For example, in the Central District in 1973, the BCW had branches in 19 villages with a combined membership of 334. In the Ghanzi area, in 1972, this group had 58 women members. With the arrival of the Community Development staff, the activities of BCW in this region increased, both groups assisting each other to achieve their set goals. In the Katleng District, the BCW with other organizations, such as the Young Women's Christian Association, Botswana Guides, the Trefoil, the Tri-Ys and 4-B Clubs, took keen interest and had active participation in the promotion of family welfare and youth training.

When the Botswana Council of Women was established in 1965, its original purpose was to unify existing women's groups in the country. This objective has never been completely fulfilled and the organization has developed new objectives. The Council is one of the largest women's organizations in the country. Membership in the organization is also open to men and a few have joined.

2. Name of Organization: Botswana Young Women's Christian Association (YWCA)
- Address: P. O. Box 350, Gaborone, Botswana
- Executive Committee: President, Vice-President, National Secretary, Treasurer
- Year Established: 1962
- Objectives: Render community services to help women and young girls
- Membership: 600
- Activities: Informal education, adult education, literacy programs, teaching of handicrafts to young girls, food-raising activities, setting up community clinics, running day-care centers and kindergartens, building bus stop shelters and running a private secondary school.
- National or International Affiliation: World YWCA in Geneva
- Branches in Country: Three in urban centers, thirty-seven in rural areas
- Paid Staff: One
- Publications: None

In Botswana, the YWCA is the second most active women's group. In the Central District alone, this organization had branches in 10 villages by 1973 with a combined membership of 227. Literacy, cookery and baby care classes were held in addition to the provision of bus shelters and toilets.

The most outstanding service provided by the Y.W.C.A. in Botswana is its work with refugees. The organization has rented houses to accommodate refugees and enrolled them in Y.W.C.A. programs.

3. Name of Organization: Business and Professional Women's Club of Gaborone
- Address: P. O. Box 654, Gaborone, Botswana
- Executive Committee: President, Two Vice-Presidents, Principal Officers
- Year Established: 1972
- Objectives: To uphold the interest and advancement of experienced professional women; to promote higher education in professional activities; to contribute to the community by provision of facilities; to increase involvement of women in development
- Membership: 50
- Activities: Fund raising, collect subscriptions from members; organize around community and other local issues such as price control and cost of living; sponsor art exhibitions for children; head local and regional meetings and conferences
- National or International Affiliation: International Federation of Business and Professional Women
- Branches in Country: Not specified
- Paid Staff: Not specified
- Publications: Not specified
4. Name of Organization: Association of Botswana Women's Organizations
- Address: Secretary, Association of Botswana Women's Organizations, P.O. Box 1305, Gaborone
- Executive Committee: President, Vice-President, Permanent Secretary
- Year Established: 1978

- Objectives: To co-ordinate development programs and activities of all registered women's organizations in the country; to negotiate with government and other institutions in matters affecting the interest of women in Botswana; to be a link between member organizations and the Government, International Women's Associations and other agencies.
- Membership: The association does not have any individual members but consists of the member organizations as stated below. It is led by an elected seven member committee from various registered women's organizations. This committee consists of a chairman, a vice chairman, a secretary, a vice secretary, a treasurer and two committee members. There are also three ex-officio members, i.e., a representative of the Ministry of Local Government and Lands, a representative of the Ministry of Home Affairs and a representative of the Botswana Christian Council.
- Activities: Being newly formed the Association has not as yet engaged in any activities, but the following plans have been discussed: 1) annual general conferences, 2) seminars--follow-up and reports by members who have attended conferences, seminars and courses abroad, 3) hosting of future international conferences, 4) a poultry keeping project to be located in Gaborone, 5) the association is also discussing building of offices and a hall.
- National or International Affiliation: Has six affiliates. The Association of Botswana Women's Organizations is a co-ordinating body made up of the following member organizations: Young Women's Christian Association, Business and Professional Women's Association, Christian Women's Fellowship, Botswana Nurses Association, Botswana Girl Guides Association, Women in Development Committee. All the above member organizations operate at a national level.
- Branches in Country: Country-wide
- Paid Staff: Not specified
- Publications: Not specified
5. Name of Organization: Women's Affairs Unit (WAU)
- Address: Ministry of Home Affairs, P/B 002, Gaborone

<u>Executive Committee:</u>	Not specified
<u>Year Established:</u>	Not specified
<u>Objectives:</u>	To coordinate women's activities in Botswana at local, national and international levels; to disseminate information; to conduct research on the overall situation of women; to work with different government departments on issues related to women.
<u>Membership:</u>	Open to all, particularly women in rural areas.
<u>Activities:</u>	Organize seminars; act as a central body disseminating information; make women aware of political issues inside their country; press for better living and working conditions for women and provide assistance to women's groups and individuals, wherever possible, through pamphlets, talks and workshops.
<u>National or International Affiliation:</u>	Women's Development Planning and Advisory Committee (Botswana)
<u>Branches in Country:</u>	Not specified
<u>Paid Staff:</u>	Not specified
<u>Publications:</u>	<u>The Woman is the One Who Carries the Nation</u>

The following international women's organizations reportedly have affiliates in Botswana: The International Alliance of Women (IAW), The International Council of Women (ICW), Women's Corona Society and World Young Women's Christian Association (YWCA).

IV. A Selected and Annotated Bibliography

This bibliography is a selected guide to materials on women's work in agricultural production in Botswana. It draws on a number of previously-existing bibliographies, especially the one prepared by Eicher (1981) and data sources such as Dissertation Abstracts International, Sociological Abstracts, the Social Science Citation Index (SSCI), Agricola, CAIN and Resources in Education (ERIC).

Annotations written by other authors have been utilized. In many cases, additional commentary of relevance to the project has been added.

Most of the materials cited are available at Michigan State University. Resources were reviewed from the Non-Formal Education Center, the Agricultural Economics Reference Room, the Women in International Development Reading Room and from the main library. Where documents are noted without annotation the referenced material was not available. These were included in the bibliography because they appear to provide information relevant to the CRSP project.

Africa South of the Sahara. 13th ed. 1983-84. London: Europa Publishers, 1984: 219-234.

Analyses of physical and social geography and of the economy are set forth followed by a statistical survey which provides an economic profile of the country. A directory provides data on the government, the press, finance, trade and industry, transport, etc., and a brief bibliography concludes the description. This volume offers general and statistical overviews of all the countries of Africa. No specific information on women is included.

Allison, Christine. The Determinants of Participation in Primary Schools in Kweneng, With Special Reference to Cattle and Mine Labour Migration. Gaborone: National Migration Study/Central Statistics Office, 1978.

Considers the Tswana household as the decision-making unit, vis-a-vis primary schooling in exploring the relationship between the number of adults in the household and the demand for children's schooling: whether children from female-headed households are more inclined to go to school; whether more educated parents will demand more education for their children; whether as labor migration increases, household demand for schooling falls; whether households living in communities with good schools have higher level of demand; and if communities with good employment prospects have higher demand for schooling. (Eicher Bibliography)

Alverson, Hoyt. "Agricultural Development in Botswana: Targets and Constraints." Institute of Development Management Public Lectures, November 23, 1978, Gaborone, 1978. Mimeo.

Outlines some problems facing Botswana in its national effort to develop agriculture, based upon the major goals stated in Botswana's Fourth National Development Plan: (1) attaining self-sufficiency in production of essential staple crops; (2) providing secure and adequate livelihoods for

Botswana; (3) eliminating political and economic dependence on Rhodesia and South Africa; and (4) saving (earning) foreign exchange. (Eicher Bibliography)

_____. "Arable Agriculture in Botswana: Some Contributions of the Traditional Social Formation." Rural Africana, Spring/Fall 1979: 33-47.

Analyzes what is already known about the socioeconomic organization of arable agriculture in Botswana. Identifies information gaps and suggests ways in which national policy implications about the development of agriculture may be drawn. (Eicher Bibliography)

The first question Alverson poses is what is the social and economic organization of agriculture in Botswana? His answers include the following: the proportion of the total population involved in arable production is declining; towns and large villages are experiencing an increase in population; pressures on land are increasing due to demands for both more grazing and arable land; crop failures are frequent due to variation in rainfall; variation in yields and in hectareage cultivated are attributable to a multiple of factors; the rights and privileges of access to the means of production, even within households, are not equal; traditional agriculture is not self-sustaining or self-financing; the contribution of agricultural production to total household income shows a convex curvilinear relationship; overgrazing is a serious problem; traditional social institutions contribute to arable production, distribution and consumption.

The second question Alverson explores deals with areas of controversy and/or consensus in the literature. The first concerns draught power. He notes that between 30 and 45 percent of households that cultivate do not own or have access to cattle as draught power as a traditional right. The next concerns the high opportunity cost of expanding food production vs. the lower costs involved in migrating to work elsewhere. The traditional social formation of the household and its context in a broader social unit comprise the fabric of a community. Exchange to enhance survival occurs within and between each of these units. The traditional system of mafisa--loaning cattle out to get milk and offspring--includes the use of cattle for draught. However, it is highly unusual, given social custom, for a female who is head of a household to receive such cattle as care of these animals is normally the domain of men.

_____. Mind in the Heart of Darkness. New Haven: Yale University Press, 1978.

This ethnography, mainly analyzing Tswana male mine migrants to South Africa, seeks answers to the question of how social institutions shape an individual's beliefs about who and what he is. Although the study offers a wealth of information on the Tswana, including their own self-perceptions, certain comments are more relevant to this bibliography than others.

Great emphasis is placed by Tswana people on kinship as the basis on which the political, juridical, economic and religious aspects of society are organized. Age is an important ranking criteria and is elaborated in a

complex system of age-set or age-regiments (an offshoot pattern of social organization predating the mfecane, the spread of the Zulu under Shaka in the 19th Century). Male and female adolescents are separated into sexually segregated sets and remain in these sets throughout life. Leadership in age sets normally rests upon a royal's relative who is a member of the set. These sets are activated at the local level for warfare (in pre-colonial times), public works, hunting, policing of executive decrees, entertainment, etc.

Traditionally women were viewed as minors dependent on a male kinsmen. Marriage was not fully consummated until the negotiated bridewealth from the man's family was transferred to the woman's. Since Tswana highly value their cattle as being the source of their wealth and prestige, women are often referred to as cows who will produce a nation at her husband's place. Since Tswana society is patrilineal and patrilocal (descent through the male line with residence at the father's village), women are removed as productive units from their parents' household. For this removal recompense is made to the female's family in the form of bridewealth. These practices, however, are no longer strongly adhered to in favor of a young man making his own marriage arrangements without bothering to consult kinsmen.

Concerning education, Alverson commented that it is women more often than men who want their children educated so that they might better adapt to changing conditions; men generally see education as economically necessary. He asserts that because more women value education as a means to advance, they are also more adaptable than men in seizing ways to earn income--cottage industry, petty trade, etc.--and that this income often exceeds the cash value of what men can receive from slaughtering stock. The traditional view of women held by Tswana elders (men) is that women cannot work for themselves so they should get married. Economics and ecology, among other things, have altered this view of women drastically.

While the major portion of Alverson's analysis is on the miners who return to Botswana, there is a great deal of information on the Tswana in Eastern Kweneng, Central Kweneng (Kalahari Desert) and Gaborone.

_____. The Social and Economic Context of Agriculture in Botswana: Some Indicators. Gaborone: Institute of Development Management Research, Paper No. 6, 1979.

Summarizes results of a small-scale study of the principal social and economic features of contemporary farming practices in general and in the Kweneng district of Botswana in particular. Findings confirm existence of a class system in rural Botswana which has numerous important implications for the organization and practice of agriculture. (Eicher Bibliography)

_____. "The Wisdom of Tradition in the Development of Dry-Land Farming: Botswana." Human Organization, Vol. 43, No. 1, Spring 1984: 1-8.

While economists have developed theories of small-farm production, the author states that little or no attention is paid to the cultural

organization of agriculture in the total context of social reproduction. The lack of this focus has led economists to design development programs to change production techniques with added technology or institutional innovation in order to achieve increased yields. He argues that great potential exists to increase production within the culture of traditional agriculture as it is practiced and uses the case of Botswana to illustrate this point.

Alverson begins his case study with some background information on Botswana: arable land is between 13,000 km and 30,000 km. About 80,000 rural households participate in either arable and/or livestock production, with between 400,000 and 600,000 ha. under regular cultivation. Population growth is more than 3% per year and urban populations have grown as a result of natural increase and the decreased need for migrant miners in South Africa. Towns are growing at about 13% per year. Concerning crop production, sorghum, maize and millet constitute the principal sources of food energy. Some 50% of the 80,000 households engaged in farming cultivate fewer than 3 ha. and 13% do not cultivate at all. Only 10% of farmers in 1980 cultivated more than 7 ha. Less than 8% cultivated more than 8 ha., the minimum required to feed a household of 7 or 8 members. Households which do not own cattle and must borrow them in 1980 planted only 1.7 ha., those with 1-10 cattle planted an average of 2.6 ha., those with 11-40 planted 3.8 ha. Larger herd ownership does not correlate with arable agriculture but with commercial cattle ranching income.

<u>Cattle Herd Size</u>	<u>Average Area Cultivated</u>	<u>Yield per Hectare</u>
0	1.7	106 kgs
1-10	2.6	102
11-20	3.8	130
21-30	3.9	148
31-40	3.7	141
41-50	4.5	215
51-60	4.0	137

In reporting on the Integrated Farming Pilot Project (IFPP) at Pelotshetla, 35 kms from Kange, the Southern District capital, Alverson found that there are 23,000 ha. of arable land and 325 farming households. Only 35 families did not have easy access to cattle and most farmers plough between 6 and 10 ha. Ploughing is done with a single mouldboard plough drawn by between 4 and 12 in-spanned oxen. The most widely grown crops are sorghum, maize, millet, beans and cowpeas, with sorghum and maize accounting for over 90% of cultivation.

Alverson then goes on to discuss the "package" of arable practice recommended to traditional farmers as opposed to the practices already in place. These include:

IFPP Package

- a) Winter (dry-season) ploughing or sweeping to kill weeds and reduce compaction of soil, thereby reducing water loss through evaporation and transpiration
- b) Regular crop rotation but omission of a grass phase in the cycle. (Grass does not add much humus because of termite activity and the high temperature of the soil.)
- c) Use of precision tools (either ox-drawn or tractor-drawn) in ploughing, planting and weeding.
- d) Application of fertilizers (250 kg superphosphate per hectare for sorghum and 250 kg 2-3-0 per hectare for maize.)
- e) Use of improved seeds.
- f) Two weedings after planting.
- g) Planting after first rains in November.
- h) Harvesting immediately at maturity to reduce loss from birds and insects.

Traditional Practices

- a) Ploughing only after the first summer rain, with planting immediately thereafter.
- b) No information is given on this factor.
- c) The single-blade plow is the only tool used; seeds are broadcast.
- d) No fertilizer is used, except manure intermittently and irregularly.
- e) No information given on this factor.
- f) One weeding, if any at all.
- g) Planting immediately after summer rains ploughing.
- h) Harvesting depends, as does ploughing, on labor availability.

A comparison of the two systems reveals that the IFPP requires much more labor (150.58 hours of bird scaring vs. 28.18 in the traditional system), a much greater capital investment, and much higher use of inputs which are available only for cash. Alverson found that the traditional system yields a more favorable return than the IFPP. He also points out that the introduction of fertilizer makes weeds grow faster and that labor is not available to do more than one weeding. This illustrates that any change in the production system has ramifications for the entire system.

In conducting trials on changing planting practices, it was found that traditional methods of hand broadcasting associated with timely ploughing after the ground is wet increases yields by almost 100%. Thus it is argued that changes not in the forces of production but in the quality, timing and patterning of various tasks associated with management of the arable cycle have more long-term impact in terms of increasing yields.

Arntzen, Jaap W. Firewood Collection in Mosomone: Kgatleng. Gaborone: University of Botswana, Institute for Development Research and Documentation, Research Note No. 11, 1983.

Undertaken as part of a broader research-utilization project in Kgatleng District, this study focuses on the collection and use of various species of wood for the purpose of making fires. Data is analyzed on the basis of stratification with varying levels of people making use of different resources. The author states that firewood is collected by women in Kgatleng, but that if donkey-carts or sledges are used for transporting wood, men are often involved. Wood is collected by the members of each household for their own use, although some surplus may be sold. Selling wood, however, is not an important source of income to households in Mosomone. The frequency of collection varies from daily to once a month depending on means of transport, season and household size. Distances travelled range between 0-9 kms per trip, each round trip takes from 1-4 hours.

Bailey, Charles Ray. Cattle Husbandry in the Communal Areas of Eastern Botswana. Ph.D. Dissertation, Cornell University, 1982.

This study is about cattle husbandry in the semi-arid, unfenced and communally held rangelands of eastern Botswana. People keep cattle for a variety of reasons, among them the use of cattle draft power in arable agriculture, the sale of cattle to meet immediate cash needs, home consumption of meat and dairy products and the accumulation of wealth. Since the last major drought in 1965/66, the cattle population of Botswana has approximately doubled and now poses a potential threat to the long-run carrying capacity of the country's rangelands. The open-access nature of the range removes the individual incentive to limit stock numbers or to systematically rotate animals among different grazing areas. Although cattle are the best means for exploiting the water and land resources of eastern Botswana, only half of all rural households hold cattle.

This study was undertaken to gain a better understanding of the use and management of two of Botswana's major natural resources--land and water--for the production of cattle. The analysis proceeded on two levels: 1) the aggregate effects of individual decision making on range condition and water resource management and development, and 2) the effects on individual herds of cattle holder herd management. Empirical data were gathered through a series of questionnaires and open-ended interviews carried out with 245 cattle holders in twelve communities in eastern Botswana during 1979/80.

Stocking rates were found to be substantially higher than those recommended by government range ecologists. Cattle holders appeared to be building up their herds to take the fullest advantage of the forage produced by a succession of good rainfall years. Water was not a constraint on growth in herd numbers. Water availability did vary seasonally and from place to place, but not enough to shift cattle and allow the range to recover from local grazing pressure. Cattle holders required at least 35 to 40 animals to plow with a full team of oxen. Net revenue in cash and kind reached an

initial maximum in herds of between 41 and 50 head. (Dissertation Abstracts)

Behnke, Roy and Kerven, Carol. "FSR and the Attempt to Understand the Goal and Motivations of Farmers." Culture and Agriculture, Vol. 19, Spring 1983: 9-16.

In Botswana less than 1/4 of all farm dwelling units are solely dependent upon agriculture; 2/3 obtain more than 40 percent of their income in off-farm labor. 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. One risk-reducing strategy employed is cooperation among close kin. The authors cite a case study in which an old, non-farming mother lives with her youngest son and two daughters, with the eldest brother living elsewhere. The two daughters and the son farm three plots, but hire-in animal traction from their older brother, while the younger brother hires out his own traction. The younger brother provides cattle in return for the labor of his sisters and their oldest daughters. The younger brother has only small children. The women brew beer and pay the older brother for animal traction with the proceeds. The authors pose the question, what constitutes the household in this case?

Households are governed by kin relationships and rules, not by close calculations of short-term costs and benefits. Meeting with people outside of the household is not economic but social--the family, as broadly defined, acts as a unit of production with family-type relations extended to the world at large. Family relations are never limited as that would limit risk reducing strategy. Designing recommendation domains may obfuscate the economic and social interdependence of the community under study. Every assistance or risk-reduction network will have overlapping members in contiguous areas or among the broader family. There is a heterogeneity of contiguous farms in which a degree of specialization has occurred. Thus, communities really constitute multi-household production units or supra-household cooperation networks.

The authors advocate selection of "dwelling units" rather than households as units of analysis in applying research methodology since all other units have multiple and overlapping layers of allegiance, cooperation, membership and residence. Probing of these units would lead researchers into other rural and urban networks.

Belien, J. The Suitability of Horticultural Crops in the Okavango Area. Gaborone: UNDP/FAO Project, Swamp and Dryland Soils of the Okavango Delta, Project Field Document No. 8, June 1978.

Provides a broad outline of optimum horticultural practices and varieties. Indicates which crops are economically viable. (Eicher Bibliography)

. The Suitability of Some Vegetables in the Okavango Area Swamp and Dryland Soils of the Okavango Delta. Gaborone: UNDP/FAO, June 1978.

Provides field data on crop varieties, trials, climatic influence, irrigation, fertilizing, spacing and crop yields. (Eicher Bibliography)

Bell, Morag. "Rural-Urban Movement Among Botswana's Skilled Manpower--Some Observations on the Two Sector Model." Africa, Vol. 50, No. 4 (1980): 404-421.

This study seeks to achieve three goals which run counter to modernization theory assumptions concerning rural-urban migration: 1) identify the influence of formal training on the propensity to migrate, 2) assess the level of integration of migrants into the urban community, and 3) question the effect of movement on rural households and rural production, as well as on urban social processes and labor market conditions.

Where young people have received education up to the Junior Certificate level, good prospects for securing well-paid employment in the public sector are available. (Those with only primary school leaving certificates are not deemed "educated".) While the Tswana have a tradition of movement to take care of their cattle and crops, the decision of an individual to migrate into the city is based upon a perception of job availability (learned about through communication along kin and friendship networks) and the presence of a relative in the city with whom to stay. Those with Cambridge level education and higher apply directly to ministries for work and secure jobs. Hence, migration of the more educated population is employer-centered, while migration by lesser educated individuals is potential employee-centered. Women fall mainly into the less educated category, and job commitment and security are viewed as even more important for independent females with families. Females who are living in the urban areas with their husbands tend to be better educated and better off since many women in this category waited until they finished their education before marrying and/or having children.

