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## Changes needed in agricultural policy for female-headed farm families in tropical Africa

Jean M. Due and F. Magayane

*Department of Agricultural Economics, University of Illinois at Urbana-Champaign,  
305 Munford Hall, 1301 West Gregory Drive, Urbana, IL 61801 (U.S.A.)*

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### ABSTRACT

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The decline in per-capita agricultural production has been reversed somewhat in tropical Africa by the structural adjustment programs which have increased producer prices, liberalized marketing and devalued currencies. But the 30% of smallholder farm households which are female-headed will not be assisted much due to their special constraints of shortages of labor and credit, lack of extension visits and appropriate labor-saving technologies. For these households, the authors argue, improved extension services, credit for agricultural inputs, small ruminant animals and poultry, labor-saving devices and craft inputs will be necessary to increase their incomes and levels of living.

### Introduction

The important contribution of women in agricultural production in tropical Africa is finally being realized; their high labor inputs in both agriculture and marketing, in food preparation and crop storage, and their importance in decision-making (about which crops are planted and marketed) is now well documented [Dixon (1982), Richards (1983), Due and Anandajayasekaram (1986), Due and Mudenda (1986), Due et al. (1987, 1988), Burfisher and Horenstein (1985), Spring (1988), Sutherland (1988), and Gladwin et al. (1989) among others]. Most of this emphasis is on the contributions of women in male-headed households (MHH) but evidence is now mounting that the percentage of households headed by females (FHH) with no adult male present or contributing to the finances of the household is between 25% and 35% of the total smallholder farms in tropical Africa

(Kossoudji and Mueller, 1983; Geisel et al., 1985; Due and White, 1986; Sutherland, 1988; Renee, 1988). Can we continue to assume that, if agricultural production is to be increased, the policy prescription is the same for these FHH households as for other smallholders? Do the FHH households have special constraints which need to be addressed if 25 – 35% of the smallholder farm families are to improve their levels of wellbeing and production? This article reviews data available on these households and offers suggestions of changes that would improve their situations.

## **Background**

It is well known that agricultural production in tropical Africa has not kept up with population growth since the mid 1979's. Since population is increasing at 3.3% per annum, total domestic food production must increase by 3.3% per annum just to maintain the current level of consumption. The index of food production per capita in 1984 – 86 for the 36 countries in sub-Saharan Africa (for which recent data were available) was 96.1 compared to the base period (of 100) in 1979 – 81 (World Bank, 1988, pp. 234 – 235). Currently it is estimated that sub-Saharan African populations are receiving only 90% of the FAO/WHO estimated calories needed to meet minimum recommended requirements per capita (World Bank, 1988, pp. 278 – 279). If minimum caloric input per capita falls below 90% of the recommended levels (2400 calories per person per day) energy and work levels decrease, people are more vulnerable to disease, parasites and malnutrition, and receive fewer benefits from schooling and training programs. If the caloric input falls to 80% of recommended minimum requirements per capita, stunted growth, brain damage and severe health risks result.

Thus the need for increased agricultural and food production is well known. Much has been written on the major causes of the continued per-capita decline: high rates of population growth; lack of incentives to smallholder producers; high-cost and inefficient marketing boards; lack of other competitive marketing arrangements, transport and spare parts; poor storage facilities; overvalued exchange rates; emphasis on large-scale public enterprises rather than smallholder producers, and shortage of relevant research and extension services are some of the factors often mentioned (Eicher, 1982, 1988a, b; World Bank, 1984; Due, 1986). Many of the countries in tropical Africa are trying to improve the agricultural situation by reversing these adverse policies. But if 25 – 35% of the smallholder farmers are FHH, are special considerations in agricultural policy necessary to assist these households? The authors of this paper would argue that special considerations are needed. Some of the reasons for these needs follow.

### **Evidence of differences between FHHs and MHHs**

Evidence is mounting that these FHHs are smaller in terms of family size and, therefore, have less labor available for agricultural production. With smaller crop acreages planted than by average MHHs, total production is lower; therefore a higher percentage of the production is needed for consumption, leaving less for sale. This means that family and per-capita incomes are lower. Also, given the shortage of adult labor for agricultural production, and without access to credit to hire oxen or labor, FHHs use more of their labor for brewing beer, selling small quantities of crafts and foods, working off the farm – in opportunities which earn a higher return than agricultural production but curtail food output.

These results are substantiated from studies in Zambia (Due and White, 1986; Sikapande, 1988) and Tanzania (Mollel, 1986) shown in Table 1, in which data were collected from samples of MHHs and FHHs in the same agro-ecological areas. In Zambia (1982) the mean acreage planted by FHHs was significantly different from that by MHHs (43% of MHHs), as were total value of crop production, crop sales and percent of families visited by an extension agent. In the Tanzanian sample, average crop acreage planted by FHHs was 54% of that of MHHs in the same area, and total value of crop production was much lower, as were crop sales and net cash incomes. In both the Zambian and Tanzanian samples, when smallholder farm families were asked about incomes earned from non-cereal crop sources – i.e., from brewing beer, selling small quantities of fruits and vegetables, making craft products and working off the farm, the replies showed that FHHs earned relatively more than MHHs from these types of endeavors. Thus, they were using their labor for opportunities with higher returns than in crop production.

It should be noted also that FHHs plant different crops than MHHs, on average; more of their total crop acreage was allocated to food crops than that by MHHs. The provision of food is a high priority for both types of families but with smaller acreages planted by FHHs it is relatively more important to allocate a greater percentage of their land to food crops. As shown in Table 1, compared to MHHs the Zambian females planted a higher percentage of their crop acreage to maize, the major food staple, and the Tanzanian FHHs to maize, beans, cassava and other vegetables.

A study of a larger sample of 123 FHHs was undertaken in Zambia by Hudgens (1988) and data compared with MHHs in the same areas. Hudgens also found that FHHs had less labor available, owned fewer oxen, planted smaller acreages, and had significantly less crop production for sale than MHHs. Sales of MHHs came from maize, beer, cotton and sunflower; sales of FHHs came from chickens, mushrooms, squash, pumpkins and beans.

TABLE 1

Comparison of male-headed and female-headed farm households in Zambia and Tanzania studies

|                                              | Zambia 1982 <sup>a</sup> |         | Tanzania 1984 <sup>b</sup> |         | Zambia 1986 <sup>c</sup> |         |
|----------------------------------------------|--------------------------|---------|----------------------------|---------|--------------------------|---------|
|                                              | MHH                      | FHH     | MHH                        | FHH     | MHH                      | FHH     |
| Sample Size                                  | 95                       | 17      | 118                        | 32      | 97                       | 27      |
| Means of                                     |                          |         |                            |         |                          |         |
| Age                                          | 42                       | 44      | 49                         | 43      | 41                       | 43      |
| Family size                                  | 7.4                      | 4.5**   | NA                         | NA      | NA                       | NA      |
| adult equivalents <sup>d</sup>               | 4.1                      | 2.3*    | NA                         | NA      | 3.5                      | 1.7***  |
| Acreage in crops                             | 11.5                     | 4.9*    | 2.7                        | 1.4     | 6.8                      | 3.0**   |
| maize                                        | 7.6                      | 3.8*    | 1.7                        | 0.8     | 5.4                      | 2.4**   |
| beans                                        | 0.3                      | 0.2     | 0.1                        | 0.1     | 0                        | 0       |
| groundnuts                                   | 0.9                      | 0.3**   | 0                          | 0       | 1.0                      | 0.5     |
| cotton                                       | 1.2                      | 0.2*    | 0                          | 0       | 0                        | 0       |
| sunflowers                                   | 0.9                      | 0.3     | 0                          | 0       | 0.2                      | 0       |
| other                                        | 0.6                      | 0.1     | 0.9                        | 0.5     | 0.2                      | 0.1     |
| Total value crop production <sup>e</sup>     | K 1201                   | K 368** | Ts 5683                    | Ts 3440 | K4358                    | K1778** |
| Crop sales <sup>e</sup>                      | K 763                    | K 139** | Ts 1166                    | Ts 329  | K2904                    | K 522** |
| Livestock sales <sup>e</sup>                 | K 193                    | K 35*   | NA                         | NA      | NA                       | NA      |
| Farm expenses <sup>e</sup>                   | K 324                    | K 85    | NA                         | NA      | K 68                     | K 3.0** |
| Off-farm income <sup>e</sup><br>and gifts    | K 216                    | K 230   | NA                         | NA      | NA                       | NA      |
| Net cash income <sup>e</sup>                 | K 848                    | K 319   | Ts 3,659                   | Ts 200* | K2,836                   | K1,775  |
| % of families visited<br>by extension agents | 57                       | 29*     | 40                         | 28      | 60                       | 19**    |
| % crops consumed<br>(%)                      | 36                       | 62      | 87                         | 96      | 35                       | 74      |

Sources:

<sup>a</sup> Due and White, 1986; crop year, 1982.