Willingness to consider the city home was found to be a function of education, with concomitant job security, the ability to buy a house or, for less-educated, lower-income migrants, whether family members (kin) were also in the city.

Ties to people in the rural areas remained strong with those earning adequate wages sending remittances at least once every three months. For many, a monthly return visit to work on the cattle posts or in the fields was normal, while for those who did not receive adequate wages both remittances and return visits were less frequent. The urban elite also maintain a traditional stratification pattern in that part of their earnings are invested in the purchase of cattle. Investment in land and cattle provide a useful supplement to urban wage.

As Bell puts it, "The spouse was based permanently at the rural home with authority to organize and manage the lands and cattle post, while the migrant returned home regularly at weekends." In this way both the farm and

the urban migrant could support each other. However, independent women in town do not have a rural spouse and so must depend on other relationships for support.

Bettles, F. M. Women's Access to Agricultural Extension Services in Botswana. Gaborone: Ministry of Agriculture, Department of Agricultural Field Services, Women's Extension Unit, 1980.

This paper presents an analysis of women's extension work in Botswana, relating it to the wider context of women's role in agriculture generally. The analysis is presented in three parts: an overview of agriculture with specific emphasis on constraints faced by female farmers (including land ownership, arable efficiency, access to draught power, labor and equipment); an historical overview of women's extension activities (including the Integrated Farming Pilot Project, courses for women, liaison activities and policy proposals); and proposals for the future integration of women into agricultural policies and projects. The final section includes a table of on-going work and future plans for the expansion of the Women's Extension Unit, projects of relevance to the needs of women, evaluation of currently-existing course offerings at rural training centers, further work on appropriate technology and liaison activities. This table is expanded into a discussion of each topic. The paper ends with the following note ". . . the talk of integrating women into development becomes a nonsense. Without women there is no development."

Bond, C. A. Discussion Paper in Agricultural Extension for Women. (No publisher cited), 1977. (Mimeo)

To solve the problem of female agriculturalists not being visited by male extension agents, the post of Agricultural Officer, Women's Extension was created. The paper describes the activities of people in this post and the ways in which women may be brought into a stronger network of information sharing. Many attempts to expand extension contact have failed due to the intrusion of other projects which required the time of extension officers, vacation schedules, etc. Basic approaches utilized by extension workers are problematic in that they wait for their clients to articulate certain needs to them rather than offering certain new ideas to farmers. Biases of extension workers include perceiving females as those who are not decision-makers, as the poorest when they are heads of household, etc. This negative attitude is further exemplified in courses designed for female farmers. Officials are apathetic in recruiting more female extension agents.

Women's Involvement in Agriculture in Botswana. Gaborone: Ministry of Agriculture, 1974.

This study seeks answers to the following questions: What is the role of women in Botswana agriculture and what is the extent of their participation in field operations and decision-making? Other questions involve extension work as it relates to women farmers.

Women are responsible for weeding, bird scaring, harvesting, threshing and storage. They also keep pigs and poultry. When husbands are absent, women make all decisions regarding crop operations and when husbands are present, there is a free exchange of ideas on farming practices. This could have resulted from more traditional practices which left men in charge of herding and women in charge of gardening. The results of a survey (covering 204 rural households) indicate women perform between 47.7% and 73.6% of all crop activities. Where there are no males in a household, women must hire men or depend on relatives to clear the land, plough and to do some planting. This work is most often done in exchange for cash thus necessitating a minimal level of cash accumulation by female-headed households. Women provide 81.6% of the labor for all operations after ploughing.

More than one-half of women's time is spent in household labor. Tasks include food preparation, washing, grinding corn, fetching water, collecting and chopping wood, collecting wild fruits and vegetables, brewing beer, shopping and house building.

In matters requiring specific decision-making, the survey found that decisions concerning tractor ploughing, cattle sales and fencing are made primarily by males, and that women decide about ploughing at times and about planting. But in most instances, discussion was reported to have taken place between males and females with a decision being reached mutually on task allocation.

The report recommended the creation of specific extension services that would meet the needs of female agriculturalists.

. Women's Involvement in the Integrated Farming Pilot Project.
Gaborone: Ministry of Agriculture, 1977.

This report sets forth background information on the IFPP and outlines the areas of livestock and crop production the project addresses. The History of Developments section deals with the ways in which women were incorporated into the project. A section on future plans lists the courses being offered to women and how groups might be formed to enhance both the efficiency and the effectiveness of the project. The report ends with a profile of each of the women's groups participating in the project.

Botswana. Agricultural Statistics Unit, Ministry of Agriculture. 1979 Livestock and Crop Survey. Gaborone: Central Statistics Office, Ministry of Finance and Development Planning, 1979.

This survey is a continuation of a series of annual surveys conducted since 1967. It covers the traditional tribal farms in the Agricultural Administrative Regions and all freehold and commercial farms in the country. In interpreting the data, several limitations were pointed out: the standard error for district estimates is very high, district totals might have been misreported due to farmers living in one district and actually farming in another, the use of a point system to determine whether a marginal holder qualified as a farm reduced the number of farms by 2,000.

The tables on crop and livestock production which comprise the bulk of the data are extensive and should be consulted (along with surveys published subsequently) to have an accurate picture of the production of cowpeas and beans.

_____. Crop Protection in Botswana, Biennial Report 1973-1975. Gaborone: Ministry of Agriculture, 1979.

Reviews research carried out on insect and avian pests, plant pathology and weed control in 1973-75. (Eicher Bibliography)

_____. Division of Planning and Statistics, Ministry of Agriculture. Preliminary Investigations into the Marketing of Crops and Livestock in Botswana. Gaborone: Government Statistician, 1971.

Three surveys were conducted in order to elicit information on crop and livestock marketing by farmers in Botswana, on traders in the Ngwaketse and Barolong regions, and on prices and demand for agricultural products in Gaborone.

In ascertaining marketing information the survey indicated that sorghum, maize and cowpeas were the main crops sold, in order of importance, mainly to traders at harvest time. The survey on traders indicated that quantities of beans and cowpeas purchased from local producers were mainly sold directly to South Africa.

The tabular presentation of data is useful, though dated, and should be used in the project as indicators of production and pricing at the time the surveys were conducted.

_____. Dryland Crop Production in Botswana: A Review of Research, 1969-74. Gaborone: Agricultural Research Station, 1974.

_____. The Rural Income Distribution Survey in Botswana, 1973-1975. Gaborone: Ministry of Finance and Development Planning, Central Statistics Office, 1976.

Rather than summarize this document, some of the problem areas which were pointed out in the survey will be noted. This survey was conducted throughout Botswana.

"Male-less" households suffer from an inability to plough either adequately or on time; also, no funds supplied by migratory labor are remitted to aid such households in hiring these services. Women brew beer to generate income.

Weevils are the main problem in storing food.

The Botswana government taxes cattle owners on a per head basis, so there is underreporting of the number of cattle owned. Also, the same rates apply to ranchers and smallherders.

At the time of the survey, farmers were paid low prices for their grain harvests thus leading them to conclude that production of crops for sale is not adequately compensated especially since extra effort is needed to grow more. The survey provides good base line data.

Brown, Barbara. "Girls' Achievement in School in Botswana." Botswana Notes and Records, Vol. 12, 1980: 35-40.

The major reason for girls not achieving higher levels of education, though girls outnumber boys in primary school, is early marriage and pregnancy. Unable to continue school because of the need to take care of their children, women are thus denied access to skilled jobs. With at least 30% of the households in Botswana headed by women, the author notes that rural incomes are low due to females not being able to earn adequate incomes. In a survey conducted at the Molefi and Linchwe II schools, Brown discerned a high degree of sex stereotyping in terms of career aspirations and particular jobs. Women were considered incapable of driving a tractor, being a pumper or building a brick house, although these views altered the higher the level of educational achievement of the respondents. Perceptions of future roles by girls included being a mother and 50% of the female respondents indicated that they alone would be responsible for their children's welfare. Hence, career aspirations tended to focus on decreasing the dual burden of children and career.

Present government policy states that girls who become pregnant are expelled from school and are not to be readmitted. The author advocates changing this policy so as not to lose part of the labor resources of the country.

. Women, Migrant Labor and Social Change in Botswana. Boston: Boston University, African Studies Center, Working Paper No. 41, 1980.

Brown begins her analysis with a brief historical overview which describes the "semi-proletarianization" of the African population during the colonial period in which the people of Southern Africa constituted a labor reserve for the mines in South Africa. Laborers were dependent both on their salaries and on receiving support from their families in rural areas since mine owners were not willing to pay wages that would ensure the reproduction of the family unit.

Views on what is acceptable work for men and women impeded women from obtaining salaried jobs which pay a supportable wage (e.g., women are generally hired as domestics and have no job security). Some 50 percent of the country's population depended on remittances in 1974, but these came largely from men who worked in the mines. Agriculture was viewed as a secondary activity for most households due to its tenuous nature and reliance upon rains for decent harvests. Yet women have been relegated to this activity. Where central villages have become overpopulated, a household may be divided with some members going to live on their fields during the agricultural cycle while older family members remain in the village with school-age children.

Of the 210 households interviewed in Kgatleng, Brown found that 35 percent were de jure female headed households (widows 20 percent; single women 15 percent). The area also has the highest out-migration of any district. Characteristic of female headed households as agricultural production units are the following comments: many do not own or hold cattle; they tend to plough late or not at all; and they may lack sufficient labor power to hoe and scare birds. Brown found that if cattle are owned, generally they number less than the critical 10 needed for ploughing. Half of the female headed households that ploughed did so by hiring a tractor--a very costly process. Widows have an added problem in that when their husbands died, the relatives of the deceased may have repossessed any family cattle.

Half of the women interviewed by Brown were unmarried mothers, few of whom received any support from the fathers of their children. Nutritional studies indicate these children are the most undernourished, and of these children, girls suffered most nutritionally.

An educational profile documents a high dropout rate for girls at the point of taking the 7th grade certificate exam. The most significant reasons for dropout were pregnancy and failure to pass exams adequately to gain entrance to the next higher level of schooling. Moreover, a survey of high school students indicated that females aspire to traditional female professions--teaching and nursing--which do not require higher certificates.

The paper concludes with a number of recommendations that concern helping women in income generating activities; allowing women who become pregnant to return to school; encouraging women to fight for their legal rights; and training greater numbers of female extension agents.

. Women's Role in Development in Botswana. Gaborone: Ministry of Agriculture, Rural Sociology Unit--Planning and Statistics, 1980.

. Women's Role in the Development of Kgatleng District in Botswana--A Preliminary Report. Gaborone: National Institute of Development and Cultural Research, 1978.

Bryant, Coralie. "Women Migrants, Urbanization and Social Change: The Botswana Case." Paper prepared for the 1977 Annual Meeting of the American Political Science Association, September 1-4, 1977, Washington, D. C.

As part of a survey research project on rural to urban migration conducted by the University of Botswana in Gaborone, Botswana, a sub-sample of 35 migrant women was chosen for in-depth interviewing to discover the potential for back migration, the underlying causes of migration, and the types of adjustment problems migrant women face. The women lived in "unit housing, site and service, self-help or traditional housing and servants quarters." The author found that type of housing correlated with differences in women's perceptions of their problems. The data indicate that women (who form the majority of migrants in Botswana) tend to migrate for economic reasons. The effects of South African mining (causing massive male outmigration), the collapse of polygamy and the responsibilities of women

with dependent children are interrelated factors. The women's own perceptions of their problems are presented and their stories help to elucidate their points. The women defined their major problems to be jobs, housing, and dependent children; the author perceived their major problems to be jobs, housing, the lack of child support from fathers of unmarried women's children (primarily when they are in mining camps or out of the country) and the lack of organizations in which women could use collective action for collective needs. A more generalized discussion of female employment compared with male employment in Gaborone elucidates the employment situation of migrant women. (Rihani Bibliography)

Campbell, A. C. "The Rural Economy: A Sociological Perspective." Botswana Notes and Records, Vol. 3, 1971: 192-94.

Enumerates the three main features of traditional life that changed with the new economic order: (1) the outlook on property, especially cattle; (2) the attitude towards the definition of labor between the sexes; and, (3) the hierarchy of the social structure. (Eicher Bibliography)

The author describes the modes of production of various peoples in pre-colonial times and notes that "each mode of subsistence had created around it set patterns of behaviour to which its members conformed. These patterns assured the continuation of the system and the relations to other members of his family. Foremost amongst these patterns was kinship--a man's relations to the other members of his family. The lower the subsistence level the more complex and widespread the kinship web, together with all the mutual economic ties involved. At the lowest subsistence level, economic ties extended beyond the family to every person in the group. The more evolved the subsistence level the less the kinship ties counted."

In speaking of more pastoral lifestyles Campbell notes that cattle were not killed for food, they were killed to emphasize important relationships and events and that they were a means of cementing position in society rather than as wealth alone.

In discussing the division of labor he notes that men conducted the "prestigious" work while women did the "necessary work of keeping the family alive." All this changed, however, with the introduction of money into the economy. He states that the result of a monetized economy placed a new value on cattle and crops, handcrafts, skins and ivory. At the same time it required that a new attitude be taken towards ownership and disposal of such items.

In pre-colonial times, Campbell posits that a man knew exactly where he stood in society and exactly what society expected of him. In the same way a woman knew her exact position and what society expected of her. Women's ambition was limited to marriage, and usually this was arranged for them.

The change in value orientation which occurred as a result of colonialism was more akin to new wine in old bottles than to a complete transformation. He cites several examples. The brigades, organized for mutual work and

learning, are really an extension of the old practice of grouping both men and women into age regiments for work and war. He notes the tradition of communal tenure could be reactivated for the purpose of establishing experimental and demonstration farms. He advocates a change in traditional attitude towards labor allocation, with men becoming agriculturalists and breeding fewer cattle of high quality instead of more cattle of poor quality. He notes also that women consider agricultural work a drudge and have no ambition to be vigorous cultivators. One of the main reasons for this is that women do not have the right to dispose of cereal crops, only men have that right.

Carruthers, Richard, et al. The Sun, Water and Bread. Gaborone: Ministry of Health, Nutrition Unit, 1978.

Reports on an Appropriate Technology Workshop on Food and Nutrition convened at the Rural Industry Innovation Centre, Kanye, November 5-17, 1978. Includes syllabus and critique of two-week workshop for better communication skills and construction techniques of family welfare educators and home economists in Botswana. (Eicher Bibliography)

Cliffe, Lionel and Richard Moorsom. "Rural Class Formation and Ecological Collapse in Botswana." Review of African Political Economy, May/December 1979: 35-52.

Links rural class formation and agricultural economy to 1) the impoverishment and "proletarianization" of poor peasants; 2) a worsening of the position of women in peasant households; 3) a general decline in food production capability; and 4) a closely linked "collapse" of an often fragile ecology. (Eicher Bibliography)

Although Cliffe's argument focuses broadly on rural transformation, the specifics about women are as follows: he feels women have borne most of the costs of rural transformation brought about by changes in the division of labor in the adoption of capitalist agricultural production and the ensuing shortages in the means of production. In drawing male labor into the mines in South Africa, women were left with the dual burden of caring for the home and family, as well as for all the agricultural production including the management of herds. Moreover, in the instances where females also migrated, jobs open to them were menial and very low paying. Thus, it is women, overall, who bear the costs of social reproduction. Cliffe notes that women who are left on the farm have greater control over the production processes, but that women have not been adequately equipped to assert efficient control and so are unable to attain economic self-sufficiency.

Colclough, Christopher and Peter Fallon. Rural Poverty in Botswana-- Dimensions, Causes and Constraints. Geneva: International Labour Office, Rural Employment Policy Research Programme Working Paper, World Employment Programme Research, 1979.

Analyzes the distribution of rural incomes and the highly inegalitarian ownership of capital in the rural areas. Concludes that the distribution of formal employment opportunities appears to have exacerbated this bias

against poorest groups. Urges action to change access to or ownership of cattle among the poorest 40% of rural households, concluding that rural income distribution will continue to become more unequal in the future if present situation continues. (Eicher Bibliography)

Colclough, Christopher and Stephen McCarthy. The Political Economy of Botswana. New York: Oxford University Press, 1980.

This volume considers issues relating to economic growth and structural change; political and constitutional change; mining, industry and dependence; migration, employment and income distribution; and schools, skills and social policy. The chapter on agricultural production and inequality is particularly germane to the current study.

An important link between cattle rearing and arable production is that the ox-drawn plough is used for repeated cultivation of extensive areas of arable land with rather low yields per hectare. As a risk-reducing strategy, mixed pastoral and arable production provides some security against the uncertainties of rainfall. Traditional methods of achieving a degree of security, which included redistribution of crops and livestock by chiefs, appear to be breaking down.

In analyzing rural inequality, the authors divided the rural population into three groups: those who own no cattle, those with small- to medium-sized herds (up to 50 head) and those with large herds (more than 50 head of cattle). They found that households with no cattle (45%) correlated positively with absolute poverty. A high proportion of this group consists of female headed households which are short of male labor for ploughing (a male task). Owners of small- to medium-sized herds (40%) were found not to have sufficient resources to acquire exclusive ownership of a borehole to water their cattle, but had a sufficient number of animals for ploughing. Owners of large herds (15%) practiced cropping as a peripheral activity (3/4 of the national herd is owned by this 15% of the population). The traditional practice of mafisa (lending out cattle) accounts for between 10 and 20 percent of the national herd.

Arable plots are generally located near villages while pastureland is more distant. Where arable land is not located nearby, families migrate from the villages to their fields where they remain intermittently until the end of harvest. A problem in ploughing is the condition of oxen at the onset of the rainy season, there being little grass for them to eat before ploughing commences. Tasks are allocated along gender lines: men plough, men and women plant, and women weed, scare birds, harvest and thresh.

An increasing consumer preference for maize over sorghum, a more drought-resistant crop, has been reported. This has resulted in part from the availability in the cities of a factory produced sorghum meal which is regarded as inferior to the hand-ground meal. The preference for maize may in the long run be attributable to the high requirement for female labor that sorghum requires in growing (more bird scaring) and grinding over maize.

Also positively correlated with cattle owning was the average hectareage planted, the overall average kg. production, and the ownership of implements. Where cattle are not owned, they must be borrowed or hired. This means that the owners of the oxen plough first, and then relatives, friends or clients may have access to the span. Normally oxen are available for hire or borrowing well into the rainy season thus allowing only a relatively small portion of an arable plot to be cultivated. A new invention--the Makgonatsotlhe (a "tool carrier") to which can be attached sweeps, planters, cultivators and scotch carts, and which uses donkeys as draught power, has helped to increase yields in farmer trials.

In times of drought, households depend for their food on the sale of livestock or on broad networks of family relationships. Where these relationships have broken down, an FAO study revealed that 30% of rural households depended at one time or another on food assistance and on food for work programs. These households, which comprise the poorest in terms of resources, were largely headed by women.

Females who are heads of household manage their enterprises using strategies different from more resource-rich farmers. Those who have no cattle either have close links with those who do, or receive some kind of remittances from migrant workers who are family members.

Comaroff, J. "Class and Culture in a Peasant Economy: The Transformation of Land Tenure in the Barolong." Journal of African Law, Vol. 24, No. 1, Spring 1980: 85-113.

Beginning with a political-economic sketch of the history of Barolong and Barolong Farms (a farmer training scheme), the author discusses some of the agricultural practices of the Tshidi chiefdom in terms of its adaptability to changing economic relations of production. He notes that people traditionally lived in villages, and when the chief so counselled at the outset of the rains, various members of a household would move their cattle from the cattle posts to the arable plots where both people and animals would stay until the harvest was over.

As a result of peasant capitalist formation in Barolong, those who did not accumulate capital through the generation of surplus became vulnerable to sharecropping agreements under disadvantageous terms. The author analyzes how the chiefdom was established as a separate political community in 1970. The Tribal Land Act, he argues, seemed to have been designed to leave existing land rights intact, while simultaneously changing the agency of distribution and management.

Throughout this analysis women are not mentioned as a group who were particularly disadvantaged in peasant-capitalist formation.

Comaroff, John L. and Simon Roberts. "Marriage and Extra-Marital Sexuality: The Dialectics of Legal Change Among the Kgatla." Journal of African Law, Vol. 21, No. 1, 1977: 97-123.

This article examines the changes that have occurred in marriage practices among the Kgatla since Isaac Schapera wrote on this subject in 1953. Labor migration has produced transformations. Women are no longer under the close scrutiny of their male guardians (fathers). When a child is born out of wedlock women now are able to seek compensation or child support from jural authorities, whereas beforehand a claim against the father of the child had to be made by the guardian. Polygyny is rare but has been replaced with serial monogomy; formal marriage negotiations can now be conducted between a man and a woman instead of between the guardians of two corporate groups; and restitution for a promise of marriage with subsequent bearing of children can be sought by individual females. Fines are also receivable by individual women instead of guardians, and are generally paid in cattle. The authors conclude that judicial institutions provide the public context wherein the logic of social order--and thus, of social change--may be apprehended and articulated by the Kgatla themselves; and it is this process which, in expressing the dialectic between social principle and its normative negotiation, underpins the dynamic of the legal system.

Commonwealth Fund for Technical Co-operation. The Horticulture Industry of Botswana: With Implications for Domestic Consumption and Export Opportunities. Toronto: Resource Management Consultants, Ltd., 1976.