<sup>b</sup> Mollel (1986); crop year, 1985.

<sup>c</sup> Sikapande (1988); crop year, 1986.

<sup>d</sup> Adults available for farming; adult males and females equals 1.0, children aged 8–11 equals 0.3 and aged 12–17 equals 0.5 adults.

<sup>e</sup> K is Kwacha and Ts Tanzanian shillings.

\* Significant differences between means  $\leq 0.1$ ; \*\* significant at  $P \leq 0.05$ ; \*\*\* significant at  $P \leq 0.001$ . NA, not available.

Only 2% of the FHHs reported income from the sale of maize; with smaller acreages planted, maize is grown primarily for home consumption. Female farmers also reported being busier than their male counterparts during the months of May to July, when labor is needed for bird scaring, and maize

harvesting and shelling. The fact that fewer FHHs owned oxen than their male counterparts meant they were forced to hire oxen and labor for land preparation. These costs restricted total acreage planted as well as purchases of improved seed and fertilizer. Visits by extension agents were also less frequent to FHHs than to MHHs.

The above data from Tanzania and Zambia are further emphasized by Sikapande (1988) who, in evaluating the T & V extension system<sup>1</sup> introduced by the World Bank into Southern Province, Zambia, found that few FHHs were chosen as contact farmers, that FHHs had significantly lower levels of education than MHHs, had different primary sources of agricultural information (neighbors, extension workers and radio whereas MHHs stated extension advisors, neighbors, field days, contact farmers), lower numbers of extension visits, and lacked knowledge of the name of either the extension agent or the contact farmer in their area. FHHs also had lower average acres in crops, crop production, sales and net farm income, and owned or rented fewer oxen (Table 1).

Three studies in Malawi (Chipande et al., 1986; Phiri, 1986; Segal, 1986) confirm the same contrasts between the economic position of smallholder MHH and FHH farm households. Chipande, in a study of 600 farm FHHs, found 46% of the FHH had *never* attended school, were at the bottom of the income scale and lacked resources. Fourteen percent of their average cash income came from beer brewing, selling processed food, fish and handicrafts. The authors recommended that FHHs increase their incomes and nutrition by having small ruminant animals and poultry, fruit canning, soap and candle making.

Phiri, in a study of 100 MHHs and 100 farm FHHs found FHHs had 58% of the cash income of MHHs (Table 2), grew relatively more beans, rice and sugarcane than MHHs, but lacked finance, land, skills and inputs for production. FHHs also had fewer extension visits, hired less labor, used less fertilizer and had less access to credit than MHHs.

The Phiri study confirmed the smaller hectares planted of FHHs (1.4 compared with 1.9 for MHHs), lower cash income and farm expenses, and a net cash income of 58% of MHHs (Table 2).

Segal (1986), in analyzing data from the Malawi 1983 – 1984 *Annual Sample Survey of Agriculture*, obtained results in comparing FHH and MHH farms that confirm the Tanzanian and Zambian results. FHHs had a smaller

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<sup>1</sup> The Training and Visit System (T and V) of extension is one being funded by the World Bank after being judged successful in Israel and India. Extension agents, trained every two weeks, relay information to contact farmers who in turn are supposed to relay the information to non-contact farmers each period.

TABLE 2

Comparisons of male-headed and female-headed farm households in Malawi

| Categories                         | Malawi, 1986 <sup>a</sup> |     | Malawi 1983 – 84 <sup>b</sup> |     |
|------------------------------------|---------------------------|-----|-------------------------------|-----|
|                                    | MHH                       | FHH | MHH                           | FHH |
| <i>Means of</i>                    |                           |     |                               |     |
| Household size                     | NA                        | NA  | 4.9                           | 4.0 |
| adult equivalents                  | NA                        | NA  | 2.3                           | 1.6 |
| Farm size (ha)                     | 1.9                       | 1.4 | 1.3                           | 0.9 |
| Hired labor-days/year              | NA                        | NA  | 21                            | 12  |
| <i>Sources of cash income (MK)</i> |                           |     |                               |     |
| Bananas                            | 263                       | 171 |                               |     |
| Cassava                            | 21                        | 16  |                               |     |
| Maize                              | 21                        | 16  |                               |     |
| Other crops                        | 15                        | 6   |                               |     |
| Livestock                          | 4                         | 9   |                               |     |
|                                    | —                         | —   |                               |     |
| Subtotal                           | 324                       | 218 | 217                           | 149 |
| Wage employment                    | 21                        | 7   |                               |     |
| Beer brewing                       | 15                        | 1   | 26                            | 17  |
| Other                              | 7                         | 8   |                               |     |
|                                    | —                         | —   |                               |     |
| Total cash income                  | 367                       | 234 | 243                           | 166 |
| <i>Expenses:</i>                   |                           |     |                               |     |
| Farm operation                     | 10                        | 5   | NA                            | NA  |
| Business                           | 56                        | 50  | NA                            | NA  |
| Household                          | 54                        | 35  | NA                            | NA  |
|                                    | —                         | —   |                               |     |
| Total expenses                     | 120                       | 90  | NA                            | NA  |
| Net cash income (MK)               | 247                       | 144 | NA                            | NA  |

<sup>a</sup> Phiri (1986).<sup>b</sup> Segal (1986); crop year 1983 – 84.

NA, not available.

household labor force available for farming, employed less hired labor, and had average total cash incomes 68% of the MHHs (Table 2). MHHs provided 75% of their caloric needs whereas FHHs provided only 68%. The published study does not include farm operating expenses, this precludes a comparison of net cash incomes; without these data sets it was not possible to compute tests of significant differences between MHH and FHH variables.

### Factors influencing variation in total farm production

Before more consideration of how FHHs and MHHs differ, a review of the nature of the impact of key variables on production is given. Multiple regression analysis of the 1986 Zambia data set of 124 farm households revealed the results presented in Table 3. The regression involved total crop production as the dependent variable and twelve independent variables. An  $R^2$  of 0.54 was obtained, implying that the twelve independent variables accounted for 54% of the variability in total production. Of the twelve independent variables, however, total hectarage (with an  $R^2$  change of 0.24) appears to be the single most important variable in accounting for the variability in total production. Total operating cost is the next most important variable, as its incremental  $R^2$  is 0.18. Other important variables in accounting for the variability in total production include available labor (incremental  $R^2$  of 0.03), years of education (incremental  $R^2$  of 0.07) and the number of extension visits (incremental  $R^2$  of 0.01). The other variables had

TABLE 3

Summary statistics of the regression of total crop production on independent variables from a 1986 Zambian sample of 124 smallholder farmers<sup>a</sup>

| Variable                  | $R^2$ change | $B$      | $T$      | Beta    |
|---------------------------|--------------|----------|----------|---------|
| Available labor           | 0.02935      | -317.11  | -1.706*  | 0.1713  |
| Years of education        | 0.06763      | 168.14   | 1.357    | 0.2601  |
| No. of E/W visits         | 0.01440      | 595.33   | 1.757*   | 0.1347  |
| Farm operating cost       | 0.17876      | 11.54    | 3.339*** | 0.4378  |
| Total hectarage           | 0.24118      | 1 572.18 | 7.250*** | 0.5870  |
| Ox pairs owned            | 0.00051      | - 83.65  | -0.225   | -0.0231 |
| Info 186                  | 0.00110      | 260.69   | 0.276    | 0.0335  |
| Info 286                  | 0.00466      | 879.43   | 1.105    | 0.0723  |
| Info 386                  | 0.00177      | -738.60  | -0.682   | -0.0436 |
| Hired ox or not           | 0.00148      | 2 542.60 | 0.599    | 0.0426  |
| Know extension agent name | 0.00033      | 197.13   | 0.241    | 0.0199  |
| Know contact farmer name  | 0.00017      | 166.19   | 0.205    | 0.0148  |

<sup>a</sup> Source: Sikopande (1988).

$R^2 = 0.54134$ .

$N = 124$ .

\* significant at  $P \leq 0.1$ .

\*\*\* significant at  $P \leq 0.001$ .

Info 186, = the most important source of farmer information.