Cooper, David. Rural-Urban Migration and Female-Headed Households in Botswana Towns: Case Studies of Unskilled Women Workers and Female Self-Employment in a Site and Service Area Selebi-Phikwe. Gaborone: Central Statistics Office, National Migration Study, Working Paper No. 11, 1979.

Presents twelve biographical case studies based on interviews with female heads of households. The biographies focus specifically on women who are unemployed, self-employed on a small-scale, or unskilled wage earners, and who have built their own compounds in town. (Eicher Bibliography)

Although the author indicates that each one of these cases is atypical, in their composite aspects these women's lifestyles are indeed typical.

Female urban squatters rely on beer brewing to generate income. Where enough is generated a female might enter into a cultivating partnership with a friend or relative in the rural areas to grow crops for sale in urban markets. Sometimes crops are grown by relatives in the rural areas and brought in by them for sale. In 1975 when one female sold beans and groundnuts, she grossed P90, but in selling sorghum and maize she grossed P228 profit. Reciprocal exchange also exists between urban squatters and rural peasants--melons, sweet reed and maize are sent to the city, while money, sugar and tobacco are sent from the city. These coping strategies are really an extension of the semi-proletarianization of the African economy begun in the colonial phase with laborers semi-dependent on both wages and rural production. Mines did not pay a sufficient wage to cover the cost of social reproduction; thus the cost of reproducing the family

was shared between wage earners and rural agriculturalists. The "oscillating migrant" gave rise to the rural female-headed household.

Women have access to land either through their parents or through direct appeal to land boards or tribal authorities, but do not have easy access to cattle. These are inherited by males as well as herded and cared for by them. Women can acquire cattle through cash savings. When women are hired to perform traditional agricultural tasks they are generally paid in kind or in reciprocal assistance rather than in cash (which men receive for clearing land, ploughing and planting).

The domestic division of labor has changed little since the 19th Century. With oscillating male migrant labor, the addition of agricultural and farm management tasks to the female burden has resulted in the need to renegotiate the domestic division of labor.

Where females find urban employment, kin networks provide informal creche services for children. Even though a wage-earning job may be found, incomes are supplemented in several ways, primarily by brewing beer and by holding beer and food parties. Hawking vegetables grown by relatives in the rural areas was problematic in Phikwe because members of a religious sect had cornered the market.

Women traditionally care for sheep and goats while males care for cattle. A three-generational matrifocal chain of relationships appears to be the female urban squatter's support network--the female head of household relies upon her mother in the rural areas and vice-versa for the support and sustenance of her children and for the reproduction of the social unit. Links with male relatives are diminishing in overall importance although a substitute father for a woman's children is sought in the form of a brother or a mother's brother who is seen as being able to give advice, care, or ploughing assistance when needed.

Curtis, D. "Cash Brewing in a Rural Economy." Botswana Notes and Records, Vol. 5, 1979: 17-25.

Although the traditional sorghum beer, bajalwa, was used in a variety of economic/social settings among most of the agricultural groups in Botswana, beer brewing has taken on different significance in Manyana and Mankgodi in the southeastern part of the country since the advent of the cash economy.

In some cases particular women become known for preparing good beer, and their compounds become places where people gather and where tankards are purchased and taken home to be enjoyed in the milieu of good friends. In other cases, several women might pool their resources to brew beer and share the profits much like a rotating credit society.

The agricultural calendar ends with the harvest and with people living at home during September, October and November before the new season's ploughing gets underway. This is the period of the year when much beer is brewed. The study found that the households with greater resources could brew more beer. Those headed by widows or single women lacked the labor

resources to be successful beer brewers. Proceeds from brewing and selling beer augment the domestic budget. Money can also be used for taxes, school fees, or the purchase of stock--all of which are generally the husband's responsibility.

Women reported that the value of a poor sorghum harvest can be increased 100% by using the sorghum to brew beer and then selling it, thus making maximum use of resources. (The author notes this was also done to milled corn that was distributed in a "work for food" program during a famine period.)

Other sources of income in the rural areas are highly unreliable; thus, beer brewing is an income-generating strategy which reduces the risk of starvation. The most successful strategy in the Manyana households was labor migration (68% of 190 households surveyed reported one or more absentee workers).

Curtis, Donald. "The Social Organization of Ploughing." Botswana Notes and Records, Vol. 4, 1972: 67-80.

This is a descriptive survey of 279 households, carried out in June/July 1971 in the Manyana area, where ploughing is usually done with a team of six or eight beasts. Ideally, the animals should be oxen, but if they are not available, bulls, cows and heifers are used. Results show uneven ownership of cattle and widespread use of mafisa cattle.

The practice of mafisa entails an owner giving some of his cattle or goats to another who cares for the animals, milks and works them and receives the first calf as payment on caring for the animals. Other practices differ slightly in that the caregiver is not paid with a calf for his services, but he may use the animals for ploughing during the period he cares for them.

Tswana ploughing customs involve one operation with corn, sorghum, beans and various cucurbit seeds thrown upon the section of the field to be ploughed. The soil is then turned covering weeds and covering seeds (plough-planting) with a broad mouldboard plough. The spread of quick grass has altered this practice and a two-part operation (turning the soil and planting) has been instituted to choke the effect of weeds and ease the burden of hoeing. Where more than one ploughing is required (as a result of changes in planting practices) sharing of oxen with neighbors is reduced as animals are required on one farm for longer periods. This has consequences for social relationships.

The practice of "putting in hands" to help one farmer who has draught animals is reciprocated by the oxen owner lending out his spans to his assistants. In this way, the author notes, a widow sent her two grandsons to work for two oxen owners and thus had two spans at her disposal when she wanted to plant. Women who own ploughs but no animals can make exchange arrangements with neighbors. The difficulties in these arrangements center on timing. Where loans of animals are made on a short-time basis (peak season), owners of the beasts take care of their fields first. In cases

where animals are "hired", ploughing might be done in good time. Widows and single women, who do not have males to help them, brew beer to earn money to hire both labor and draught animals.

The bond between brothers and sisters is instrumental in sharing animals and labor. The author argues that since sisters and their children are not in competition for the assets of inheritance there is more cooperation than with sisters-in-law who may be living in the same area (the paternal compound).

A conclusion the author reached about those who "plough alone" is insightful: those who plough alone must have sufficient draught power at their disposal, and the ability by negotiation, chance, or at the cost of offending the norms of cooperation within the family, to avoid obligations. Thus the ability to plough appears to be a function of wealth or a function of social relations.

Draper, P. "!"Kung Women: Contrasts in Sexual Egalitarianism in Foraging and Sedentary Contexts" in R. P. Reiter (ed.) Toward an Anthropology of Women. New York: Monthly Review Press (1975): 77-109.

Draper attempts to alter the view of !Kung women's work as uninteresting and unchallenging by analyzing the tremendous ecological knowledge these women possess in order to gather appropriate foods at the time they are ripe. She also notes the social processes in which women partake when gathering in groups. !Kung women retain control over their own production and can redistribute it as a gift to band members.

Although there is a distinct division of labor, especially concerning food gathering, other tasks might be shared. The author noted that while women traditionally build houses, men sometimes perform these tasks. Fetching water is generally women's work, but when the water source is quite distant men will haul it. Among sedentary !Kung, however, gender roles are more rigidly adhered to. To grow food, men clear the fields and erect brush fences around the gardens, while women perform the rest of the agricultural tasks. The diet of sorghum, maize, squash, melon, etc., does not offer the same rich nutritional variation as was available in more nomadic settings. The overall effect of sedentism, as the author asserts, is the decrease in women's autonomy and influence relative to that of men.

Duggan, William R. Informal Markets, Technology and Employment on Arable Land in Botswana. Gaborone: Ministry of Agriculture, ALDEP Employment Study, Paper II, 1978.

Egner, E. B. and A. L. Klausen. Poverty in Botswana. Gaborone: University College of Botswana, National Institute of Development and Cultural Research Documentation Unit, Working Paper No. 29, 1980.

Eicher, Shirley F. Rural Development in Botswana: A Select Bibliography 1966-1980. Washington, D. C.: African Bibliographic Center, 1981.

This bibliography is a very valuable resource. Among the categories of materials the author either noted or annotated are government documents, analyses of agriculture, development, education and training, employment, labor and migration, health and nutrition, land tenure and land use, livestock, marketing, cooperatives and credit and women in development. Many of Eicher's annotations have been noted and utilized in this selected bibliography.

Fair, T. J. D. Towards Balanced Spatial Development in Botswana. Pretoria: The Africa Institute of South Africa, 1979.

Family Health Care, Inc. and Africare. Health and Development in Southern Africa, Vol. VIII. A Review of Health Care in Botswana: Issues, Analyses, and Recommendations. Washington, D. C.: AID, Southern Africa Development Analysis Program, 1978.

The major causes for morbidity in Botswana are respiratory and gastrointestinal ailments, and pulmonary tuberculosis is a major cause for hospitalization. Malnutrition is uncommon, but chronic undernourishment is more prevalent due to lack of total food intake.

Urban migration has been running about 16% annually for the past several years.

High nitrate concentrates in water from boreholes and groundwater supplies has affected children. It is envisioned that by 1985 all villages with more than 500 inhabitants and 2/3 of settlements with less than 500 will be supplied with safe water. It is intended that nobody should have to walk more than 400 meters to the nearest standpipe.

Women of child-bearing age comprise 20% of the population. Family welfare educators--mainly women--receive three months of pre-service training to work in their villages on local health problems--child care, immunizations, family planning and nutrition. The educators are chosen by Village Development Committees.

Reported population statistics include a growth rate of 2.6%; a low mortality rate, and a low infant mortality rate of 97/1000 births. Fertility is 6.5 births per woman. Child bearing is spaced in accordance with the belief that a woman should not conceive until her last child has been weaned at about 18 months.

Recruiting women for nurses' training is difficult because other careers offering better salaries and working conditions are available. Early marriage, child-bearing and family obligations are additional facts which cause a drop out among nurses trained.

Finch, Glenda S. and Peter O. Way. Country Demographic Profiles Botswana. Washington, D. C.: U.S. Department of Commerce, Bureau of the Census, June 1981.

In 1978 approximately 80,200 females and 65,200 males were enrolled in primary school. During that same year approximately 8,900 females and 7,000 males were enrolled in secondary schools.

In 1971, 67.9% (140,000) of the total female population 10 years and older worked in family agriculture, while 5.8% (12,000), worked for a salary; 66.7% of the male population (107,100), worked in family agriculture, while 23.4% (37,600) worked for a salary.

The projected mid-year population for 1980 was the following:

Total	794,700
Male	367,300
Female	427,400

Fortmann, Louise. Women's Agriculture in a Cattle Economy. Gaborone: Ministry of Agriculture, 1981.

Two problems seem to affect women in agriculture more than men: access to draught power and labor. Over 50% of female headed households (varying between 20% and 43% of the total) own no cattle; of those who did own them, 60% had ten or fewer. Average small stock herd size was 5.1 for females. Households without sufficient draught power generally plough late as oxen must be borrowed after they have been used by their owners. Where animals are not available there must be ready cash to pay for the hiring of a tractor and a man to drive it. Such cash outlays reduce profit per acre. Women do undertake ploughing with animal draught when necessary, but this activity is incompatible with pregnancy, carrying small children and the completion of household chores. While women might hire some of the labor power, it is generally thought to be unreliable due to low wage rates. Poorer females hire themselves out to other farmers on a sharecropping basis known as majeko. Arguments for and against women remaining in agriculture are examined in the conclusion. Recommendations are made concerning what might be done to either eliminate or accommodate the special constraints women face in agricultural production.

Women's Involvement in High Risk Arable Agriculture: The Botswana Case. Washington, D. C.: AID, 1980.

The author begins her study with a review of the literature on women in agriculture in Botswana. A point she stresses is that women have little access to draught power for cultivating and few or no cattle to serve as "savings on the hoof." Incomes of female headed households are not substantially increased by remittances from husbands working in the mines in South Africa, so that 54% of these households earn below the poverty line set at P395/year. Access to labor for these households is also problematic in that the quality, reliability and quantity of time of male laborers is always open to conjecture.

An analysis of data collected from a Water Points Survey is presented. Women stated that lack of seed was yet another problem in growing more crops. Since women gain access to draught power later in the planting season, they are unable to fully utilize the land they have. Thus, their harvests are smaller and they are unable to save sufficient seed from their harvests to plant in the following year.

Policy issues are considered in the following section. Fortmann notes the creation of the post of Agricultural Officer for Women's Extension, but this has not solved the labor and draught problems. She points out difficulties in making draught or tractor power available (insufficient arable land, no room for grazing, operating costs) and in providing incentives for increasing agricultural production. She asserts that one way to keep women in agriculture, opposing the already-existing transformation of women's work to more artisan and market-focused occupations, is to provide direct subsidies to women. Additional funds could be utilized to solve both labor and draught problems.

The report concludes with a recommendation that agricultural researchers move off the research station and on to the farm to discern the specific problems of women so that more relevant solutions can be developed.

Fortmann, Louise P. and Emery M. Roe. Common Property or Scarce Resource: The Management of Dams in Botswana. (No publishing information)

A discussion of the function of dam groups. Dam groups were proposed as a solution to "poorly managed dams," i.e., those dams which had been subject to severe overgrazing and overstocking pressures through time. The strategy held that a group which was given exclusive rights of use over the dam would conserve the water and grazing resources and thereby manage the dam better. While some groups have been quite successful recently in other enterprises in Botswana, most of these dam groups failed to manage the dams according to government procedures. Some groups were created by agricultural extension staff rather than rising in response to a community initiative. Some were, in a sense, a means of getting something for nothing, since these groups were not required to contribute more than a token amount of money and only in a few cases labor as a prerequisite for obtaining exclusive rights of use. There was in some cases a lengthy hiatus (two years or more) between the formation of the group and the building of the dam which was itself done with a minimum of participation. Failure of the government to finish equipping some dams led to these not being formally turned over to the groups. Groups were sometimes expected to undertake tasks which made little sense to them--planting on a dam wall grass which was unlikely to survive livestock trampling; encouraging people to use a hand pump rather than simply turning their cattle loose in the reservoir. Moreover, the dam groups, which were meant to be limited groups (intended for not more than twenty people with no more than four hundred livestock units), ran afoul of the traditional perception that water and the water source are common property, the access of which should not be denied to anyone, especially those in need. Dam groups were thus often loathe to restrict access or collect fees from users, whether they were members of

the group or not. Also, many dams only incrementally extended the availability of the rainy season supply of water in any given area and hence were of marginal importance in the water user strategy of maintaining year-long access to water. Differing perceptions of the same water point by dam groups and by government are at the heart of the management and participation issues. (Sociological Abstracts)

Fox, Ray S. Farm Management Survey Results. Gaborone: Division of Planning and Statistics, Ministry of Agriculture, 1981.

The fourth in a series of farm management survey reports covering 1970-1980, this writing continues to document trends and variations in weather and how it effects both crop and livestock production. The objectives of the survey are: to describe farm enterprise organization, to identify physical and financial returns in the form of input-output and cost-returns data for individual crop and livestock enterprises, to establish standards for planning and decision-making purposes and to identify changes in agricultural production practices adopted by farmers over time. Data was collected from farmers at nine collection stations: Polokwe in Ngwaketse North, Gakgatla in Kweneng South, Mookane in Mahalapye, Maunatlala in Palopye, Masunga in Tate, Matobo in Tutume and Gorokhu in Ngamiland East. The other two stations were established in Ngamiland but data were not included in this report. Methodologically, data was stratified by station, by female farmers with and without adequate draught power and by males with and without adequate draught power. Data presented in tabular form are comprehensive and provide information according to gender.

Some of the findings of the survey include the following. Crops were grown by 91% of survey farmers with sorghum grown by 92% of crop-growing farmers (constituting 45% of planted area), maize grown by 95% of crop farmers (29% of planted area) and beans by 81% of farmers (14% of planted area). The average area devoted to crops in 1980 by survey farmers was 5.7 hectares, but 45% of farmers planted on less than 4 hectares and 16% planted 10 or more hectares.

Among survey farmers, males with adequate draught power had net incomes from crops about double that of females. This is attributable to 31% of female farmers using tractor power compared to 12% of males (with a variable cost to females 56% greater than to males), to female farmers planting smaller amounts of land and to females receiving slightly lower commodity prices on their crops. Females with inadequate draught power had higher crop incomes than males. Farmers with the highest per hectare income from crops tend to have lower incomes per livestock unit from their livestock activities and vice versa.

Since certain of the specific findings on crop production are relevant to this Resource Guide, they are presented below in full rather than in abstract form.

Of the 120 FMS sample farmers 92 percent or 110 farmers planted crops in 1980. Following are selected summary findings of those farmers' practices and opinions.

1. Plowing practices--Cattle were the primary source of draft power used for plowing in the spring of 1979. They provided the draft power for 72 percent of the farmers, donkeys 16 percent and tractors 12 percent. Only one of the 110 farmers fall plowed their crop land for the 1980 crop. Of the remaining farmers 41 percent plowed after the first planting rain while the remaining 58 percent plowed later. Forty-four percent of the farmers who plowed later did so because of inadequate draft power and another 44 percent because their draft animals were in poor condition. The reason the latter was so high was because of the poor grazing conditions that prevailed during most of 1979 in many areas of Botswana.

Although only one farmer plowed in the fall of 1979, 53 percent of all the farmers fall plowed at one time or another in the past. Of these farmers 38 percent felt weeds were a greater problem, while 35 percent thought they were less when fall plowed. Sixty-seven percent of the same farmers felt that their yields were the same or less when fall plowed. Of all the farmers, 17 percent said that they would not fall plow in the future primarily because they did not think it was beneficial.

2. Planting Practices--Broadcasting seed just prior to plowing continues to be the most dominant method of seeding crops. The broadcast seeding method only was used by 84 percent of the farmers. An additional eight percent did both row planting and broadcasting. Sixty-two percent of these farmers said that they did not row plant because they did not have nor could they afford to buy a planter. However, 84 percent of these farmers said that they plan to row plant some time in the future.

Of those farmers who seeded their crops by broadcasting, 76 percent practice mixed cropping. Somewhat more than half of these farmers practice mixed cropping to save time especially when rains are late and 44 percent felt it was more reliable in low rainfall years. In addition, 30 percent believed mixed cropping required less labor.

Some farmers, 38 percent, intentionally stagger their planting dates. Of these farmers, 79 percent stagger their plantings to improve the chance that some of their crops would be in a growth cycle that could best utilize the rainfall pattern of the year. In addition, 38 percent of these farmers staggered their plantings to spread out their labor inputs over a longer period of time.

When planting the 1980 crop 25 percent of the farmers used seed from their previous year's production. When selecting their seed, 73 percent made their selection in the field from standing crops. The remainder of the farmers selected their seed from their crops while in storage. Twenty-five percent of the farmers acquired their seed from cooperatives, 20 percent from the drought relief program and about 12 percent each from BAMB, private traders and friends or neighbors. The type of seed most often acquired from outside sources was sorghum followed by maize then beans.

3. Fertilizer Practices--Only two of the 110 survey farmers growing crops used chemical fertilizers on their 1980 crops.

Manure is a more commonly used fertilizer. Thirty-one percent of the farmers said that they had used manure during the last five years. All of the farmers that used manure said it improved yield. Of the 69 percent of the farmers that did not use kraal manure 34 percent said they had no way of transporting the manure from the kraal to their fields. Twenty-one percent felt that manure didn't improve yield while another 20 percent said it required too much labor. A significant 14 percent said that they knew nothing about the use of manure as a crop production input.

To get an understanding of the amount of kraal manure available and its location, farmers were asked where they kraaled their animals relative to their fields and for how long. Eighty-four percent or 101 of the survey farmers had livestock. Of these farmers, 63 percent kraaled some or all of their livestock some time during the year. The average number of livestock unit months that animals were kraaled (night time only) was 107 of which 100 livestock unit months were cattle and 7 were small stock. Assuming that 5 kilograms of kraal manure is produced daily per livestock unit then 107 livestock unit months would yield about 16 tons. This is approximately what is required for one hectare. Thus the average farmer with livestock who crops between five and six hectares would be able to manure all their crop land about once in every five years or so.

The average distance between kraal and crop land is relatively short at 0.8 kilometers. Seventy-eight percent of the farmers who kraaled their livestock had their kraals within one kilometer of their crop land.

The farmers were asked if their land was producing as well as previously. Half of the farmers felt that their land was producing less well than it did before. As a result of this 44 percent of these farmers said that they would apply manure or fertilizer, 32 percent said they would keep farming as they have been in the past and 14 percent said they would abandon their land.

4. Weeding Practices--Survey farmers generally weed their crops once during the year. Seventy-five percent of the farmers weeded their crops once in 1980 while 23 percent performed this activity twice or more. The remaining two percent did no weeding at all. Of these farmers who weeded only once 74 percent did so because they did not have enough labor to do more weeding. Twenty-nine percent of these farmers felt one weeding was sufficient.

The hand hoe was used almost exclusively for weeding purposes. Ninety-nine of the farmers used the hoe for some or all of their weeding needs. Of the 16 percent of the farmers who did some row planting 33 percent used a cultivator on some of their crops. The reason 92 percent of the farmers who row planted but did not use a cultivator was because they did not have access to one.

5. Water Sources, Fencing and Lands Area Occupancy Practices--Almost one-half of the survey farmers or someone from their household stay permanently on their lands area. About one-fourth of the farmers go to their lands

area for plowing and planting then leave and return occasionally during the crop growing season and for harvest. Another one-fourth of the farmers go to their lands area for plowing and stay until harvesting is completed before returning to their villages.