Info 286, = the 2nd most important source of farmer information.

Info 386, = the 3rd most important source of farmer information.



relatively very minor beta coefficients, implying their minor explanatory power.

Of the beta coefficients, only four were statistically significant and therefore the most important explanatory predictors of total crop production: they include total hectarage ( $P \leq 0.001$ ), total farm operating costs ( $P \leq 0.001$ ), the number of the extension visits ( $P \leq 0.1$ ), and available labor ( $P \leq 0.1$ ). These same variables have been found to be the variables significantly affecting total value of farm production in other studies of smallholder farms in Tanzania (Due and Anandajayasekaram, 1984; Due et al., 1987a, b).

### **Why may the general agricultural policy prescriptions be inadequate?**

The major causes of the poor agricultural performance in tropical Africa in the mid 1970s and 1980s were listed earlier. Major solutions follow from the causes: higher prices for agricultural products, lower taxes on agricultural exports, more efficient and competitive marketing arrangements, more research on domestic crops than on export crops, inputs available on time, credit available for inputs and hired labor, oxen, machinery, etc., currency devaluation, extension services which bring relevant research information to farmers and from farmers to research stations, improved infrastructure, and population-spacing policies. These solutions are interdependent (Jaeger and Humphreys, 1989) and the effectiveness of higher prices depends on marketed production (Weber et al., 1989).

The first of the general agricultural policy prescriptions is the payment of higher prices to farmers to encourage greater marketed production. In the past African governments have kept prices low to appease vocal urban consumers. Higher prices, however, would not greatly assist FHHs as little of their production is sold, and they often must enter the market to purchase some of their own food requirements.

Similarly, since FHHs market a small percentage of their crop, more efficient and competitive marketing arrangements would not be of much assistance except to the extent that this efficiency and competitiveness decreased the cost of their food purchases. Improved transport, spare parts, and infrastructure would assist FHHs in getting supplies more efficiently, getting their produce to and from the market, and improving access to health and other facilities. Improved off- and on-farm storage would assist all smallholder farm families as well as urban families as spoilage would be reduced and higher-quality food would come to market.

More relevant research on domestic food crops and an extension service which is sensitized and communicative to all smallholder farmers would assist FHHs as well as MHHs. This will be discussed in more detail later.

A renewed emphasis on the needs of smallholder farmers instead of the past emphasis on large-scale public agricultural enterprises would also assist all farm households. However, a devaluation of exchange rates would make imports, including petrol and transport equipment, more expensive and would not assist FHHs in the short run except for invigorating the economy. All households involved in export crop production would benefit from devaluation of exchange rates and reduction of export taxes.

Availability of credit to FHHs would allow them to increase their agricultural production through use of high-yielding crop varieties, fertilizer and insecticides, ownership or rental of oxen and ploughs or mechanized implements, and hired labor. However, when one examines the average annual net income of these FHHs (Table 1 and 2), can one expect FHHs to be able to repay credit? Will a grant (rather than a loan) be necessary for many of these FHHs for the first two or so years until incomes increase?

The policies outlined are primarily production-oriented; however, consumption-oriented factors are also important: these include education, nutrition, health and family-planning activities (Johnston and Clark, 1982). Although important, space precludes an adequate discussion of these factors.

### **Policies which would assist low resource and FHH farm households**

Since it is imperative that total agricultural production be increased and that low resource and FHHs, which constitute more than one-quarter of total rural households, be included in the effort, what specific policies would assist these low resource and FHHs?

First and most obvious is to retrain extension agents (male and female) so that they relate to this population in a meaningful way with both nutrition and agricultural advice. FHHs are growing the crops that will meet nutritional needs of their families, that is, they are meeting their major food needs first and, when food has been provided, considering other crops. But FHHs, on their smaller acreages, need to be encouraged by being given access to supplies of seed and information about all crops, especially those that will improve nutrition and food supplies. Examples of possible crops are beans, cowpeas, soybeans, leafy vegetables, etc. Are these seeds available when demand for them is considerably lower than for seed of the major cereal crops? Do the extension agents have training in nutrition, including information that can be relayed to all families? Are extension agents aware of the necessity to relate to FHH as well as MHH households? Women (even in the MHHs) choose the seeds for planting (Due and Anandajayasekaram, 1984); do extension agents realize the importance of transferring new technologies to the women as well as the men?