Boreholes provide 40 percent of the survey farmers with their water needs at the lands area. Thirty-three percent acquired their water from wells while 28 percent do so from rivers and pans.

Thirty-four percent of all the survey farmers have their crop land fenced. Of these farmers, 70 percent have bush fences and 38 percent have wire fences. Also, 26 percent of all the farmers have some protection of their crop land through the presence of community built drift fences.

Garforth, C. J. Crop Husbandry in Southern Botswana: Report of a Knowledge, Attitudes and Practices Study. Gaborone: Ministry of Agriculture, Evaluation and Action Research Unit, Agricultural Information Services, 1979.

Examines the attitudes toward crop husbandry in Kweneng North and Ngwaketse North, in conjunction with the preparation of an educational campaign on crop husbandry. (Eicher Bibliography)

Gibbon, D. Dryland Crop Production Systems in Semi-Arid Botswana: Their Limitations and Potential for Improvement. Norwich: University of East Anglia (Overseas Development Group, Development Studies Reprint 1), 1974.

Gibbon, D., J. Harvey and K. Hubbard. "A Minimum Tillage System for Botswana." World Crops, Vol. 25, No. 11, Sept./Oct. 1974.

This article explains the design and various functions of the "versatool," an animal-drawn tool which has several attachments for several operations: overall sweeps, overall chisel plough, marking out, subsoil plough, planter, steerage hoe and fertilizer application. The tool can be helpful in cultivating cowpeas.

Gollifer, David, Theo Wilcocks and David Salmon. "Dryland Farming." Botswana, No. 5 (n.d): 27-31.

Timing is crucial to seed planting and seed-bed preparation since more than half of the semi-arid soils of Botswana form clods as a result of sporadic rainfall patterns. Primary tillage breaks open the soil surface and allows rain water to penetrate the soil and reduce run-off of water. Reduced tillage techniques need to be devised, therefore, which require less draught energy. Two types of crop production systems have been developed--one using a traditional mouldboard plough and the other an animal-drawn tool bar, the former being used in the autumn before soils dry up and oxen are still in good condition. Autumn ploughing allows for spring rains to easily penetrate the soil and enhance the preparation of seedbeds and early planting in November and December.

Crop rotations in the dryland areas are as follows: sorghum, sunflower, sorghum, cowpeas, sorghum, and maize.

Graff, J. F. "The Brigades of Botswana." Social Dynamics, Vol. 6, No. 1, June 1980: 25-35.

The Botswana Brigades attempted to apply socialist principles of education within an underdeveloped capitalist country. Their success in this endeavor is examined on the basis of published reports. While they now supply a significant proportion of skilled artisans in Botswana, they have drifted away from their original philosophy and have failed in the spheres of activity most essential to a less developed country: agriculture and rural development. (Sociological Abstracts)

Grant, Sandy. "Old Struggles, New Hopes." Botswana, No. 4, n.d.: 53-57.

The common sequence of family disintegration resulting from male heads of household going to work in the mines is as follows: absent husband finds second wife, contact with the home ceases, support dries up and the women, mother and wife, are left to struggle all alone as best they can.

Where a family has a substantial number of cattle, occasional sales to the meat commission help meet larger expenses while sorghum and beans serve as the family staple.

Grivetti, L. E. "Nutritional Success in a Semi-Arid Land: Examination of Tswana Agro-Pastoralists of the Eastern Kalahari, Botswana." American Journal of Clinical Nutrition, Vol. 31, No. 7, July 1978: 1204-1220.

This study, which was undertaken between April 1973 and May 1975, focuses on dietary traditions and nutritional status of the Moshaweng Tlokwa, a Tswana agro-pastoral society in Tlokweng, Southeast District, Botswana. The author found that during July-September families live in villages, but with the onset of the rains in October, families move to homesites at the interface between agricultural fields and communal grazing lands 6-12 kms. from the village.

Nutritional success during severe drought falls into five broad categories: 1) diversified food base, 2) food preservation techniques, 3) cooking methods, 4) dietary practices, and 5) food distribution mechanisms.

Food Base--Of 126 holdings examined, the following agricultural crops were noted: sorghum (16 varieties)--99%; maize (6 varieties)--40%; sweet reeds (6 varieties) 37%; cowpeas--44%; tepary beans--27%; peanuts--15%; hem squash--58%; pumpkin--33%; watermelon--29%. Of 145 household gardens examined, the following horticultural crops were noted: maize--50%, sweet reed--27%; peanuts--41%; potatoes--10%; pumpkin--25%; gem squash--19%; watermelon--13%; tomatoes--34%; peaches--32%; black mulberries--30%; oranges--18%; grapes--16%; papaya--15%; pears--13%; figs--12%; bananas--11%.

Preservation Techniques--Foods are sun-dried, salted, parched, or fermented. Leaves of several wild and domesticated species may be cooked, sundried, and stored for winter use.

Food Storage--Traditionally each family compound had its own mud, timber and thatch silos, with the headman or chief erecting a separate silo for communal food resources to be distributed at a time of greater need. The silo tradition, the author contends, has been abandoned and grain is now stored in rough burlap sacks and kept dry under protective plastic tarps or sheets of galvanized metal. Freshly harvested and sun-dried vegetables are stored in burlap or leather bags and unhulled legumes are stored in the same manner. Cracked pots, no longer serviceable as water or cooking containers, hold small quantities of grain, legumes or wild seeds.

Cooking Methods--All varieties of legumes are boiled whole in the pod. After cooking, the shells are split, seeds consumed and pods discarded. Legume pods are eaten, however, during periods of food shortage. All legume dishes are referred to as dikgobe and these are difficult to disaggregate in research. The following combinations, however, were noted: peanuts mixed with boiled, stamped maize flour; peanuts blended with boiled sorghum; beans mixed with boiled maize flour and cracked maize kernels. Cowpea leaves are commonly stewed and served with meals as green vegetables or as relishes.

Dietary Practices--Three meals are prepared daily--a breakfast of sorghum porridge, a mid-day meal of meat, stiff porridge and green vegetables and an evening meal of leftovers from the mid-day meal. Children are breastfed for about one year and are weaned on to thin gruels or porridges prepared from sorghum. Encouragement to abandon breast feeding is conducted by smearing a paste made from chicken dung, hot spices or tobacco on the nipples. Boys and girls are forbidden to eat the meat of certain animals and honey due to the belief that consumption promotes forgetfulness. Girls are not allowed to eat eggs for a number of reasons related to fertility and child bearing. Pregnant women have special diets which strongly favor the inclusion of dishes prepared from stewed green leaves, especially those from domesticated cowpea or selected wild species. Great quantities of green-leafy vegetables are served to mothers in the months after delivery, but the ingestion of all legumes stops until children have been weaned.

Food Distribution--When an animal is killed, meat is distributed according to sex, age and social status. In times of food shortage, relatives ask each other for food before going to the chief for a gift.

The author concludes on a note of warning--should the Tlokwa embark upon cash crop farming on a large scale, the damage done to the environment in clearing the bush will endanger the plant species which have provided these people with the diversity of foodstuffs for survival. If diversity cannot be maintained, the Tlokwa face an uncertain future.

Quenther, M. G. "Bushman Hunters as Farm Laborers in the Ghanzi District of Botswana." Canadian Journal of African Studies, Vol. 11, No. 2, 1977: 195-203.

This is a study of how San people have adapted to sedentary agricultural practices, even though they have traditionally been hunters and gatherers. The study covers about 4,000 people who have become a part of the labor

force of the rural economy. This labor force is employed almost totally on white cattle farms which number about 300.

The author notes that even within the farm community, San "camps" or "bands" remain together thus maintaining traditional social organization. Problems in adaption center on three points: the nomadic-type lifestyle of bands, the inability to accumulate stock holdings and an inability to "make do" on the lower-than-subsistence wages, the attitudes of non-San people toward the San--e.g., "once a hunter, always a hunter."

While no comment is made specifically about women, it is ascertained that where San join the labor force a number of gender-related issues will arise.

Gulbrandsen, Ornulf. Agro-Pastoral Production and Communal Land Use, A Socio-Economic Study of the Bangwaketse. Gaborone: Ministry of Agriculture, Rural Sociology Unit, 1980.

Discusses rural poverty and the increasing absolute number of poor households which have very few cattle and which produce crops below the subsistence level. Examines the increasing pressure on communal land resources and the serious danger of deterioration of grazing land. (Eicher Bibliography)

. On Socio-Organizational Aspects of the Bangwaketse Land Tenure System with Special Reference to the Tribal Grazing Land Policy. Bergen, Norway: University of Bergen, 1978.

Discusses the implementation of the TGLP within the Bangwaketse territory, and man's relationship to his land and to the community with regard to land. (Eicher Bibliography)

Hamilton, Andrew G. A Review of Post-Harvest Technologies, Botswana. Ottawa: Canadian University Service Overseas, 1975.

This report is an in-depth analyses of agricultural practices, storage techniques and facilities, marketing and distribution channels, utilization of sorghum as the crop most widely grown, and the results of a rural consumer food preference and storage survey in Kweneng District. The survey makes the point that rural women earn most of their income from beer brewing (from sorghum). No less than 40% of the households are headed by women and this figure does not include those women who are nominal household heads while their husbands and/or fathers are temporarily absent from the area on labor migration.

The three crops most widely grown in the survey area are sorghum, maize and cowpeas. Wood and manure ash are commonly used insect preventatives in storage. Where cowpeas are stored, damage levels are higher than for the other two crops. When animals are used, women have to rely on men for ploughing and carting activities. Estimated legume consumption per person per year is 24.3 kgs or 66 gms/day. These include cowpeas, jugo and mung beans. They are eaten generally at lunch and dinner time.

Henderson, Francine I. Women in Botswana: An Annotated Bibliography. Gaborone: University College of Botswana, National Institute of Development and Cultural Research, Working Bibliography No. 4, 1981.

A general bibliographical guide on women in Botswana with references as to where each item is found in Botswana.

Higgins, Kathleen M. Women Farmers and Their Training. Gaborone: University College of Botswana, National Institute of Development and Cultural Research, Working Paper No. 39, 1981.

This is an evaluation report of a non-formal education program provided for women by the Ministry of Agriculture at rural training centers. The first chapter is an overview of the WID perspective and how it bears upon women in agriculture in Botswana. The second chapter discusses the lack of educational opportunity at all levels for women and broadly outlines the various departments and institutes which have NFE components. It also details the background of how women's courses in agriculture were introduced at the NFE level. The third chapter describes courses offered at various training centers including a breakdown of which courses were requested and which were offered, an outline of recruiting and training practices and an evaluation by the women themselves as to whether or not their needs were met. The final chapter asks certain evaluative questions of the program in general and makes several recommendations as to how programs might be changed to better meet women's needs, including having them participate in developing their own programs.

Hinchey, Madalon T. (ed.) Proceedings on the Symposium on Drought in Botswana. National Museum, Gaborone, Botswana, June 5-8, 1978. Gaborone: The Botswana Society, 1979.

Botswana was ill-prepared for the severe drought which affected it during the 1960s. As there is a strong possibility that extended drought following a series of below-normal rainfall years will occur in the 1980s, and with the lessons of the Sahel drought of the 1970s in mind, the Botswana Government is actively examining strategies and making plans to cope with future droughts. The Botswana Society organised a symposium in 1978 to further this objective, and in collaboration with the Government, University College, Botswana, and Clark University, Massachusetts, invited participants with both local and international expertise from a wide range of disciplines. The proceedings consist of twenty-eight papers, edited discussions and speeches loosely grouped into the physical and social aspects of drought and with a substantial final section on combating and ameliorating drought. Many papers are short but all are informative and only about half relate solely to Botswana so that there is much of interest for students of other parts of Africa. In view of the increasing need for inter-disciplinary understanding of such problems as the ecological, economic and social collapse which may accompany drought, this volume is one that can be recommended to a wide readership. (Review by R. A. Pullan, Africa, 50 (2), 1980.)

Hitchcock, Robert K. Kalahari Cattle Posts. Gaborone: Ministry of Local Government and Lands, October 1978.

This is a preliminary draft describing a number of different people and their agro-ecological adaptation to the Western Sandveld Region of Central District. The study includes a profile of the natural environment, the social environment, the physical and social infrastructure, water source locations and ownership, the various economic systems of the Sandveld including hunting and gathering, pastoralism, employment and agriculture. The study concludes with a number of recommendations to the government relating to the Tribal Grazing Land Policy and a general development policy for the area. The analysis is based on agronomic data and does not disaggregate findings by gender.

_____. "Tradition, Social Justice and Land Reform in Central Botswana." Journal of African Law, Vol. 24, No. 1, Spring, 1980: 1-34.

This article addresses the issue of land tenure as it was altered as a result of the Tribal Grazing Land Policy of 1975, and how traditional political and social organization have been attenuated as a consequence. The study focuses particularly on the Ngwato people (a Tswana group) of the east-central Kalahari. Prior to the implementation of the policy, residential and arable lands were divided according to ward affiliation, pastoral zones were divided for use by several wards, and hunting areas were unallocated. Access to land was through membership in a social group, which was hierarchically stratified with a chief and his royal family at the apex, commoners who were absorbed through conquest, foreigners who had sought refuge among the Ngwato, and serfs who were members of other ethnic groups held in low esteem (e.g., the San, the Kgalagadi and the Sarwa). As serfs, property ownership was denied, and as a result these groups did not own cattle nor did they have access to land for their own use. All of these practices changed, however, as a result of the policy.

Concerning access to water: all open surface waters were considered tribal property and were accessible to any who needed them for their cattle. However, when an individual sunk a borehole, dug a well or built a dam, the person responsible had sole use rights over that water. But permission to make these capital improvements had to be sought from traditional authorities.

Concerning land rights: Government-created land boards (1970) transferred land allocation from tribal chiefs to a body of elected and appointed members, although in many instances the transition has not been complete. Where land was divided into commercial and communal zones, previous occupants in "commercial" areas were forced off the land or became squatters subsisting on gathered or begged-for food. This was especially true for non-stockholding populations such as the Sarwa who were never given access to land and who were traditionally perceived of as hunters with no permanent residence (although every anthropologist writing on hunting-gathering populations comments on their territoriality).

The overriding concern of the author is that traditional institutions are perceived of as being static and unstructured resulting in the political elite of the country expanding its authority at the expense of local-level organizations. He notes that unwillingness to take into account the comments of tribal authorities has already resulted in the failure of a highly capitalized development project--the AID Range and Livestock Management Project--and that such lack of success will continue if certain social variables are not considered.

Hjort, Anders and Wilhelm Ostberg. Farming and Herding in Botswana. Stockholm: Swedish Agency for Research Cooperation with Developing Countries, Report No. R:1, 1978.

Surveys literature on farming and herding in Botswana over the last 20-30 years. The authors raise a number of troubling issues about changes in Tswana society and rural development. The unspoken conclusion is that inequality in rural areas is increasing as Tswana move into the monetized economy. Recommends more research on who benefits from migration, on causes of rural inequality and on the role of women in rural development in Botswana. (Eicher Bibliography)

Farmers in Botswana tend to participate in a number of activities and conduct a mixed farm, mixed crop enterprise to withstand the exigencies of climate. As a result of overgrazing, the withdrawal of mutual labor to the mines or cities, etc., the subsistence farmer is becoming more and more sub-subsistence. About half the households in any given village live under subsistence level.

While traditional chiefs and herdsmen no longer have power over when sowing and harvesting are to begin, many of these former political leaders profited from their positions during the colonial period and now often comprise the people who own the local tractor, oxen or plough teams. Political support is maintained by a chief pledging the use of his farm equipment to his supporters.

Households headed by single mothers have few or no cattle. They lack an economic base to establish an independent household and thus are dependent upon the male members of their families.

Due to the scarcity of water, cattle are taken to cattle posts which can be quite distant from the homestead. In such cases, and when the family does not have sufficient resources to hire herdsmen, it is possible that both fathers and mothers may live at the post during the dry season. The authors note that this is especially the case when arrangements can be made to house school-age children so that when parents go to the posts, the children will be taken care of.

Government development programs to improve herding practices and the quality of livestock and to develop marketing systems, etc., have largely benefitted the economic elite of the cattle industry--who themselves may be government officials. In such situations, increasing numbers of the rural population must gain their livelihood from activities other than herding.

Settlements have become more dispersed as a result of fragmentation brought about by the increasing inability of chiefs and headmen to allocate land. Cultivable fields as well as cattle posts are the locales for many new homes. This movement has tended to isolate social units and has precipitated interaction on the basis of mutual commercial interests and formal agreements rather than familial loyalties and obligations.

Hudson, Derek J. "Rural Incomes in Botswana." Botswana Notes and Records, Vol. 9, 1977: 101-108.

Reports on a sample survey to measure rural incomes, including the statistical distribution of income among citizen households in rural areas of Botswana; the extent of relative poverty; the extent of absolute poverty; the contributions of various sources of income to the total household income; the relation of income to the number of cattle owned by the household. Also analyzes certain socioeconomic characteristics such as size of household, how household members spend their time, fertility patterns of mothers, etc. (Eicher Bibliography)

Income was generated through the following activities: 1) sale of maize, sorghum and millet crop, as well as of beans and peas (a high proportion of the latter was sold due to favorable prices); 2) sale of small stock (goats and sheep); 3) employment in areas ranging from the full-time "modern" to casual subsistence sector (e.g., temporary reaper of crops at harvest); 4) beer brewing; 5) petty commodity production, and other means. Data on the distribution of the incomes earned through these activities was not disaggregated by gender.

Institut D'Études Economiques et Sociales. Transformation of Customary Land Tenure Systems as a Result of Socio-Economic and Political Change: The Case of Botswana. Paper prepared for the World Conference on Agrarian Reform and Rural Development, July 12, 1979, Paris.

Describes changes in land tenure and land utilization, and discusses problems relating to land reform. (Eicher Bibliography)

Izzard, Wendy. Rural-Urban Migration in a Developing Country: The Case of Women Migrants in Botswana. D. Phil. Thesis, Oxford University, 1982.

A more detailed and comprehensive account than the fieldwork report annotated below.

Rural-Urban Migration of Women in Botswana, Final Fieldwork Report. Gaborone: Ministry of Finance and Development Planning, Central Statistics Office, National Migration Study; Ministry of Agriculture, Rural Sociology Unit, 1979.

Presents some preliminary results drawn from nine months' fieldwork in Botswana on rural-urban migration to Gaborone, focusing on women who are heads of households. The research emphasizes the following topics: the emergence of female-headed households and the matrifocality of the family group; the stages of formation, growth and decay of the life-cycle of the

household in terms of support; the generational structure of these households; the interdependence of female-headed households; the decision-making process in migration; the degree of permanency of the migration, and the social and economic problems encountered by these women and how such problems can be overcome. (Eicher Bibliography)

The author interviewed 84 female household heads in Gaborone and 61 in the villages of Kanye, Ramotswa and Oodi. Methodologically, she used a life history matrix format to ascertain information on migration. Under "Emergence of Female-Headed Households" Izzard defines matrifocality as a situation where jurally, children are not necessarily affiliated to their father's kin and where in terms of domestic relations and child rearing, the mother and maternal kin predominate. A full 82% of the sample interviewed fell into this category. Matrifocality tends to correspond with the declining importance, both socially and economically, of the father-figure within Tswana society. This may be due to the changing pattern of economic relations where rural women are legally allowed to own their land and urban women can support themselves through formal employment. Moreover, a century of male labor migration made females de facto heads of household; with legal and economic independence, women have become de jure heads of household. She notes that female heads who have not had adult males live with them predominate in the urban areas while female heads who are widows, divorced or separated predominate in the rural areas. Some 69% of the latter households are older (past child-bearing age). Of those in the city, 61% first resided with relatives and friends in Gaborone before establishing their own households.

While migration of a female to Gaborone is seen as bringing potential benefit through remittances to the rural household, the study revealed that 36% of the urban women were supported solely by their parents at the birth of their children.

Some 77% of rural women either owned or borrowed land, but many had not ploughed for several years due to the unavailability of labor. In discussing why women migrate, the author makes the following points: educating a daughter predetermines her migration to town; unmarried mothers must earn income to support their children and that need guides women to migrate; as women rarely set up their own households in town immediately, the presence of a relative or friend with whom to stay might enhance the decision to migrate.

The paper concludes with a number of policy recommendation on how to address the needs of female-headed households, and how the government needs to change its perceptions of women to that of human capital which should not be wasted.

Kann, Ulla. Voluntary Women's Organizations in Botswana. Gaborone: Swedish International Development Authority (SIDA), 1979.

Kerven, Carol. "Academics, Practitioners and All Kinds of Women in Development: A Reply to Peters." Journal of Southern African Studies, Vol. 10, No. 2, April 1984: 259-268.

In critiquing Peters' article ("Gender, Developmental Cycles and Historical Process: A Critique of Recent Research on Women in Botswana" in Vol. 10, No. 1, 1983), Kerven attempts to correct some of the misconceptions Peters has given rise to. The first point relevant to this bibliography is that of female-headed households and how policy does not adequately address this issue. Kerven notes that the phenomenon of female headed household was first brought to the attention of the Government by Bond in the early 1970s. It received wider focus as more researchers found that such households are more disadvantaged than those with a male head. This conclusion prompted more finely-honed research by the author who found that female headed households are a highly heterogenous group and are not uniformly disadvantaged. They are a very mixed category in terms of wealth, composition and size of household, ability and need for crop production, etc. While many households headed by females are in a cycle of poverty because of the lack of draught power, lack of male labor power, and lack of male migrant remittances to pay for labor and draught inputs, many other female headed households do have some access to these inputs in social networks of reciprocity. This also has its drawbacks, however, since use of draught and labor supplied by others comes later in the season, after the others have tended to their own ploughing and planting. As a result, women almost invariably harvest less and receive lower incomes from the sale of their produce.

Kerven takes exception to the directions for research Peters suggests. Peters did not include women's wage employment in her study while Kerven notes that it is arguably the single most important factor affecting the social and economic position of women in Botswana. Kerven also strongly recommends further research in the area of male support to women who have their children, and how such support might correlate with class distinctions.

. National Migration Study Bibliography. Gaborone: Ministry of Finance and Development Planning, Central Statistics Office. National Migration Study/Ministry of Agriculture, Rural Sociology Unit, 1979.

A preliminary bibliography representing the collection of materials gathered by the National Migration Study. Divided into two sections--Part I lists the works dealing directly with migration in Southern Africa and Part II lists a selection of works on social change, agriculture, income and rural development in Botswana. No historical works are included. (Eicher Bibliography)

. National Migration Study. Urban and Rural Female-Headed Households' Dependence on Agriculture. Gaborone: Ministry of Finance and Development Planning, Central Statistics Office, 1979.

The author separates female headed households into two groups: those who either have some resources (e.g., cattle, land) of their own or who receive

reliable remittances from husbands on labor migration, and those who have no husbands, no resources or no adult children.

The author summarizes her conclusions as follows: successful farming by female headed households depends on age of the head, marital status, employment status, age and education of children and composition of the household (how many laborers). Absence of young males from the rural areas is due to the unattractive employment opportunities for them there and the relative ease with which they can obtain wages in towns and in the mines of South Africa. Work that females do now has traditionally been done by men. Consequences of this are decreased yields, more labor power leaving to earn money to make up for agricultural inadequacies, and more dependence on the communal group to share in the harvest.

Certain cautions are advanced by the author concerning policy. If women were to be given draught power, this might upset the labor balance since many women work on farms in return for draught power for their own holdings. Policy must be directed not only at women, but their associated other "segments" who are elsewhere, i.e., policies designed to target one group might negatively effect another. She notes that one policy might be beneficial to all: the subsidization of labor.

. Report on Tsamaya Village North East District. Gaborone: Ministry of Agriculture, Rural Sociology Unit, Division of Planning and Statistics, Report Series No. 1., 1976.

Reports on a two-month study on a Tsamaya village and concludes that women must be brought more effectively into agriculture planning and extension. Also stresses that attempts must be made to involve entire communities in development schemes, that severe labor and resource constraints must be overcome, and that arable agriculture and its development must be seen as inextricably linked to livestock programs. (Eicher Bibliography)

. Underdevelopment, Migration and Class Formation in the North East District of Botswana. Ph. D. Dissertation, University of Toronto, 1977.

The subject of this thesis is urban migration in North East Botswana. The central problem is to explain the economic underpinnings of the labour migration pattern as found, and in particular the continuing need of urban dwellers to maintain their economic links with rural areas. The continuation of these links calls into question some theories of urban migration which explain urban/rural ties as a consequence of "traditionalist" tendencies among African migrants or else as ties between the unconnected "dual economics" of urban versus rural sectors.

This problem is investigated from several aspects, namely present day socio-economic patterns in the town of Francistown and its hinterland, specific historic forces of imperialism and commercial activity and the individual behaviour and attitudes of both urban and rural dwellers.

The methods used in the investigation, which consisted of ten months field work in Botswana (1975-76) were participant-observation, life history

interviews and archival research. Three research locations were studied, two squatter settlements in Francistown and a rural village of out-migration some 25 miles away from the town.

The results of the research indicate that migration to town is largely a product of the rural areas' inability to provide subsistence and cash opportunities, for the majority of the population. The previous alienation of land by a private company, at the turn of the century, set into motion a process of rural impoverishment and a need for cash. This resulted in out-migration of adult males, which in turn deprived the rural areas of labour power and further underdeveloped them. Meanwhile, urban wage levels were set low enough to prevent migrants from completely relying on wages for subsistence in the town.

Therefore, urban and rural dwellers are straddling a fine line between marginal rural subsistence and low, unpredictable wage employment. Rural economic links are maintained in order to support members of a migrant's family and to provide insurance against unemployment, sickness and old age. Consequently, the rural and urban economic spheres are highly interdependent.

The conclusions of the thesis support the argument that it is the imposition of a colonial capitalist mode of production in southern Africa which has necessitated a pattern of migration in which rural economic links must be maintained. Thus the urban capitalist sector is dependent for part of its profit upon the rural pre-capitalist sector which is therefore integrated with the former rather than isolated from it. The rural sector has been allowed to stagnate to the point where it can only provide economic back-up to migrants, rather than an alternative viable subsistence. This merging of two modes of production has been accompanied by an emerging class structure which is neither fully capitalist nor pre-capitalist, but an underdeveloped combination of the two. (Dissertation Abstracts)

Ketlareng, C. L. "Grain Storage Methods." AGRINEWS, Vol. 7, 1976: 8-9.

Kooijman, Kunnie. Bokaa, Living and Learning in an African Village. Cambridge: International Extension College, 1980.

Although the author's fieldwork, conducted in 1971, 1972 and 1977, originally was designed to ascertain the needs for non-formal education in the village of Bokaa, some 40 km from Gaborone, due to difficulties in ascertaining meaningful responses, the author decided to translate her assignment into an analysis of the social and economic problems of Bokaa. An account of social and cultural change is given as well as one of community development and health care. Chapter 4: Cattle, Agriculture and Economic Change is most relevant to this bibliography.

Although cattle husbandry and agriculture continue to be the major economic focus of the middle-aged and older people of the village, the rest of the population depends on wage labor/remittances and other income-generating activities such as beer brewing. However, the Rural Income Distribution Survey indicated that even with several types of income, 45% of the population still live under the poverty line. Cattle are accumulated as

economic goods, but not necessarily to be sold to raise standards of living. They have high prestige value and are relied upon heavily for milk and draught power. It follows that those who are poor in cattle (those who have less than six cattle required for a span to plough) are also poorest in crops since without cattle, households must await the loan of another family's cattle to plough after they have finished their own fields. Cattle are also used to pull sledges on which firewood, crops, and water are carried, in barter in exchange for grain, to pay court fees and herd boys, to exchange for brides, and to be killed and consumed at ritual feasts. A cow is assigned to each child (including girls) at birth and parents are seen as the guardians/caretakers of such animals and their offspring until children grow up and can assume responsibility for themselves. For these reasons, it is the quantity of cattle which is important, not necessarily the quality. In conducting a survey of 110 households, the author found that 35% of the households had no cattle, another 8% had only 1-4 (not enough to plough) and another 35% had between 5 and 14. Only 4 households had between 50 and 100 head, and many of these more commercial ranchers lent out their cattle (mafisa) so that they would not be accused of witchcraft because of having accumulated so many animals. More than 20% of households had received mafisa cattle, but in 65% of these instances they were given to households which already had cattle.

Almost 93% of households cultivated their fields in sorghum, millet, beans and small quantities of maize, sweet reed, squash and watermelon. The author notes that beans are the only crop which are primarily grown for sale as the market price is relatively high. But farmers were unable to meet even subsistence needs due to exhaustion of the soil, poor agricultural techniques, inequality of cattle ownership and migrant labor. The gender-specific division of labor makes women responsible for crops and men for cattle; thus young males are reluctant to enter agriculture even though a family's fields may have been expanded. Women must cultivate to feed their families as there is little other choice for them in paid employment. Weeding is done only once and is usually started when weeds are already tall and strong. In performing a labor survey, the author found 46% of households cultivated without men ages 16-55 and another 14.8% did so without males or females in this age group. The growing demands of cropping altered the herding priorities of men such that cattle posts were abandoned, and cattle were kept close to the fields. This has resulted in gradual destruction of the local environment.

Traditional settlement patterns have been altered as a result of economic pressures and the attenuation of the political system. More people stay in homes on their fields throughout the year than live in the village once the harvest is in. Fragmentation has resulted in the inability to form farmer organizations which might facilitate an extension worker's job or build stronger reliance mechanisms. An extension agent has been in the village since 1948, but due to lack of cooperation tends to work more with "scheme" (more progressive) farmers and ignores the rest. The scheme is an educational endeavor in which pupil farmers are taught to be master farmers, but problems in implementing the scheme involve poverty, labor shortage, limited rewards and traditional beliefs.

The chapter on women, love and marriage illustrates how education has opened new avenues for both political and economic mobility for women, even in rural village leadership.

. Social and Economic Change in a Tswana Village. Leiden: Afrika Studiecentrum, 1978.

Botswana has seen significant economic change and has undergone a rapid political transformation since its independence, not only at the national but also at the local and district levels. The country's economy remains based on the earnings of labour migrants to South Africa, on agriculture, and on animal husbandry as it did in pre-independence times. Today, however, economic opportunities have diversified with the growth in local and national government employment, new mining developments and with increasing opportunities for trade and commerce. Diversification is the key word here, for those who have grasped these opportunities have not abandoned the pattern of migration and agriculture, rather they have combined new opportunities with the old.

Kunnie Kooijman gives us an account of change in one Botswana village. She traces some of the changes in production, labour availability, and related patterns of residence and is anxious to point out the structure of inequality in the village. What she does not do is present us with a systematic analysis of productive relations, property ownership, and capital accumulation in the village, or of the significance of multiple occupations for rural differentiation.

Ms. Kooijman's overriding view is that of a 'traditional' society collapsing under the impact of the 'forces of modernisation.' The ethos changes from 'communalism to individualism' while, on the political front, the traditional chiefship is in decline. She is undoubtedly correct that the chief does not have the power he once had, but the impression of village life she gives is almost one of a political vacuum. This would seem strange, given accounts we have of other contemporary Tswana villages. There, an increasingly diversified economy has given rise to new resources, new classes, new competitions and new institutions; while political struggles have been fought out in new, often informal and overlapping, arenas. This book alludes to such developments in local politics but does not really give them the empirical or theoretical attention they deserve. (Review by Nicholas Mahoney, Africa, Vol. 51, No. 4, 1981.)

Koussoudji, S. and E. Mueller. "The Economic and Demographic Status of Female-Headed Households in Rural Botswana." Economic Development and Cultural Change, Vol. 31, No. 4, 1983: 831-859.

The purpose of this article is "to analyze the demographic and economic status of female-headed households" in rural Botswana where "insufficient earning opportunities force many men to live and work away from home." The article demonstrates that these households are poorer than others and explores the reasons for their poverty. It analyzes the social customs, economic institutions and economic behavior of women that either alleviate or aggravate their economic problems. Basing much of their information on

the data collected as part of the Rural Income Distribution Survey, the authors found the following: being unmarried or separated may be a characteristic of a particular life-cycle stage since the preponderance of males who migrate are in the 20-40 age group with many deferring marriage until after labor migration ceases at about age 40; female headed households are somewhat younger than male heads and that a separate household may be formed before any children can be net contributors to it; female headed households receive the greatest portion of their income from their own labor and that even when transfer payments are included in calculating household income, female headed units still have less income than male heads; one of the explanations of female poverty is the low level of asset ownership among female headed households (cattle, land, equipment); women may own cattle, be bequeathed them, win them in a court case or buy them, but usually cannot have access to them through traditional mafisa lending; female headed households with no males present own the lowest number of stock; women receive land from their husbands or the fathers of their children or through Land Board allocation, but in the latter instance the household must be able to cultivate in order to receive a holding; female headed households cultivate only 2/3 the area of male headed households; often female crop income derives from women working in other people's fields; the gender based division of labor allocates chores to women requiring little capital and is characterized by low-productivity, and those that are more capital intensive and more productive to men; child care obligations tend to confine women to less productive economic activities and prevent them from translating their educational qualifications into opportunities in the wage labor market. The article concludes with several policy recommendations: special credit facilities should be available to women; fathers should bequeath more cattle to their daughters; women should receive more crop extension education; and more rural cooperatives should be created.

Kowet, Donald Kalinde. Land, Labour Migration and Politics in Southern Africa: Botswana, Lesotho and Swaziland. Uppsala: Scandinavian Institute of African Studies, 1978.

Development specialists in Southern Africa as well as desk-bound academicians should start their area orientation by reading this volume. Dr. Kowet has provided a refreshing departure from more conventional analyses of political economy and dependence networks. Unfortunately, the attention of the reader is constantly interrupted with spelling, punctuation and grammatical errors. The author moves beyond an indictment of colonialism and capitalism to a Real Politik which allies traditional leaders, new black managerial elite, and South African socio-economic interests in the maintenance of the status quo.

Professor Kowet's analysis is based upon Samir Amin's three-part typology of colonial penetration in Africa: first, those countries of the colonial economy; second, countries administered by the concession-owning companies; third, Zambia, Swaziland, Lesotho, Tanzania, Kenya, Uganda, Rwanda, Burundi, Mozambique and Angola.

Amin, a noted social theorist, has examined underdevelopment as a natural consequence of reducing large land areas into labor reserves for European colonial and capital penetration. Professor Kowet builds from this functional premise in analyzing "push-pull" forces between South Africa and the labor reserves of Botswana, Lesotho and Swaziland. Early Afrikaner and indigenous conflict over land (1800 onwards) is identified as a major cause of dispersal and concentration into uneconomic "reservations." Between 1820 and 1870, British colonial intervention further accelerated the consolidation of power in the hands of selected chiefs.

The allocative power of selected chiefs over land is identified by the author as the main reason for the relationship between land, labor migration and politics in Southern Africa. Chiefs were responsible for controlling access to land, which in turn affected labor migration and the allocation of political power within traditional family-based systems.

With increased scarcity of land, local chiefs allied themselves with paramount chiefs and they in turn with colonial administrators and the industrial power structure. Chiefs would coerce and send labor to the gold mines of South Africa so as to maintain their own economic and political self-interests. This alliance became an institutional escape valve.

The author has pointed out that contemporary political and economic progress on the periphery of cores such as South Africa and Britain has become subordinated to economic self-interest. In particular, Dr. Kowet has noted the failure of reforms in Botswana, Lesotho and Swaziland since independence. This is attributed to the self-interest of chiefs, as well as to the new black elite of civil servants, teachers and managers. Indeed, many of the development initiatives introduced by external international assistance agencies appear to have been subverted by the alliance of chiefs, new black elite, and expatriate elite.

This analysis has important implications for future progress in Botswana, Lesotho and Swaziland as well as in the "Homelands" of South Africa. Explosive population growth, rural-urban migration, unemployment, scarce land, and uneven economic development continue to widen the gap between the rich and the poor. Before further assistance efforts are made, Kowet suggests the question of whether these programs will have a realistic chance of success, given the constraints, must be faced. (Review by Stanley B. Andrews, Africa Today, Vol. 28, No. 3, 1981.)

Kuper, Adam. Kalahari Village Politics. Cambridge: University Press, 1970.

It is no longer a novel observation that social anthropologists in Africa have largely been concerned with reconstructions of "traditional societies" or with the impingement of Western institutions and power on those societies. Nevertheless it bears repeating if only because we still have far too few incisive studies of ongoing social life in rural Africa during the second half of this century. Even fewer (almost to the point of nonexistence) are the analyses of contemporary political life at the local level, and in its own right, despite much profession of interest amongst anthropologists. The study of local-level politics is rather more advanced

among anthropologists specialising on India and other parts of Asia: and there is a moral in that, no doubt.

Dr. Kuper commits himself to tell it as it is, or at least as it was in the mid-1960s, in the field of political life. His book is very much concerned with local-level politics because for the most part he concentrates on a single village of mainly Ngologa people, a Kgalagari group living in the semi-desert of western Botswana. Ethnographically, rather little is known of these people, but Dr. Kuper is not at all concerned with filling ethnographic gaps as he aims at a more limited, analytical goal.

An Ngologa village comprises agnatically focused kin-groupings, of which the most important politically is the "family-group alliance" under the leadership of an elder. The focus of village politics is the semi-hereditary headman, though nowadays as formerly his authority is weak. He achieves what political success he can either by following general village opinion (mainly as expressed by the elders) or by getting his own supporters (mainly his patrikin) on to the village council. The arena of village politics is the lekgota, or council, which meets regularly either as a court to deal with dispute cases or as an overt political assembly to deal with intra-village affairs and with relationships outside. The council in the particular village studied was dominated by three factions with marked agnatic bases: one supporting the headman, one against him, and one which varied in its support. In addition to all this, Dr. Kuper introduces and shows the local significance of such latter-day figures as village counsellors and court-scribe within the village, and District Councillor, Members of Legislative Assembly and of the House of Chiefs, as well as District Commissioner and state police, who operate in the village's external political environment.

There is a good deal of hard empirical fact to substantiate generalization about political action in the village. Unfortunately, however, it is not clear whether Dr. Kuper's cases (both judicial and political) are only exemplary (apt illustrations) or if they comprise more or less the totality of public confrontation and encounter in that one village during the periods of observation (just before and soon after Botswana independence). The former seems to be the answer, for the case material does not altogether add up to the continuing actuality of the ongoing village polity in the sense that this has been achieved by Turner for the Ncdmbu village, and by Middleton and others since. Admirable though this book is, this is one partial defect. The other is that Dr. Kuper makes very little attempt to draw general conclusions or make theoretical hypotheses from his data and analysis that might be illuminating and instructive for anthropologists and others studying local-level politics elsewhere. Agreed, this is no easy thing to accomplish, but it should surely be an aim beyond the careful treatment of highly localised, specific new material. (Review by P. H. Gulliver, Africa, Vol. 42, No. 2, April 1972.)

Although this writing is a general analysis of what the author calls "An African Democracy," certain points he makes about women in Ghanzi and Kgalagdi Districts are noteworthy.

Young women generally participate in the economic activities of their parents on their parents' compounds where a garden is grown, and poultry and small ruminants are raised. Compounds can be occupied by a matrifocal unit. Most often women have their own gardens, though sometimes the women who are married to one man will share a plot and cooperate in forming work groups.

Politics is basically the business of men with the affairs of women dealt with to the extent that the rights of men as husbands, fathers, or brothers are involved. Thus, women do not have access to the politico-jural domain except in so far as they are related to a male who has access. This also applies to the decision-making processes in rural development projects-- women should work only with the permission of their fathers or their husbands.

_____. "The Kgalagari and the Jural Consequences of Marriage." Man, Vol. 5, No. 3, September 1970: 466-482.

The Sotho-speaking Kgalagari of Botswana are used to illustrate the principle that a jural analysis of marriage, stressed by modern social anthropology, is a necessary preliminary to the understanding of marriage. The marital histories of 37 adult males were collected in 1964 in a Kgalagari village. The basic features are described, especially those of the prestations and bridewealth. Very few men practiced polygyny. Conjugal unions were unstable. Marriages were most commonly dissolved by the wife's desertion. Men rarely sued for divorce. The marriage rights of men are sexual, rights to the wife's services, and rights to the children, all prescriptive and supported by the courts. These rights are transferred against the receipt of brideswealth payments; rights in a woman are recognized as they mature. There is a definite tendency for more people to consider brideswealth in its economic terms and for it to increase in value. Economic factors also affect the rate of marriage dissolutions. Its jural dimension is only one of its dimensions. Kgalagari marriage can be seen as a dialectical series of exchanges against prestations. The most stable rights are transferred against the highest prestations. These findings have implications for comparative studies of marriage. (Annotation by D. Burkenroad from Sociological Abstracts)

_____. "The Kinship Factor in Ngologa Politics." Cahiers d'Etudes Africaines, Vol. 9, No. 2, 1969: 290-305.

The social structure of the Ngologa of Western Botswana is examined in order to test Fortes' and Evans Pritchard's hypothesis that "kinship and domestic ties have an important role in the lives of individuals, but their relation to the political systems is of secondary order." Fieldwork in ten Bantu villages of the Kalahari, mainly populated by Ngologa people, is reported. The kinship idiom is seen as part of the language of politics. Clans and active kinship groups are described as of the patrilineal type. It is noted that the activities of the clanhead influence the political future of his descendants and that kinship determines the lay-out of groups on the ground and patterns the distribution of power (each village being headed by the senior man in the senior family group). There is, however, a

concept of law which overrides kinship status. After this examination of the idiom and ideological system, the system of action is studied in order to evaluate the behavior conditioned by kinship relationships. Three groups are described: the family-group based on a tight association of households, a corporation of the inner ring of Magnates, and the sub-clan which has no solidary character. It is noted that "the kin-based groupings are the main political groupings in the village" but that kinship does not mechanically determine political behavior although political alliances and oppositions are patterned largely by kinship. The definition of political roles by the kinship factor is then described and it is noted that the kinship factor does not determine but rather limits political opportunities. Non-agnatic bonds between men, such as the bond between mother's brother and sister's son, can be made to yield to political benefits according to the article. It is noted that there is a reciprocal interaction between kinship (domestic) domains of social relations and the domain of political relations. It is however, stressed that smallness of political scale is a necessary but not sufficient condition for the political prominence of the kinship factor and that the actual decentralization of many African states makes the political life at the village level similar to that of the Ngologa political community. (Annotation by M. Laferriere from Sociological Abstracts)

_____. "The Social Structure of the Sotho-Speaking Peoples of Southern Africa." Africa, London No. 45, 1975: 67-81, 139-49.

Provides an introduction to the social structure of the people who inhabit a large area in Botswana, as well as parts of Lesotho. (Eicher Bibliography)

The focus of this two-part study is on the relationship between the political arrangements within each "tribe" and certain aspects of their social systems--in particular, patterns of marriage preference and residential alignment.