Many would argue that FHHs also need more access to credit so that they can purchase packages of inputs, rent oxen, or hire labor (if credit is available in cash) to expand crop acreages. We agree, but if crop acreage is expanded, additional weeding and harvesting will be necessary; this additional crop acreage may not give high-enough returns to allow FHHs to repay the loans.

Perhaps the credit would earn a greater return if used to purchase poultry, pigs, sheep, goats, and other small animals which do not demand large amounts of labor time but which yield higher returns per hour than crops. In Tanzania, managers of the Cooperative Rural Development Bank currently are experimenting with loans to women for these types of projects.

If grants are made available to these households for animal purchase, repayment could be in kind (the first offspring to another low-resource family, as in the Heifer Project) to emphasize self-help rather than welfare. In addition the extension service must be prepared to assist these households with veterinary services and workshops on animal care. This is an especially appropriate area for donor assistance to these families.

Research into higher-yielding varieties and earlier-maturing varieties which give farmers higher yields and more labor flexibility would be of assistance to all farmers but especially to FHHs. Since most farm families use their own seed rather than purchased seed, open pollinated varieties rather than hybrid varieties would be of greater assistance. In addition, recommendations of different varieties for various agro-ecological zones would be especially helpful in African countries where conditions within countries vary significantly.

Many studies have demonstrated that extension agents, even in the new T and V systems (Due et al., 1987b; Sikapande, 1988), do not visit FHHs nearly as frequently as MHHs; this means that FHHs do not have the information about new packages of technologies, prices, agricultural meetings, and so forth. Obviously extension agents need to be sensitized to the special constraints of FHHs and be directed to include them in visits and other forms of outreach.

In many countries of southern and eastern Africa land is not a constraint to FHHs. This is not necessarily true in Kenya (where 2/3 of the arable land is registered and titled, usually in the husband's name) or Malawi and in parts of coastal west Africa where population pressure has created a shortage of land. It is apparent that land availability to FHHs in these countries is a constraint. In general FHHs are dependent on their father's (if not married) and their husband's (if widowed) families for land. In these areas it is even more important to provide additional employment opportunities for farm FHHs to maintain or increase income.

Labor-saving devices for the home and for the farm which are designed

with relevance to low resource and FHHs would free up labor time for additional crops or other income. In some areas of tropical Africa donkeys, which are much less expensive than oxen, would provide labor saving in transporting wood, water, crops and in crop production. Additional community wells, grain grinding mills, and better stocked retail outlets would also assist.

Many economists will argue that it may be optimal for low resource and FHHs to leave agriculture and enter the urban employment market. However, given the slow rate of economic development in tropical Africa, population is already growing much faster than employment creation and it will be several decades before much additional employment will be available to the rural population. Thus to suggest that these farmers leave agriculture for the urban slums seems cruel and counter-productive. While living on the farm, these families can at least provide most of their food and can generate some off-farm income when opportunities arise. Thus these writers would argue for extension services and an agricultural policy that would improve the small acreage which is being cultivated by FHHs so that food supplies and nutrition are improved, would be better than encouraging them to leave the agricultural sector.

Malawi is typical of areas of tropical Africa in which population density is high and large numbers of farmers are farming acreages insufficient to allow families to provide sufficient food and income for their needs. Data from the *Malawi National Sample Survey of Agriculture* (1984) show that 35% of rural households (with less than 0.7 ha) cannot, with present technology, satisfy their own subsistence requirements and even with modern technology, will remain dependent on off-farm income. Yet opportunities for off-farm work are largely for agricultural labor for larger farmers, which occurs at the time when these low-resource farmers should be preparing land and planting their own crops. As a result, their plantings are late and yields lower. Estimates indicate that 50% of the families run out of food before planting time [Mkandawire (1988) and from personal conversation]. One can see the cycle of poverty and hunger. To assist such situations some writers argue for food and fertilizer for work programs which would alleviate the hunger and malnutrition and allow infrastructure to be developed and repaired.

Another suggestion is provision of opportunities for income-generating activities<sup>2</sup> which can be undertaken during the labor surplus periods.

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<sup>2</sup> Income-generating activities are activities designed to generate income from other than agricultural sources to improve the total income of FHHs.