The introduction to the second paper states that the Tswana, Southern Sotho and Kglagadi are organized in tribes under chiefs who are linked in competition and through marriage with other close agnates. The chiefdom is divided into wards, ruled often by brothers, brothers' sons, or sons of the chief, and within each ward the dominance of the central core of competing and intermarrying agnates is duplicated. Men with patrilineal ties to those in power at each level are brought into alliance or competition with them, and their relationships may be transferred or reinforced by intermarriage. Outsiders are attached to these ruling agnat' cores at each level and develop or reinforce matrilineal ties to them by contracting suitable marriages.

_____. Wives for Cattle: Bridewealth and Marriage in Southern Africa. London: Routledge & Kegan Paul, 1982.

Kuper's volume is an exercise in anthropological kinship virtuosity, intended to provide a better understanding of the regional institutional complex involving the exchange of cattle for wives; and, as a demonstration

of formal rule-governed institutional transformations linking the various bridewealth systems of the region, it is offered as a case study with wider implications. He identifies four types of marriage alliance systems, and argues that though cattle-wife exchanges were part of the exchanges of pastoral and agricultural products between wife-takers and wife-givers, they were also involved with other crucial hierarchical exchanges between rulers and subjects, household heads and dependents, and ancestors and descendants; therefore, economic, kinship and political factors account for local variations in the systems. An appendix discusses kinship categories and marriage preferences.

Kuper's style and approach present problems. Whilst noting that the Southern Bantu do not constitute a closed "culture area" or represent a timeless ethnographic unity he treats the ethnographic labels as almost totally unproblematical. Generalized, timeless discussion is interpolated with local and historically specific details from various places and times in the "pre-industrial" period of c. 1840-1940; and too often one cannot tell to what period his data and his analyses refer. In the absence of a clearly structured historical analysis it is difficult to appreciate fully the transformations he indicates and their internal and external structural and institutional concomitants within the different collectivities. Despite these and other reservations, his book should serve to alert researchers to possible questions, trends and problems for exploration, though non-anthropologists may find some of it heavy going. (Review from Journal of Southern African Studies, Vol. 10, No. 1, October 1983.)

Lee, Richard B. "Hunter-Gatherers in Process: The Kalahari Research Project, 1963-76" in George M. Foster et al. (eds.) Long-Term Field Research in Social Anthropology. New York: Academic Press, 1979: 303-321.

Reports major findings of a long-term study of the Kung San (Bushmen), a hunting and gathering people in northwestern Botswana. Directed by Richard Lee and Irven DeVore, the study involved 14 researchers over a 14-year period, and focused on four major problem areas: ecology and social change, population and health, child development, and the cognitive world. In 1963, when the study was initiated, the researchers did not predict the rapid changes that would occur over the ensuing 14 years, including the long-term trend away from hunting and gathering to horticulture and herding; opening of a primary school; migration to the mines; and an increase in the birth rate following sedentarization. (Eicher Bibliography)

Lucas, Robert E. B. The Distribution and Efficiency of Crop Production in Tribal Areas of Botswana. Boston: Boston University, African Studies Center, 1981.

Examines inter-family variations in crop production within tribal (non-freehold) areas of Botswana. Four major lines of analysis are pursued: a study of the distribution of inputs into crop farming across families; a study of the relative importance of particular types of crops according to household size, composition and location; an analysis of productivity in the arable sector and some of its determinants; and, lastly, a presentation

of some issues and estimates on the question of profitability. All results of this paper are based on data from the Rural Income Distribution Survey, 1974-75. (Eicher Bibliography)

Lucas asserts that crop production is the third largest source of income (after employment and remittances) for families in the 15-50 percentile range of household income, but one of the least important for lowest income families (1-10 percentile).

Distribution of inputs--traditionally male heads of household apportioned part of their arable land to their daughters on marriage, which would be inherited by her daughters. As land tenure arrangements shifted from the chiefly domain to "self-allotment" and purchase, these allocation arrangements also changed, although it was difficult for Lucas to ascertain specifics. He notes that female headed households cultivate or own about 35% less land than do those headed by males. He suggests this could be due to the practice of chiefs and land boards allocating land on the basis of a household's ability to cultivate it. Since female heads of household are constrained by a shortage of labor, the area of land they are allocated is smaller. When allocated land is not utilized it is confiscated and redistributed. Lucas believes this is the reason for some 47% of the female headed households surveyed in the RIDS receiving income below 100 Rands per year. Female headed households attempt to overcome male labor shortages by hiring people to plough. Fertilizers and chemicals are not used at all by small farmers, with the exception of the farmers in the Barolong Farm region. Amount of farm equipment correlated positively with a larger number of male adults, heavier rains, and larger plots.

Adult women provide most of crop labor contributing some 610 hours per year--more hours than the total for children and men combined. Girls provided the next largest input with 176 hours per year. The crop time for women and children increases in female headed households.

Crop types--Sorghum as a regional crop increases in importance as rainfall increases (600 mm) and as the number of males present during the ploughing season increases. Cowpea production is more important in more arid areas (300-400 mm rain/year) and decreases in importance when more males are present in the ploughing season, although this varies considerably by size of land holding. Beans decrease in importance as income increases but the same pattern is not discernible for cowpeas.

One of Lucas' conclusions is that conflict may occur between men who can no longer work for the mines in South Africa and cattle barons as each will require land.

. The Distribution of Wages and Employment in Rural Botswana.
Boston: Boston University, African Studies Center, 1981.

Based on an analysis of findings of the National Migration Study of Botswana 1979-80 and of the Rural Income Distribution Survey (RIDS) 1974-75, Lucas comments on data concerning the composition of the potential adult labor force, the extent of adult participation in wage employment,

the work done for wages and the distribution of wage rates. His conclusions state that wage labor outside of the urban areas is scarce due to the dearth of wage work in crop farming (only some 15% of rural wage workers are engaged in agriculture). Statistics on rural wages indicated a discrepancy for 1974-75 between men and women: men earned 49 Rands for the period while women received only 28 Rands. Lucas attributes this discrepancy to the failure of wage rates to increase with age for women as they do with men. It was found also that women's peak period of employment coincides with their child-bearing years. He notes women seem to be discriminated against in probability of employment, days worked if working for wages, and in daily wages.

Mahoney, N. "Contract and Neighborly Exchange Among the Birwa of Botswana." Journal of African Law, Vol. 21, No. 1, 1977: 40-65.

The author's intent is to discuss the significance of contracts among the Birwa and to specifically analyze which contracts are used to regulate certain kinds of productive exchanges among cooperating neighbors. The article gives a very concise agro-ecological overview of the Birwa habitat and notes that sorghum and maize are the principal crops grown on the normally less than two-hectare farm. Livestock posts are mainly near rivers and Mahoney notes that the Birwa have the most riverine-based livestock system in Botswana. Although households are composed generally of three-generation families, with members of each gender performing specific agricultural tasks, there is an inter-household production exchange in which households lacking particular production inputs will rely on another that has them.

A discussion of the various gender-related tasks to be performed throughout the agricultural cycle is informative. From July to September land clearing and fencing is undertaken by men; where males are not a part of the household, they are hired generally from a local labor supply. From October to December the critical stages of ploughing and planting occur at the first rains. The author notes that almost all households lack some or all of the equipment and/or labor necessary to plough and as a result a range of labor and service exchanges occur, some of which are performed on a reciprocal service basis and some for pay. During the growing and ripening season--May or June--women's work intensifies as it is their job at this time to weed, scare birds, build threshing floors and prepare storage facilities. If there is insufficient labor a woman may hire another woman for the duration of the agricultural cycle to perform whatever jobs are required, or reciprocal work parties might be called and women may move from farm to farm to help each other. Harvesting occurs between May and July and is conducted by women. Cattle caretaking is generally the domain of men while women often keep smallstock around the household.

In analyzing neighborhood sets, the author posits that Sahlins' arguments on the domestic mode of production are not totally applicable among the Birwa since there is such a strong inter-household interdependence, and that the production unit is not the household but the neighborhood set in which the households are intertwined. While production may be a function of neighborly exchange, in some instances contracts are drawn up for the

performance of an agreed-upon service for an agreed-upon wage. In his conclusion the author summarizes the need for contracts between people with "multi-stranded" relationships so as to set limits to the responsibilities of the contracting parties and prevent disruptive and intermittent but necessary transactions from damaging a valued neighborly relationship.

Massey, David Reid. Labor Migration and Rural Development in Botswana. Ph. D. Dissertation, Boston University, 1981.

The goals of this dissertation are to provide an historical analysis of the development of a labor reserve system and to assess the effects of labor migration on the rural sending areas of Botswana. The research included archival work in Botswana and London, and fourteen months of field work in three villages in Kgatleng District in southeastern Botswana.

The dissertation argues that historically labor migration has been the dominant form of articulation between the developing capitalist center and the rural, largely precapitalist periphery in southern Africa. Because the rural labor reserve areas have borne much of the cost of reproducing the labor force, this articulation has allowed low wages and hence rapid capital accumulation in the core areas. It is shown that British colonial policy played a role in transforming Botswana into a labor reserve for South Africa. Land alienation, discrimination against Africans in the marketing of cattle, the involvement of traditional Chiefs in labor recruitment and tax collection, and the neglect of local development encouraged this transformation. By removing labor power from the rural areas, the migration process itself stifled development. It is concluded that the state of underdevelopment--defined here as a general low level of productivity--which characterized Botswana at independence in 1966 was the result of a long term British policy of encouraging labor migration and ignoring local development.

Since independence, the process of underdevelopment in Botswana has been complicated by the development of a mining sector involving Government partnership with transnational corporations, the rapid growth of a civil service and of an urban commercial sector, and the commercialization of farming. Dependence on foreign banks, companies and countries for financing, technology, and markets has resulted in a process of dependent development. This has led to the emergence of a dependent domestic bourgeoisie sharing an interest with foreign capital in maintaining the mass of the rural population as a reserve of cheap labor. Despite rapid economic development, the rural areas continue to function as labor reserves--now supplying labor to the emerging capitalist sector in Botswana as well as to South Africa.

Post-independence rural development programs have encouraged the development of private commercial farming. This has deepened rural inequality as those with favored access to capital, land, and cattle are transformed into a capitalist farming class. At the same time, rapid urban development has led to increased rural out-migration.

Three village case studies show that migrants to urban areas in Botswana maintain strong links with the rural areas, as urban wage rates are not sufficient to allow workers to relinquish those rural ties which insure their survival in the case of disability, unemployment, or old age. Only a small minority of educated migrants, coming mainly from the wealthier rural families, are able to command salaries adequate to support a family in an urban area. The case studies show that poverty and labor migration have brought about changes in Tswana family structure as indicated by the appearance of households headed by single women. Female-headed households and the households of traditionally dependent ethnic minorities are among the poorest in Botswana because they lack equal access to the means of production in the rural areas.

It is concluded that inequality in Botswana is likely to worsen as dependent capitalist development continues. Without the backing of a politically mobilized rural population, attempts to halt this process by redistributing rural income-producing assets--such as access to land, cattle, and water--are likely to fail. (Dissertation Abstracts)

Merafe, Yvonne, Survey of Farmers' Attitudes Towards the I.F.P.P. Project and its Development Components. Gaborone: Ministry of Agriculture, Rural Sociology Unit, 1979.

Surveys farmers' attitudes toward the Integrated Farming Pilot Project. The project, with both arable agriculture and livestock components, was designed to reduce agricultural risks, improve animal husbandry and maintenance of animal health and the water supply, as well as establish a market system. Report focused on agricultural component and indicated an increase in the number of farmers owning and hiring equipment for arable farming since the 1975 baseline survey. Participant farmers preferred improved seed, as did many non-participant farmers, and both groups of farmers indicated an awareness of weeding twice or more to get better yields. The majority of farmers sold their produce to the cooperative, which did yield best prices, demonstrated support of members and was also easily accessible. (Eicher Bibliography)

Motsete, Ruth K. The Role of Women's Organizations in Development in Botswana. ECA African Training and Research Center for Women, 1982.

Mueller, E. "Household Structure, Time Use, and Income-Distribution in Rural Botswana." Population Index, Vol. 45, No. 3, 1979.

In a peasant economy, where people are for the most part self-employed, the household's time use and ownership of productive assets (principally land, cattle, and equipment) are the major determinants of income. Household size and the household's age and sex composition affect labor supply as well as capital per potential worker. In this paper, the author first examines differences in demographic characteristics of households by size, class and income deciles, paying particular attention to the dependency, burden, sex ratio, and female headship. She then analyzes how socioeconomic and demographic characteristics and assets influence time use within age and sex groups, and how time inputs differentiated by age and sex, together with assets and socioeconomic variables, relate to income.

Murerwa, Herbert Muchemwa. The Planning of Non-Formal Education for Rural Youth Employment: An Analysis of Training in the Botswana Brigades. Ph.D. Dissertation, Harvard University, 1979.

Analyzes Botswana Brigades: how programs are planned and organized, and ways in which they affected rural youth preparation for employment. Methodology combines survey interviews and case study collection. Findings reveal that while trainees are satisfied with their Brigade experience, more coordination is required to consolidate use of resources and manpower. Notes that little evaluation of Brigade effectiveness and trainee performance has been done. Recommends improved planning and evaluation, greater attention to selection and recruitment of trainees, to curriculum development, and to guidance, placement and follow-up of trainees in employment. (Eicher Bibliography)

Murray, Colin. "Migrant Labor and Changing Family Structure in the Rural Periphery of Southern Africa." Journal of Southern African Studies, Vol. 6, No. 2, April 1980: 139-156.

Two views on male migration and its effects on the rural household are discussed. The first argues that the prolonged absence of husbands and fathers was associated with high rates of conjugal breakdown and desertion; it induced a repetitive cycle of illegitimacy and instability in arrangements for rearing children; and it subverted the authority of the senior generation by attributing earning capacity to younger men. In short, the consequences of oscillating migration were destruction of traditional social structures. (These findings were based on studies conducted in the 1940s and 1950s in Zambia and Botswana.) The second argues that ties to the rural community were sustained because access to land afforded migrants more permanent security than the endemic insecurity of town/mine life.

Murray argues that much of this seeming contradiction can be dispelled by the findings of prolonged participant observation which can discern specific aspects of the dual role of the labor reserve--to supply labor and to provide part of the means of subsistence. To have access to the product (both agricultural and human reproductive) of the reserves, a migrant had to maintain ties albeit in a somewhat restructured form, i.e., one pattern of reciprocal obligations has broken down while the onus of the new one has been placed on conjugal roles. These same relationships have "dissolved" while others have been "conserved." Murray found that basically the agnatic core of a ward in Botswana was highly durable and that it adapted to three-generation households generally consisting of grandparent(s), and an unmarried daughter with her children, but that the conjugal, family relationship was disintegrating although qualitative description was often not discernible. He argues, however, that these processes have occurred as a result of the structure of the political economy of the labor reserve which limited a man's land holdings and prevented him from moving his family to his locus of employment.

The remainder of the article is a discussion on the concept of "family" as it is perceived in various areas in Southern Africa. He cautions against western biases which try to carve out a nuclear family as the "natural"

unit of analysis, and calls the reader's attention to the domestic cycle in which "families", over time, are transformed and can thus accommodate the in- and out-migrations of many of its members.

Norman, D. W. and D. C. Baker. "Components of Farming Systems Research, FSR Credibility and Experiences in Botswana." Paper presented at a Conference on Intra-Household Processes and Farming Systems Analyses, Rockefeller Foundation Conference Center, March 5-9, 1984, Bellagio, Italy.

The points made in this paper concerning women deal with the potential impact various farming systems research recommendations might have. These include the suggestion that farmers plough early (on first spring rains or in the preceding winter) in order to gain access to traction animals. This practice would result in a significantly increased weeding burden for women--double rather than single weeding would be necessary.

If men are in the family, they take care of livestock, while women brew beer. Money from cattle/beer sales is used for hiring traction for ploughing so both sexes can subsidize this activity.

As part of this project, a regional survey on cowpea cultivation practices and utilization is to be undertaken.

Odell, Malcolm, Jr. (ed.) Report on the Sociological Survey of the Losilakgokong Area, Kweneng District, October 1975-January 1976. Gaborone: Ministry of Agriculture, Rural Sociology Unit, Division of Planning and Statistics, Report Series No. 2., 1977.

Reports on the severely limited Losilakgokong land area where the population is still actively involved with mafisa relationships (cattle loans) and where arable agriculture will remain the backbone of the local economy, and so must be integrated into all development plans for the area. (Eicher Bibliography)

Odell, Marcia. Planning for Agriculture in Botswana. Gaborone: Institute of Development Management, Research Paper No. 7, May 1980.

Reports on a survey of nine areas with arable potential for intensive field research. Provides a socio-economic perspective and indicates that there is potential for significant change in yields in rural Botswana. (Eicher Bibliography)

Oland, Kristian. Agricultural Research in Botswana. Gaborone: Ministry of Agriculture, 1979.

Opschoor, J. B. Socio-Economic Activity Patterns and Environmental Resource Utilization in Kgatleng District: Some First Results of a Household Survey. Gaborone: University College of Botswana, National Institute of Development and Cultural Research, Research Notes No. 1., 1980.

Osborne, Allan. "Rural Development in Botswana: A Qualitative View." Journal of Southern African Studies, Vol. 2, No. 2, April 1976: 198-213.

Since Botswana's independence in 1966 there has been much speculation on the meaning of that status in the face of its geographical, economic, and political circumstance. The true meaning of independence may lie in the possibility of an effective program for rural development. Many of the definitional problems surrounding the idea of development arise from the adoption of a quantitative perspective. The indicators used to measure development, e.g. the per capita income, are so closely allied to the concept itself that separation becomes impossible. A qualitative approach is needed to measure such concepts as dignity, justice, freedom, etc, which are vital to the human condition and to development. Above all, development must not negate traditional and cultural factors. Technocratic strategy has in the past regarded traditional modes and methods as hindrance to "integration." Rather, the need is for a total development involved in an ongoing relationship with national structures on one hand and the people on the other; true development comes not from above or below but from within. (Annotation by E. Preston from Sociological Abstracts)

Peters, Pauline E. Cattlemen, Borehole Syndicates and Privatization in the Kgatleng District of Botswana: An Anthropological History of the Transformation of a Commons. Ph.D. Dissertation, Boston University, 1983.

This dissertation presents an anthropological history of changing patterns of resource control which seeks to grasp the dynamic of the transformation of a commons. In the late 1920s boreholes, or deep bore wells, were introduced into the Kgatleng, and syndicates, or groups of cattle-owners who jointly owned and managed the wells, were formed soon thereafter. The central thesis that a transformation of the commons has been taking place in the Kgatleng contains three related propositions. First, the establishment of permanent water points under private ownership within the communally-held grazing areas has led, over half a century, to a gradual privatization of the grazing land despite its continued formal designation as "communal." Secondly, the changing patterns of access to water sources and to pastures in the grazing areas are central features in the forms and processes of socioeconomic differentiation and class formation that have emerged over this period. Thirdly, the syndicate, as a group form of ownership, has played a central and facilitating role in privatization, yet its very cultural definition and social organization constitute a hurdle to recent policy introducing leasehold rights to grazing areas. The syndicate's paradoxical role results from its mediating, through an ideology of collective action an incorporating mode of organization, the contradictory processes that derive from introducing privately-owned boreholes into a grazing commons. The following are the social conditions within which this contradiction generates conflict between different categories of Bakgatla. The fixing of boreholes as water sources in a semi-arid environment, their high capital and operating costs, and the increasing demands on pasture use have all combined to reduce herd mobility, to increase borehole owners' control over surrounding pastures, and to encourage greater closure of syndicate organizational boundaries. The de facto control of land has acquired a certain legitimacy from both customary Kgatla formulations of

grazing rights and an administrative procedure in borehole allocation. Such pressures towards exclusive access to water and pasture have been buttressed by the growing dominance of an ideology and practice of exclusive rights and a corollary denigration of the commons.
(Dissertation Abstracts)

_____. "Gender, Developmental Cycles and Historical Process: A Critique of Recent Research on Women in Botswana." Journal of Southern African Studies, Vol. 10, No. 1, Oct. 1983: 100-122.

In reviewing a number of writings on women in Botswana, Peters makes the point that relations both within and between households must be analyzed in order to discern the various phases of the developmental cycle of the household and to develop a theory of gender in Botswana. She begins her analysis by examining the literature on labor reserves and patriarchy arguments and notes that wage income is the independent variable in a household economy and that farming provides an important supplement to it. She states that an analysis of the cattle economy is central to an understanding of household production, even in cases where a female is deemed head of household since women may also own cattle as a result of inheritance, gift, judicial process, etc. Peters takes exception to the loose way in which other authors have defined female headed households and the typology this has given rise to. She feels adequate attention has not been given to the networks women have called into play to help in agricultural production, including those focusing on the strong brother-sister bond. Also reviewed is the literature on marriage among the Tswana since it is in the transformation of the marriage process that female headed households are defined. The definition of the term "married" as it is viewed by the Tswana themselves is critical to such an analysis. Also considered is the notion of "matrifocality" and the problems which have been created in defining this term since authors have relied on the literature of the Caribbean to provide conceptualization of the term. She argues that female headed households and matrifocal households (applied to households in which the core members are a woman, her adult daughters and the latter's children, but defined by the author as a female headed household based on consanguineal links rather than a conjugal bond) constitute only a limited portion of households, and that there is no inherent economic deprivation implied in the use of these terms. Moreover, it is only a subset of these households that are disadvantaged and this occurs, generally speaking, when women are at a vulnerable point, e.g., in the early stages of household formation, when women have little resident male help, or when particular strokes of ill fortune occur. In concluding her paper, Peters points to certain lacunae in the literature--what are the roles of women in households where both males and females are present, what are the characteristics of male-female relations, how do males support their children when they are not married to the children's mother, what characterizes the relations between generations, in what ways do women contribute to Tswana social relations overall, and what are the activities women participate in outside the household.

Potten, David. "Etsha: A Successful Resettlement Scheme." Botswana Notes and Records, Vol. 8, 1976: 105-119.

An account of the resettlement of some 4,000 Angolan refugees between

December 1967 to September 1969 and subsequent successes. Presentation does not analyze data according to gender.

Purcell, R. A. and J. P. G. Webster. Agricultural Change in Botswana A Summary of the Farm Management Survey Results 1970-76. Gaborone: Division of Planning and Statistics, Ministry of Agriculture, 1977.

The Farm Management Survey objectives are to describe farming organizations in four areas in Botswana, to identify and account for farming changes and to produce input-output data for planning profitable farming systems. This particular summary concentrates on a time-series analysis to identify and elucidate historical trends and movements within the mixed farm enterprise. The survey conducted for this particular writing covered twelve farmers in each of the following areas: Gakgatla in Kweneng District, Palotshetlha in the Ngwaketse, Sedibeng in the Barolong and Mookane in the south of Central District.

The tabular presentation of data should be viewed with some caution since sample size is very small and thus not representative of production in the areas surveyed. The summary conclusions appearing at the end of the document are useful as indicators to consider when designing agricultural development projects. Some of these conclusions are as follows: 1) where labor is scarce relative to capital, a farmer will invest in livestock; where labor is abundant and capital scarce, the crop enterprise is more attractive; 2) in most years the mean planting date occurred in December since farmers are reluctant to plant earlier due to the uncertainty of post-planting rainfall; 3) bean production increased by 20% when row planted, while sorghum increased 70% and maize 100%; 4) sorghum requires 17 man-days of labor per annum while maize requires only 11.

Rihani, Mary. Development as if Women Mattered: An Annotated Bibliography with a Third World Focus. Washington: New TransCentury Foundation, Occasional Paper No. 10, 1978.

Includes a number of entries on Botswana used in this bibliography.

Roberts, Simon. "The Settlement of Family Disputes in the Kgatla Customary Courts: Some New Approaches." Journal of African Law, Vol. 15, No. 1, 1971: 60-76.

While marriage was traditionally negotiated between the "guardians" of both the bride and groom, such practices have been attenuated due to socio-economic changes among the Kgatla. Formal betrothal is now rare and full kinship support of the individuals being married is obviously absent. The author, through an examination of a number of court cases, discusses how far customary courts have succeeded in adapting the law to these changed social conditions. He concludes that, for the most part, the courts have recognized the diminished importance of the traditional kinship organization in contemporary family life and this recognition has been manifested in decisions requiring the payment of matrimonial relief and maintenance in more "informal" marriages where children's welfare is at stake.

Russell, Margo. "Slaves or Workers? Relations between Bushmen, Tswana and Boers in the Kalahari." Journal of Southern African Studies, Vol. 2, No. 2, April 1976: 178-197.

The relationship between a small community of about 300 white cattle-keeping Afrikaners in Ghanzi in the western Kalahari, and the indigenous Bushman majority on whose traditional hunting grounds the Afrikaners were formally settled in 1898, is compared to the very similar relationship developed between Bantu cattle-keepers and the Bushmen in Botswana. Archival evidence of Bamagwato and Batawana domination of subservient Bushmen and Kgalagaris is assembled. Parallels are drawn between the hostile British reaction to the domestic servitude during the Protectorate, and contemporary Tswana criticism of Afrikaners for their exploitation of the bushmen. Archival accounts of the Tswana defense of this institution in the '30s is compared to similar explanations solicited from Afrikaners during fieldwork in Ghanzi in 1973. The economic basis and evolution of Bushman dependence in Ghanzi is traced in the context of the recent rapid commercialization of cattlekeeping. Prevailing governmental pressures to transform established patterns of dependence between bushmen and their patrons into the contemporary idiom of employer/employee is short-sighted conformism to a modernizing ideology which may well be to the detriment of the Bushmen whom the policy is overtly designed to protect. (Sociological Abstracts)

Schapera, I. Rainmaking Rites of Tswana Tribes. Leiden: Afrika Studiecentrum, 1971.

The present volume is the third in a series of "African social research documents" being published jointly by the African study centres at Leiden and Cambridge. The editors have provided a vehicle for the publication of fairly raw (or at least not overcooked) data, which while useful to specialists would not normally attract the interest of a conventional publisher. This is an excellent notion, as the present volume demonstrates, and it would be unfortunate if the series were unable to proceed for lack of funds.

Schapera has used the opportunity to publish his observations on rainmaking among the Tswana, recorded during the field-trips which he made between 1929 and 1943. The Tswana live in a dry environment, and rainfall is both sparse and unpredictable. To ensure good crops, enough rain must fall at the right time, and, not unexpectedly, there are a number of rainmaking rites. The first chapter describes reactions to a drought among the Kgatla in 1929, and Schapera vividly sets out the range of magical resources, from church services to traditional cults, to which people turned. However, there is another side to rainmaking too, a political side. Traditionally the chief was believed to have rainmaking powers, even today he is at the centre of rainmaking, as officiant or magical entrepreneur. Moreover, his actions may result in droughts. This side of the picture is described in chapter two. Chapter three deals with the professional rainmakers, and describes the techniques they use. The next two chapters describe the seasonal and the special rainmaking rituals. The following chapter brings together material on other Tswana tribes, and ends with a discussion of general characteristics of Tswana rainmaking.

In his preface, Schapera writes that it is 'part of a general plan in which I hope to make available to ethnographers, while opportunity and time permit, some of my still-unpublished material about the Tswana. For this reason I have included as much descriptive detail as I can . . .' This is, then, at least partly, to be seen as the filling in of a corner of the great Tswana ethnography which Schapera has published over the past four decades. However, even those anthropologists who are not particularly familiar with the Tswana literature will find that the lively narrative and the complex detail make for interesting and challenging reading. I can think of few books more likely to give the student a feel for the complex of ritual behaviour. It will serve as a useful antidote to the sometimes facile pattern-making of the 'new anthropology', and a reminder of what ethnography should be. (Review by Adam Kuper, Africa, Vol. 42, No. 1, 1972.)

. "Some Notes on Tswana Bogadi." Journal of African Law, Vol. 22, No. 2, 1973: 112-124.

This is a general analysis of the bridewealth system among the Tswana based on certain quantitative studies the author undertook in several different chiefdoms from 1932 to 1940. He notes that even though missionary churches banned the payment of bridewealth, it still continued even among Tswana Christians. Also noted was a difference in the speed at which bridewealth was paid and the amount. No specific reference is made of the object of this payment--the women--as the writing is basically a comparative analysis of the systems as they are practiced among various branches of the Tswana.

. The Tswana (rev. ed.). London: International African Institute, 1979. (Originally published in 1953.)

A seminal volume on the Tswana, providing detailed information on groupings, demography and history, language and literature, economy, social organization, government and law, and religion and magic. A supplementary chapter by John L. Comaroff covers Tswana transformations from 1973 to 1975. (Eicher Bibliography)

Schapera describes the characteristics of social status among the Tswana by noting that there are both rank and social class differences as well as differentiation according to sex and age. Women, traditionally, were treated as perpetual minors under the guardianship of their fathers, husbands or some male relative. In terms of the household, he notes that on each compound there might be several dwelling units and granaries. A "family group" consists of several different households (compound) living side-by-side and acknowledging a common elder who is generally the senior agnatic kinsman of the group. Within the household, women were responsible for all crop production, as well as repairing the walls of any structures on the compound, fetching grass and thatching roofs, preparing food and making beer, looking after fowls, fetching water, wood and earth, collecting wild edible plants and doing the housework. Men herded cattle, hunted, did all the timberwork in building, cleared new fields, and occasionally assisted in planting, weeding and reaping. Schapera also notes that since oxen are used as draught animals, men plough, and sometimes fetch wood and

earth in wagons or sledges. Women more recently have handled cattle and so assist in ploughing and driving. They also look after pigs in the eastern region. When tasks are too onerous for the members of a homestead to perform alone, a work party consisting of relatives and neighbors is called, for which they are paid in meat and beer.

Another aspect of social organization comes into play when labor is required, and this is the traditional gender-based age regiments. These are called upon to perform work of a public service nature or, in the case of women, to build new structures and related activities for a chief or other political leader.

Sheffield, James R, Jon R. Moris and Janet Hermans. Agriculture in African Secondary Schools, Case Studies of Botswana, Kenya and Tanzania. New York: African-American Institute, 1976.

Urges Botswana to give high priority to upgrading agricultural knowledge and skills and to implementing existing government policy. Recommends that Botswana give a clearer definition of the aims and objectives of agricultural teaching in secondary schools, resolve the syllabus issue, develop textbooks and teaching aids, and provide laboratories, equipment and adequate administrators and teaching staff. (Eicher Bibliography)

In a case study of St. Joseph's College--the oldest secondary school--the author noted that girls are not allowed to take agricultural courses though many would like to; they are instead directed to domestic science. "Earn and learn; learn and earn" is the motto of the male students who grow vegetables and raise small ruminants as part of their course requirements and who are allowed to sell them. Thus boys gain access to extra income while girls do not.

Sigwele, Howard Kgalemang. An Analysis of Research and Extension Strategies to Improve Cropping Systems for Small Farms in Botswana. M. S. Thesis, Plan B Paper, Department of Agricultural Economics, Michigan State University, 1982.

The problem this research addresses is why do the majority of traditional farmers resist sole cropping and row planting when both the Research and Extension Department of the Ministry of Agriculture have been promoting these practices since colonial days? After presenting a review of the literature on arable production practices in countries other than Botswana, a chapter is presented on farmers who practice sole and mixed cropping in Botswana.

The typology of farmers the author presents consists of 80,000 traditional farmers and 360 commercial farmers. The major commercial crop farms are located in the eastern strip between Francistown and South Africa, while those in the West (Ghanzi) specialize in stock production. In specifying this typology further, Sigwele shows that some 54,350 traditional farmers raise a combination of livestock and crops, and of these some 60% plant between 4 and 5 ha., the remaining 40% plant only 2.7 ha. The difference is attributable to owning cattle (between 30 and 40 head). Some 28%

(22,300) of traditional farmers do not own any cattle. Further specifying his typology, Sigwele distinguishes the following groups: 1) Farmers who plant less than 2 hectares but did not produce anything in 1980 constitute 15% of traditional farmers; 2) those who plant between 2 and 4 hectares and have average yields of 96 kg/ha. constitute 50% of traditional farmers; 3) those who plant between 4 and 10 ha. and have average yields of 211 kg/ha. constitute 15% of farmers; and 4) those who plant between 10 and 18 ha. and obtain an average 435 kg/ha. of various crops. The remaining 18% do not grow crops and have average livestock herds of between 40 and 76 head.

In his discussion on cropping systems, the author first considers labor allocation on farms with less than five hectares. Most farmers prefer mixed cropping/broadcasting since it is less labor intensive and less risky. Seeds broadcast together include sorghum, maize, cowpeas, water-melon and millet. Competition for labor exists between crop and livestock enterprises as well as off-farm activities. A graphic presentation of competitive labor activities is as follows:

The Agricultural and Livestock Calendar for Small Crop and Livestock Farms in Botswana

Household Activities Using Labor	Periods of the Year											
	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.
<u>Non-Farm Activities</u>												
Leather work												
Tapestry												
Beer-brewing												
Woodwork												
*Mining in South Africa	Vacation											
Metal work												
Hunting												
<u>Off-Farm Activities</u>												
Private sector employer	Vacation											
Miscellaneous												
<u>Community Development Activities</u>												
Building schools												
Clinics etc.												
Village meetings and traditional court hearings												
Marriage activities												
<u>Schooling Activities</u>	Vacation											
<u>Cropping Activities</u>												
Ploughing	Ploughing											
Planting	Planting											
Weeding	Weeding											
Birdscaring	Birdscaring											
Harvesting	Harvesting											
Threshing	Threshing/Winning											
Winnowing												
Wood destumping	Wood Destumping											
Repairing bush and wired fences etc.	Repairing bush fences and wire fences, etc.											
<u>Livestock Activities</u>												
Herding cattle against crop damage	Herding cattle against crop damage											
Watering livestock during dry months	Watering livestock during dry months											
Miscellaneous												

* Reliable data on the pattern of migrant mine labor to South Africa vis-a-vis the supply of labor for peak periods for agricultural operation is highly limited.

There is only one tillage stage which occurs when the rains begin. Seeds are broadcast on unploughed/tilled land which is usually littered with crop residues from the previous season. Few farmers apply fertilizer in the mixed traditional sector, although a few broadcast kraal manure using animal-drawn carts. Weeding is done once with hand hoes. Mechanical harvesting in mixed cropping is impossible. Commercial farmers (3% of total supplying 50% of market surplus) have two tillage stages, one shortly after harvest (to control pests and weeds and to conserve soil moisture) and the second at the onset of the rains. Fertilizer and hired labor are used in commercial enterprises. Intercropping conducted on the research station requires much more labor as planting times for each crop differ.

The study was conducted on research stations to measure the productivity of cowpeas in mixed stand or in intercropping and yielded a reduction in both pods per cowpea plant and yield per plant in grams (27% and 39%, respectively). Grain yield of cowpeas dropped from an average of 1003.7 kg/ha in the sole stand to about 200.5 kg/ha in the intercrop. He found that sorghum yield remained about the same thus indicating that competition from cowpeas in intercrop does not deleteriously effect the growth of sorghum. But man hours for these two intercropped were 14% higher than for sorghum as a sole crop, but 59% lower than for cowpeas in sole stand (but this was attributable to the reduction in the number of cowpea plants in intercrop). There are alarming differences, however, between yields on the research stations and those experienced by farmers.

The Ministry of Agriculture has been indirectly encouraging small farmers to adopt the following practices: plant as soon as possible after it rains, weed more than once, plough-in crop residues immediately after harvest, use more fertilizer, insecticide, etc. Autumn ploughing was not possible for half of the small farmers (58 out of 110 surveyed) due to insufficiency of draught power, hardness of soil, insufficient water at the lands/fields, their preference to graze fodder on fields and their preference to move back to the village in the fall.

Sigwele's thesis then goes on to describe the Ministry of Agriculture and the projects it has undertaken--Dryland Farming Scheme, Farming Systems and Agricultural Implements Project, Integrated Farming Pilot Project, Arable Lands Development Program and various Farming Systems Projects. In reviewing data generated by these projects Sigwele found that family labor is crucial to arable production on small farms, farmers prefer mixed to monocropping because it provides security against natural vagaries (weather, pests, etc.), farmers are not willing to accept new practices because they are unsure of the risks involved. Additionally, he found farmers suffered from a lack of draught power and credit. He notes that the greatest need in agricultural research and projects is for on-farm trials and testing.

Silitshena, R. K. Preliminary Notes on Some Characteristics of Households and Population that is Settled Permanently at the Lands in the Kweneng District. Gaborone: University College, National Migration Study Workshop Paper, 1977.

Simela, Oscar Dick. The Impact of Planned and Implemented Projects on the Development of Botswana Since Independence. Ph.D. Dissertation, Kent State University, 1980.

After decades of semi-colonial rule in partnership with its sister British Protectorates of Lesotho and Swaziland, Bechuanaland gained its independence in 1966, and assumed the name Botswana. Under the leadership of Seretse Khama, Botswana's first black government moved quickly to try to legitimize its newly gained political independence by achieving economic independence as well. This latter effort however, has proved to be a very difficult undertaking for Botswana partly because of its geographically landlocked position in the middle of hostile neighbors of South Africa, Namibia, and until recently, Rhodesia; and also because of unfavorable climatic conditions on top of a long history of developmental neglect by the protectorate administrations.

To remedy this situation, Botswana proposed and implemented a series of development plans, but like many other developing nations, these development programs have met with limited success, allegedly because of limited resources. This study contends that another possible reason for limited achievements in developmental efforts may be insufficient consideration of geographical elements in planning such as the distributional patterns of key variables like population, income, and poverty-oriented variables such as infant mortality or unemployment. Further, consideration of these variables must be from both static and dynamic perspectives which incorporate the time element.

This dissertation took these elements into consideration and mapped several socio-economic variables over three time periods, using the synagraphic mapping program. The resulting distributions showed a fairly modest increase in socio-economic status from the pre- to the post-independence periods for most areas in the eastern region of Botswana. It was further shown by a distance decay model, that such growth had a strong distance bias in favor of urban areas.

An investigation of the continuity of this growth in the post-independence era gave mixed results showing definite continuing growth in agriculture, but not so definitive results with respect to education, mining or medical services.

Finally, the largest contributor to growth and interaction among the major economic sectors was shown by an input/output analysis to be the Botswana Meat Commission (B.M.C.), a company that enjoys legislative monopoly of the meat industry; all meat products exported from Botswana are required by law to pass through the B.M.C.'s abattoir in Lobatse. It was also noted that the mining industry's challenge for leadership among Botswana's economic sectors could become a reality if the potential impact of the Jwaneng diamond mine, scheduled to start production in 1982, is realized.

These results and other observations on different aspects of development planning were incorporated in a discussion of the implications of existing spatial patterns and trends for future development policy formulation and orientation. (Dissertation Abstracts)

Snyder, Linda M. Rural Development and Women in Botswana: Policies, Problems and Priorities. Edinburgh: University of Edinburgh, Department of Educational Studies, 1978.

Solway, Jacqueline S. "Socio-Economic Effects of Labour Migration in Western Kweneng" in Carol Kerven (ed.) Workshop on Migration Research, March 29-30, 1979. Gaborone: Ministry of Finance and Development Planning, Central Statistics Office, National Migration Study/Ministry of Agriculture, Rural Sociology Unit, 1979.

Examines the general socio-economic structure of western Kweneng, with emphasis on the Dutlwe area and the changes brought about by the commercialization of the cattle industry. (Eicher Bibliography)

People, Cattle and Drought in Western Kweneng: Report on Dutlwe Village. Gaborone: Ministry of Agriculture, Division of Planning and Statistics, Rural Sociology Unit, 1980.

Stevens, C. "Food Aid and Nutrition--The Case of Botswana." Food Policy, Vol. 3, No. 1, 1978: 18-28.

After a brief review of ways in which food aid is used in Botswana, the author focuses on a case study of the distribution of food aid from the World Food Program in 1975 and its impacts. He first considers primary school feeding programs. The author queries whether nutritional levels of children most in need are being raised as opposed to those children whose nutritional intake is already adequate. With regard to the vulnerable group feeding program (food supplied to pregnant women, nursing mothers, pre-school children and TB outpatients), the author queries whether distributed food is actually consumed by those who receive it. He argues further, in considering the impact of food aid on the family economy, that this food represents transfer income in kind to recipient households. He concludes that more attention is focussed on the logistics of getting food to people than on its ultimate nutritional value, although he agrees some of the most needy are being reached.

Sutherland, Alistair J. "Grass Roots Land Tenure Among the Yeyi of North-Western Botswana." Journal of African Law, Vol. 24, No. 1, Spring, 1980: 62-84.

This article is divided into four sections: a brief history of ecological and administrative change in the study area (the Okavango Delta in the northwest); the present pattern of variation in land tenure of the neighborhoods of the North Valley, the Sandybelt and the South Valley; differences in the organization of production and how these relate to land tenure; and a discussion of the development of distinct patterns of neighborliness, investment and economic differentiation.

The Tawana subdivision of the Tswana-speaking peoples cultivated both sides of the river valley in Riverside and South Valley until the water table subsided and older cultivation sites were abandoned.

A mixture of land tenure practices is found in the areas of study in which both village and scattered hamlets are the norm, for the Tswana the former and for the Yeyi the latter. In the North Valley land titles are inherited along the male line from father to son, and a title-holder may lend out various plots on his land thereby establishing a special, close relationship to the plot lender which is characterized by such terms as "our father," "our maternal uncle" or "our chief" without there being an actual kinship or political relationship. Plot lending is legally binding, and may also be transacted among kin. How these practices differ in the South Valley is a function of the interaction of the intensity of the kinship/friendship network vs. the personal accumulation of wealth. Thus in the South Valley "accumulators" have increasingly larger herds of cattle and larger shares in grazing land. Also, available land is more of an economic asset linked to the household and individual units of production and less an aspect of social relations linking the individual to the community. In the Sandybelt where swidden agriculture is practiced, rights to land are less clearly formulated. Short-term fertility requires movement as production decreases. Where long-term fertility is maintained in wet valley cultivation there is a greater interest in retaining the site, thus land tenure rules are more stringent as are social relations which enhance the ability of a title holder or plot lender to keep hold of his land.

Production is organized differently according to neighborhoods. In the wet valley system ploughing is done by teams of oxen. In the North Valley two men team up to plough each other's fields with the senior of the two having his ploughed first. Households generally have two or more plots within easy walking distance from the residential site. Men plough the land, while women weed and harvest it. Some of the grain produced in the husband's plots is reserved as a customary gift for a male's in-laws. Social stigma prohibits married women in the North Valley from ploughing when their husbands are on labor migration; thus assistance is sought from other male kin. Sandybelt production practices are similar except more ploughing labor is required owing to the constant need to clear cultivation sites. Women do all the hand hoeing in this area.