Botswana has experimented with a grant program, providing grants of up to \$1000 to nationals to expand entrepreneurship and employment. Forty-six percent of the recipients in both the rural and urban sectors were women. Grants to women were largely for knitting, sewing, poultry, horticulture, carpentry, brick making, atch beef making, jewelry, sorghum milling and grain milling. An evaluation of the small-scale enterprise funding project (FAP 1987) found that although 40 – 50% of the funded projects failed, the successful enterprises generated 2.1 jobs per grant at a cost per job of \$1000 (which is successful by international standards).

The Government of Botswana established positions for rural industrial officers (RIOs) to operate the program, assist persons to complete application forms and aid and monitor fund recipients after funding. These RIOs were placed around the country in offices with extension personnel but their numbers were much smaller. These RIOs hold workshops for potential applicants, train successful applicants in business management and bookkeeping, and informing them of supply sources and markets. Successful entrepreneurs found the RIOs helpful; however, the RIOs lacked training and transport to make their services as optimal as possible.

The enterprises established were *very small*; most sold their items in the local communities and produced commodities (bakery products, dresses, school uniforms, poultry products, etc.) that were in local demand. The evaluation team found that training in bookkeeping was not enough; entrepreneurs needed workshops in which they could exchange experiences with one another (dressmakers getting together for workshops on supplies and markets, etc.) as well as workshops on general business practices, marketing, and source of supplies.

The Botswana experience could be duplicated in other African countries with donor funds (Botswana used government funds) through private voluntary agencies as well as under government auspices. We are suggesting that funding for such projects may need to be on a grant basis for the first two years until women obtain more experience in marketing and management; establishment of the RIOs would also improve probability of success. A more detailed summary of the experiences of African governments with income-generating activities (IGA) for women is found in Kurwijila and Due (1991); some of the experiences follow:

- African women should be asked what income-generating activities would be most needed and successful before programs are initiated.
- Assistance to farm women must be cognizant of their labor constraints and suggest IGAs which do not conflict with major agricultural enterprises.
- Governments can expect a 40% failure rate based on evidence from Botswana and Malawi.

- Due to the low incomes of the FHHs, grants rather than loans may be necessary in the short run until the women have some savings.
- Most of the Malawi and Botswana loans/grants were to individuals rather than to groups; group loans have been more successful for larger capital items like grain grinding mills.
- School uniform making was not as successful as hoped because governments often took seven months to repay the women, who needed to meet their expenses in a much shorter time.
- Products which can be sold in the local markets and are needed by local people were more successful than products whose markets were located further away.
- Women need workshops on business practices, input sources, and markets and, after loans/grants are received, workshops designed for each IGA group should continue so that women producing poultry (for example) can get together and share experiences and problems.
- Veterinary extension services must be coupled with livestock and poultry loans; rural industrial officers greatly assisted the Botswana and Malawi program although their numbers were limited and they suffered from lack of business training and transport.
- Several countries in Eastern and Southern Africa have significant supplies of coal which are largely unexploited and little used by consumers. If governments made this coal widely available at low cost to consumers, significant savings in fuel and deforestation could be achieved at relatively small cost. This would free the time for fuel searching to more productive enterprises.

## **Conclusion**

Female-headed rural households in most African countries now constitute 25 – 35% of total farm households. In a labor-intensive agriculture they have less labor available and, therefore, are able to plant less acreage in crops, consume more of their total production, have lower crop sales, and lower net incomes than MHHs. With credit unavailable for labor-saving devices and farm inputs, and with much fewer extension visits than MHHs, these FHHs are in a permanent cycle of poverty. Present prescriptions of policies ‘to get agriculture moving’ in tropical Africa will have to be changed if these FHHs are to have improved levels of income, nutrition and wellbeing. This article documents the significant differences in resource endowments of MHHs and FHHs in selected tropical African countries and suggests ways in which agricultural and extension policy could be changed to benefit this group. Given the labor constraint and low incomes of FHHs, improved extension services and credit must be made available to allow them

to increase their agricultural production and family nutrition. These two improvements will allow FHHs to provide more food for their families. But, given the low incomes, it may be necessary to provide grants rather than loans in the short run to allow these households to purchase small ruminant animals, craft inputs, and labor-saving devices to increase incomes but not increase labor demands at crucial agricultural periods, or loans for small ruminant animals could be repaid in kind (as the Heifer Project). Income-generating activities which supplement crop production will assist these families markedly.

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