Peak demands for labor vary. More labor is required for weeding under swidden cultivation. More drought resistant crops (millet and sorghum) are planted and need more labor during harvesting and threshing than maize grown in better watered areas.

In the South Valley neighborliness is minimized in both sharing production tasks and providing assurances that underproducers will have a source to buy a neighbor's surplus. This transaction is conducted on the bases of reciprocity by which the buyer becomes obliged to the seller to reciprocate in time of need, and to sell at less than market prices.

The author sees gradual shifts in each of the studied neighborhoods, and comments upon the role of the state in enforcing land registration laws. He concludes that even though changing patterns of social organization and tenure may produce different strategies for coping with adverse conditions, there are signs of "increasing overall prosperity" across the country.

Syson, Lucy. Absentee Remittances as an Item of Household Income. Gaborone: UNDP Project Botswana 71/014, 1973.

Tengroth, Leyla Assag. Facts on Botswana. Gaborone: Government Printer, 1976.

A succinct presentation of information on geography, history, people, government, industries, health, education, tourism, etc. Maps of rainfall, vegetation, population density and mineral and agricultural distribution are included.

Tinema, B. C. "The Changing Pattern of Tswana Social and Family Relations." Botswana Notes and Records, Vol. 4, 1972: 39-43.

This brief article outlines the decline of traditional political authority and the changes in family relations which have occurred among the Tswana over time. The author notes the traditions of sharing goods and services have been attenuated by the introduction of cash crops and the need for money to send children to school.

Ulin, Priscilla R. Utilization of Maternal and Child Health Resources in Rural Botswana. Ph.D. Dissertation, University of Massachusetts, 1976.

The Western interpretation of health beliefs and practices in sub-Saharan African countries has undergone a substantial metamorphosis since the eighteenth century, when so-called "primitive" behavior was judged according to its presumed level on an evolutionary continuum. Since that time, the emphasis has gradually shifted toward the continuities between scientific and traditional healing systems and the rationale which underlies their dual use in many countries. The research which is reported here reflects this theoretical perspective.

In Thamaga, a rural village in southeastern Botswana, 638 women participated in a household survey which explored their recent utilization of both official (scientific) and non-official (traditional or customary) maternal and child health resources. The major objectives of the project were: 1) to identify patterns of help-seeking behavior as a means of providing useful information for health planners and providers in the Ministry of Health; 2) to add to the knowledge of the socio-medical scientific community on a country about which little had been written in recent years; and 3) to investigate the extent to which health behavior is associated with several potential vehicles of change: education, voluntary women's organizations, the mass media, and urban experience. In addition to the household survey, the investigator conducted informal, intensive interviews with traditional healers and with some of the women in Thamaga. This qualitative data is used for comparison with and interpretation of the survey findings and to suggest new avenues of inquiry.

In multivariate and multiple classification (categorical) analyses of the survey data, several clear findings emerged. The majority of the children with health problems were taken first to an official clinic, but the decision to seek scientific or customary healing rested primarily on the

caretaker's definition of the symptoms, that is, whether she located them in a scientific or a traditional taxonomy. Compared with similar countries, there was relatively little dual use of scientific and customary healers, but in that 20% who did use both the majority moved from the scientific to the traditional system and did so because of dissatisfaction with the former.

Faith in scientific curative medicine finds little parallel in preventive health behavior. The majority of women attended a prenatal clinic; however, they did so not as a preventive measure but to seek relief from illness or discomfort which coincided with pregnancy. Most continued to deliver their babies at home and to avoid or neglect immunization beyond one inoculation, in most cases a small pox vaccination. At least half the women distrusted immunization, mainly out of fear that the inoculation would cause rather than prevent illness.

Among potential change agents, only participation in women's organizations was directly related to the use of official clinics for curative medicine. Level of formal education demonstrated an opposite effect insofar as the more educated women (upper primary school) were somewhat more likely to choose traditional healers as a first source of help. However, education was positively related to the use of official maternity services and to the expression of a favorable opinion of immunization. Other potentially modernizing influences showed little or no effect on health behavior.

The quantitative and qualitative data of this investigation are brought together with evidence of similar behaviors reported in the literature to build a set of general propositions. Thus, the dissertation is an attempt to contribute inductively to the generation of substantive theory in sociomedical science. (Dissertation Abstracts)

U.N. Food and Agriculture Organization. Report on the Agriculture Marketing Seminar for Botswana, Lesotho and Swaziland. Seminar Report No. 1. Gaborone, June 1975.

Report on FAO/UNDP Seminar on food crops, livestock and animal product marketing and production requisites. Outlines marketing organization for food commodities, marketing boards and role of cooperative marketing in each of the BLS countries. (Eicher Bibliography)

Van Rensburg, Patrick. "Boiteko." Botswana Notes and Records, Vol. 5, 1973: 12-16.

Describes Boiteko as a model village cooperative organized to promote employment and improve the quality of life in rural areas. No mention is made of women and income-generating tasks are not analyzed in terms of gender.

_____. The Serowe Brigades--Alternative Education in Botswana. The Hague: Bernard van Leer Foundation, 1978.

The author presents a description of the Brigades as primarily non-governmental organizations operating under the control of autonomous local

trusts. Each Brigade center is independent of the others, although a National Brigade Co-ordinating Committee was established by the government under the jurisdiction of the Division of Technical Training in the Ministry of Education to watch over operations and channel technical and financial government aid to them.

Each Brigade specializes in the training of a particular productive activity such as farming, building, electrical wiring, tanning leatherwork or vehicle repair and maintenance. Each program generates income through the sale of its products or services. Training consists of courses lasting 2-3 years, 80% of which is on-the-job training and 20% classroom work.

At the time of writing, some 2,500 people had been trained in more than 16 skill areas. The Brigades at Serowe are making an attempt to meet the needs of women by providing both training and child care services.

Vengroff, Richard. Botswana: Rural Development in the Shadow of Apartheid. Rutherford, N. J.: Farleigh Dickenson University Press, 1977.

With increasing media coverage on the border tensions between Rhodesia and Botswana (which were debated by the United Nations Security Council in the latter part of January 1977) there may be a tendency to let the dramatic and the martial aspects of Botswana politics supplant the less flamboyant and unheroic concerns of economic development and adequate rural income distribution. Although geographically thrust into the cockpit of Southern African politics, Botswana must primarily wage war on poverty and income maldistribution. Only secondarily can it divert its very scarce resources to the attenuation and eventual termination of racial status inequality. For years, President Khama has rejected the pleas of the Loyal Opposition to form an army (which, in 1977, has just received statutory approval by the Botswana National Assembly) on the pragmatic grounds that it would drain funds away from a spartan budget that could better be utilized in the economic development of the hinterland.

Dr. Richard Vengroff, an Associate Professor of Political Science at Texas Tech University in Lubbock, provides an eminently solid and readable analysis of the political components of economic development in the Botswana countryside. His is one of the very few full-length scholarly studies to concentrate on the rural masses of the Republic of Botswana, a nation granted independence by the British Government in 1966. It is refreshing to be reminded once again that the precepts of nineteenth century utilitarianism, calling for the greatest good for the greatest number, should gaze away from the urban elites of Africa, who have a keen sense of their own entitlements, to those who are benefitted least from the advent of independence. In this sense, the author is implicitly acknowledging the debt all Africanists owe to Rene Dumont, whose False Start in Africa has helped keep the priorities of Africa straight in their minds. Like most political scientists, Dr. Vengroff is interested in the admixture of modernity and tradition, two ideal type constructs. He discovers, not surprisingly, that the two worlds can coexist in time and space and within the same person. The author investigated which types of roles and organizations in the rural setting, such as local district councils and village

development committees, were most effective in facilitating the improvement of socioeconomic conditions in rural Botswana. To a much greater extent than Professor Adam Kuper (who wrote the superb social anthropological study, Kalahari Village Politics, in 1970), Dr. Vengroff has studied the organization and impact of the Botswana political party machinery at the micro-level in order to ascertain how it functions as a means of communication between the core (capital of Gaborone) and the periphery (area of the Kweneng District, inhabited principally by the Bakwena ethnic group of Botswana).

The book, which includes most of chapters three through six of the author's 1972 Syracuse University doctoral dissertation entitled "Local-Central Linkages and Political Development in Botswana," is especially strong in the field of quantitative research techniques as applied to political participation in Botswana. Thus the book contributes much more than mere description and narration. It complements very nicely the work in this area being done by Professor John D. Holm of the Department of Political Science at Cleveland State University. Both men have conducted field research in Botswana. In addition to an impressive and cross-culturally oriented methodology, the book contains photographs of village life in the Kweneng district, several maps and diagrams, as well as twenty-seven tables.

Unfortunately, the index is not as exhaustive as it ought to be, and the selected bibliography omits a number of exceedingly important works on Botswana, such as the reports of the Pim and Morse Commissions about the economy of colonial Bechuanaland, Mary Benson's biography of Tshekedi Khama, the late Anthony Sillery's biography of John Mackenzie, and the writings of Patrick van Rensburg. In addition to several misspellings of proper names (Claude Welch, Patrick van Rensburg) and foreign terms (domkrag, an Afrikaans term for an automobile jack which the Botswana Democratic Party used allegedly because some Botswana could not pronounce the word "democracy" and settled on domkrag as a linguistic compromise), the author fails to provide full and proper citations for British command papers and the appropriate file designations for Botswana National Archives holdings.

He makes very little use of the British House of Commons Hansard and none whatsoever of the Debates or Minutes of Botswana National Assembly and its predecessors (the Legislative Assembly, Legislative Council, Joint Advisory Council, and the African and European Advisory Councils). Furthermore, the author is not altogether clear as to just how the "shadow of apartheid" bears upon rural development in the Republic of Botswana. The comparisons he used are primarily the Ivory Coast and Tanzania--to illustrate the nature of other center-periphery communications networks--rather than the other two former High Commission Territories of Lesotho and Swaziland or even Malawi and Zambia.

Given the attractions of Botswana to those who endorse a philosophy of nonracialism, it is strange indeed that the author devoted little, if any, attention to the rural development activities of foreign volunteers in Botswana, especially those from the various Scandinavian nations, the United Kingdom, and the United States Peace Corps. Perhaps this oversight

was due to the fact that the author appears to have visited Botswana only once in 1970-71 and may not have had the opportunity for a return visit to his Botswana friends in Molepolole and other parts of the Kwaneng in south-eastern portion of Botswana. However, it would not have been unreasonable for him to have kept up with such developments in the Botswana press or even the South African press, which provided fairly ample and basically sympathetic coverage of Botswana politics. (Review by Richard Dale, Journal of Southern African Affairs, Vol. II, No. 3, July 1977.)

. "Networks and Leadership in a Development Institution: The District Council in Botswana." Political Anthropology, Vol. 1, No. 2, July 1975: 155-174.

For an analysis of local government in Botswana, data were gathered during 1970-71 in the Kweneng District. Multiple interviews were conducted with all district councillors and chiefs (number of cases = 40), and single interviews were conducted with a sample of village development committee members (number of cases = 105), unsalaried headmen (number of cases = 37), and a mass adult sample (number of cases = 284). District Council meetings, political party meetings, and Kgotla meetings were observed, and records of these groups were reviewed. In Botswana, as in much of Africa, local leadership positions ("modern" elective ones) are characterized by a syncretistic blending of traditional and rational-bureaucratic values. Influence in the District Council is determined by age, tenure in the ruling party, and the density of the individual's communications relations. The syncretistic nature of local leadership has a direct impact on the local political allocation process. Authority conflict between the council and the traditional authorities continues to play an important role in local politics. Consequently, major considerations for the council in undertaking development projects are frequently local leadership disputes rather than developmental issues. District councils provide neither the leadership nor the direction necessary to make a major contribution to the development effort. Pressures from below must be created by increasing the rate of mass participation at the village level through community development, education, and mobilization. Demonstrated is the utility of employing individual communication networks as data for the study of local level politics. This approach has provided a basis for systematic analysis as well as more easily quantifiable data useful for empirical testing. (Annotation by E. Preston from Sociological Abstracts)

. "Popular Participation and the Administration of Rural Development: The Case of Botswana." Human Organization, Vol. 33, No. 3, Fall 1974: 303-309.

An effort to isolate those variables associated with successful, locally initiated, and locally undertaken community development efforts is made. Three specific criteria are analyzed: (1) leadership, (2) participation, and (3) coordination. The Republic of Botswana is used to examine local participation and the contribution of self-help to national development. Each village development committee (VDC) consists of about twelve members, including the chief, the elected district councillor and a group of villagers chosen by a meeting of the community. There are four basic types of

leadership associated with VDC: (a) the large villages in which both an established tribal authority and elected councillor are resident, (b) villages that have a resident councillor but not a tribal authority, (c) villages that have a tribal authority but not a councillor, and (d) small villages that have neither a resident councillor nor a tribal authority. The 31 villages examined were grouped according to type of leadership and a t-Test was performed on the output of projects for each pair of village types. No significant differences were found to exist between groups. The type of leadership available for rural development is not a key issue if the concern is with immediate outputs. Both traditional and elective authorities appear equally capable of organizing and bringing to completion local development projects. (Sociological Abstracts)

. "Traditional Political Structures in the Contemporary Context: The Chieftaincy in the Kweneng." African Studies, Vol. 34, No. 1, 1975: 39-56.

The utility of two alternative approaches to the study of sociopolitical change in African societies are examined: (1) the eurythmic approach which assumes that culture contact results in the imminent replacement of traditional african by western roles and values, and (2) the syncretistic approach which suggests that change is a question of selective adaptation of elements of western culture to the traditional milieu. The case of the changing role of the chieftaincy in Botswana is employed as a test of these competing hypotheses. Three types of data were gathered during 1970-71: (1) archival material covering the entire colonial period, (2) multiple interviews--both structured and unstructured--with all officially-recognized chiefs and a sample of headmen in the Kweneng District (number of cases = 46) and (3) direct observation of a sample of tribal court cases (number of cases = 43), and tribal, village development committee and party meetings. These data provide support for the syncretic hypothesis. The role of the chief continues to be complicated by the demands of a poorly-integrated value system. Behavior can therefore draw legitimation from diverse sources. Rather than falling before the onslaught of western values, the chieftaincy continues to be a viable institution. In spite of the loss of much formal authority, traditional leaders continue to dominate the local judiciary and the flow of information to the people, selectivity in the dissemination of information and the potential loan of traditional legitimacy to government programs leaves the chiefs in a position of considerable strength. (Sociological Abstracts)

Vivelo, Frank Robert, Jr. The Herero of Western Botswana: Aspects of Change in a Group of Bantu-Speaking Cattle-Herders. Ph.D. Dissertation, Rutgers University, 1974.

This is a study of social change among a group of Herero cattle-herders residing in western Botswana, Africa. Previous descriptions of the Herero are compared with observations of the Herero in 1973. Based on these comparisons, major transformations in Herero social organization are reported and interpreted.

I attribute most changes in Herero social institutions and patterns of social behavior to their adoption of the practice of selling formerly

sacred cattle. In turn, the adoption of cattle sale is interpreted as a result of Herero reliance on new resources, mainly of European provenience, after their wealth in herds was severely depleted by war. Thus, it is suggested that endogenous change among the Herero was precipitated by exogenous factors. The influence of exogenous stimuli to change is especially apparent in the political sphere, where contact with foreign nation-states produced significant transformations in Herero political organization. The implications of this work for the study of social change in general are: 1) that changes in a group's organization of social relations generally rest on adjustments in the primary economic activities of the group's members; and 2) that social change may not be explicable if analysis is restricted to the group in question with reference to its relationships to other groups with which it is in contact. (Dissertation Abstracts)

. The Herero of Western Botswana: Aspects of Change in a Group of Bantu-Speaking Cattle Herders. St. Paul, MN: West Publishing Co., 1977.

Vivelo's thesis is that most changes in Western Herero social institutions and culture are due to "their adoption of the practice of selling formerly sacred cattle" following the 1904 war in South West Africa (Namibia) during the migration to Botswana.

The hypothetical underpinnings are attributed to Yehudi A. Cohen, who theorizes that "the social organization of an adaptive unit is dependent on its boundary cultural relations" and "that changes in human culture and social organization are exogenous, that is, such transformations have their principal sources outside a society's boundaries." Vivelo feels that the Herero characteristics "fit" Cohen's theoretical framework and accordingly attempts to "test" related criteria and corollaries, but seems to fall short in grounding theoretical assumptions in a firm qualitative/quantitative data base.

Translation of hitherto unavailable German sources is excellent and Vivelo has mentioned new sources pertinent to both Botswana and Namibian scholars. Unfortunately, due to the usage of technical terms, this ethnohistorical treatise is largely aimed at a professional rather than a popular readership.

Historical factors center around the German/Herero conflict in which several hundred families uprooted and migrated to Western Botswana for safety, leaving behind their cattle in the process. Upon arriving in Botswana, they were economically dependent upon the Tswana, working both for survival and to reacquire religiously important cattle. Vivelo describes the cultural importance of cattle in structuring Herero society, pointing out that cattle symbolized more than a mere economic commodity, i.e., social relations, prestige, religion, and their sense of identity.

Without cattle, the Herero gradually lost cultural values which prevented selling ritual cattle commercially and adopted Tswana and European values, thus weakening a binding social/religious mechanism.

Although many elders still hold traditional values, Viveló contends that external material and ideological introductions influence younger people, giving them a different religious and economic orientation, in which they view cattle primarily as a market commodity which can be used to obtain modern goods and hence to become modern.

This author conducted applied fieldwork in 1976 among the Western Herero in Botswana and although the book is theoretically adequate, I think the title is rather presumptuous. The period of fieldwork (4 and 4/5 months), historical research, and lengthy "theoretical" excerpts appear insufficient to produce a descriptively adequate account of Herero culture.

Problems and needs of Herero society are not related very well to the processes of national development and other ethnic groups, even though Viveló emphasizes the power of the state in change. Viveló recognizes the lack of macro-perspective and quantitative data but has done little to correct these gaps, weakening the overall quality and reliability.

While Viveló's book is a valuable contribution in "salvage ethnography" it could do a better job of assessing modernization processes if the methods and techniques of fieldwork were improved and the fieldwork extended. (Review by Stanley B. Andrews, Africa Today, Vol. 27, No. 3, 1980.)

Werbner, Richard P. "Land, Movement and Status Among the Kalanga of Botswana" in M. Fortes and S. Patterson (eds.). Studies in African Social Anthropology. London: Academic Press, 1975.

Analyzes land tenure practices in a mixed economy of the highland region of eastern Botswana. In so doing, Werbner analyzes various adaptations the Kalanga have had to make in cropping and herding practices. Certain areas in the high veld are used as belts of cultivation, others for pasture, and still others remain unused. In some large villages, productive belts may be as far away as 35 miles from homesteads. The main staples in both the high and middle veld, as well as for most of Eastern Botswana, are sorghum and bulrush millet. Other crops include maize, sweet cane, ground nuts, beans, pulses, potatoes, and especially in the high veld, finger millet and in swampy areas, rice. The high veld is a higher potential crop production area because of the greater reliability of rainfall.

Access to land by women is not discussed in this writing, nor is any reference made to how Kalanga marriage relations affect women's rights of inheritance or access to land.

_____. (ed.). Land Reform in the Making: Tradition, Public Policy and Ideology in Botswana. London: R. Collings, 1982.

This is a collection of articles which grew out of the Conference on Land Tenure in Botswana which the author convened in March 1978 at the Field Centre of Manchester University. The papers explore different points of view concerning land tenure and how it has changed. The article by Robert K. Hitchcock speaks to "Tradition, Social Justice and Land Reform in Central Botswana"; the next by Uri Almagor describes "Pastoral Identity and

Reluctance to Change: the Mbanderu of Ngamiland"; Alistair J. Sutherland deals with "Grass Roots Land Tenure among the Yeyi of North-Western Botswana"; John L. Comaroff writes on "Class and Culture in a Peasant Economy: The Transformation of Land Tenure in Barolong"; Simon Roberts considers "Arable Land Tenure and Administrative Change in the Kgatleng"; Werbner discusses "The Quasi-Judicial and the Experience of the Absurd: Remaking Land Law in North-Eastern Botswana"; and the last writing by Robson Silitshena is on "Regulation and the Development of Petty Trade in the Kweneng."

Wikan, G. "Absenteeism; Crop Cultivation and Standard of Living in Developing Countries: A Review of the Literature with an Example from Botswana," Geo Journal, Vol. 6, No. 6, 1982.

Wilson, B. H. "A Mini Guide to the Water Resources of Botswana" in Proceedings on the Symposium on Drought in Botswana. June 5-8, 1978. Gaborone: National Museum, 1978.

This article sets forth information on rainfall patterns, temperatures and drought cycles in all the regions of Botswana.

Yates, Leslie McKnight. "Integration of Women in Development in Southern Africa: An Evaluation with Recommendations for USAID Programs in Botswana, Lesotho and Zambia." SADEX, Vol. 1, No. 3, 1979: 1-15.

Summarizes a 1978 report which was undertaken to delineate the basic issues and problems related to the integration of women in development in Botswana, Lesotho and Zambia and to make recommendations for improving USAID efforts to integrate women into its projects and programs. Stresses the urgent need for women in these countries to have access to knowledge, credit, agricultural extension services, consumer and producer cooperatives, labor-saving devices and income-generating activities. Advocates that a special effort be made by host governments and donors at the inception of project identification to include views of local women regarding development needs and possible solutions. (Eicher Bibliography)