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The LGender Factor  
and Technology Options for  
Zambia's Subsistence Farming Systems

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## INTRODUCTION

Recent reviews of the role of women in farming systems have pointed to the variability of womens' contributions across the developing world (Ferguson and Horn, 1985; Lele, 1985; Rockefeller and ISNAR, 1985). In the Southern African context, some writers have noted that rural women do not comprise a uniform and undifferentiated group, and that economic differentiation between households may be a more significant variable than gender of household head in accounting for variation in farming (Brown, 1981; Fortmann, 1984; Keller 1984; Safilios-Rothchild, 1985). In the case of Zambia, this recognition represents a progression of interest and awareness, as the development effort relating to women moves increasingly from campaigning at a general level to implementation in specific situations (Keller, 1984; Safilios-Rothschild, 1984; ZARD, 1985). Effective implementation requires that empirical relations at the field level are properly understood in advance, and such understanding implies detailed and thorough socio-economic studies of womens' roles (Keller, op. cit.).

In Zambia, along with a growing recognition of variation in gender roles, comes an awareness of the need for the fuller integration of women's interest within the larger context of rural development. This awareness is all important in view of the large number of projects recently inventoried (Keller, n.d.) which are supported by government and a range of donors

and which aim to increase women's participation in rural development. Agricultural projects which have been targeted specifically at women's groups have proved relatively ineffective and have often failed to reach the poorer households (Chilivumbo and Kanyengwa, n.d. and Keller, 1984).

Farming systems research, when institutionalised at the national level, is an approach with the potential for a particularly full integration of women's interests into the agricultural development process (CIMMYT, 1985). The time is ripe for focused empirical studies giving the data needed to implement a research and development approach which takes women's role and contribution to agriculture properly into account (Ferguson and Horn op. cit.). Moreover, the treatment of gender as a social variable needs to be made a priority for social scientists working in FSR programmes (CIF, 1985). It should also be a priority to make systematic comparisons within a country of women's roles in agriculture. Such comparison need to be systems specific and done in conjunction with the identification of recommendation domains, and the subsequent setting of research priorities. If a comparative and systematic approach is not adopted, the danger is that a well documented case from a particular country may be taken to be typical of that country (or larger region in which that country is included), when in fact it is not (Sharpe, 1984). Thus FSR provides the framework for country based comparative studies which can be used to proceed to one of the objectives of this conference; comparison

between countries, sub-continent and continents.

My paper begins a country description for Zambia. I set the stage with a brief summary of Zambia's farming systems research programme, before proceeding to present brief case studies which address the issue of gender and its relationship to recommendation domains and research priorities in three of Zambia's eight provinces.

#### FARMING SYSTEMS RESEARCH IN ZAMBIA

Zambia's farming systems research programme was established around 1980, following a demonstration of farming systems methods by CIMMYT's East Africa programme in 1978/9 (Kean, 1985). A separate farming systems section known as the Adaptive Research Planning Team (ARPT) was established within the Research Branch of the Department of Agriculture, Ministry of Agriculture and Water Development. Each of Zambia's eight provinces will have its own ARPT team comprised of a farming systems agronomist and economist. To date six provincial teams have been established. I joined ARPT as a consultant rural sociologist to advise on the need for, and nature of a professional sociological input into the programme (Kean and Sutherland, 1984). Research extension liaison officers and a consultant nutritionist were also added to ARPT.

Gender issues received little attention in the initial years of data collection in Zambia. ARPT team members were trained through CIMMYT training programmes which, while emphasising a 'user perspective', did not specifically emphasise the

importance of gender issues (CIMMYT, 1985). Greater attention was brought to bear on the issue after the sociologist and nutritionist joined the team. The case studies presented below have arisen out of my involvement as consultant sociologist in the ARPT programme.

#### THE CASE OF FEMALE HEADED HOUSEHOLDS IN LUAFULA

Luapula Province lies in the northern high rainfall belt of Zambia. The province is characterised by subsistence cropping throughout, and by fishing (commercial and subsistence) in areas close to the main rivers swamps and lakes. Cassava is the principal starch staple supplemented with finger millet (the traditional staple) where chitemene shifting cultivation is still practiced, and with maize where cultivation has become semi-permanent. Both rice and maize are grown on a limited scale as cash crops, largely in areas where institutional support and incentives are provided by donor projects. Annual rainfall averages 950 - 1200mm and as in the rest of Zambia is concentrated between the months of October and April, and there is no frost. The soils are of two types, upland and 'dambo' (low-lying areas prone to waterlogging), with nearly all crops apart from rice being grown on upland soils. Most soils have a sandy/gravelly texture and poor fertility due to a low Ph caused by excessive leaching. Owing to disease problems and tsetse fly cattle are very scarce and hardly ever used for draught purposes. The traditional method of chitemene using an axe

has given way to the mounding and ridging of fields using a hand hoe. Population and pressure on land adjacent to settlement is growing because the population is concentrated in large villages along the major roads, rivers and lake-shores of the province. Female headed households (FHHs) comprise from 27% to 38% by district of all households according to the 1980 census (Safilios-Rothschild, 1984).

In view of the high proportion of FHHs and the prominent role women play in subsistence farming, in 1983 a study was conducted by the Zambian counterpart sociologist in order to establish the role of women in farming in Luapula, and to see if FHHs comprised a separate target group for on-farm research (Haalubono, 1984). Two different areas representing two recommendation domains, 'traditional recommendation domains 7 & 4' (TRD7 & TRD4) were chosen for the study; Mukunta Village located in a fishing area of TRD7 on the shores of Lake Mweru, and Mabumba Village a plateau village of TRD4 which relied on cropping for subsistence. These villages were the two primary target areas for surveys and on-farm research in the province. In each village, a sample of ten FHHs was compared with ten male headed households (MHHs) in relation to:- division of labour in cropping; choice of crops; cash earning opportunities; land tenure, and decision making. Data collected through unstructured interviews was supplemented by participant observation.

Certain features were common to both areas. The size of semi-permanent land holdings is limited by the amount a family

(often with hired assistance) can prepare using a hand hoe. Land tenure is based on customary rights allocated by the local chiefs and secured through clearing of bush and continuous use. The kinship system is matrilineal with uxurilocal residence giving way slowly to virilocal residence. Along with this changing trend in residence, the custom of bride service is dying out, being replaced with payment of brideprice to facilitate removal of a woman from her kin (but not giving the husbands' people custody over the children). Each household is an independent production unit but there is an obligation to share between relatives and neighbours, and on death the larger matrilineal kinship group distributes the property: spouses and a man's children are not allowed to inherit.

The division of labour in cultivation is organised and allocated according to gender. In semi-permanent fields men are responsible for the preparation of mounds for cassava and ridges for maize, while women are responsible for planting, weeding and harvesting. In chitemene fields men (preferably sons in law) are responsible for lopping branches, while women are responsible for piling and burning branches, sowing seed and harvesting. In terms of decision making, women are the ones who are primarily responsible for food crops, while men tend to dominate cash cropping decisions. However, as has been reported elsewhere in Zambia, in most cases spouses consult each other before making decisions (Duc et. al. 1984).

In Mukunta, the comparison of MHHs and FHHs revealed

surprisingly few differences. The two types of household enjoyed the same type of access to land and the same choice of crops (except for one male household which had a small pineapple and sugarcane plot). The main difference was in the household size and composition: FHHs were smaller with less male adults, which made for a difference in access to male labour in land preparation. This obstacle was overcome by hiring labour for cash which was easy as cash earning opportunities for women in the area were plentiful, and men from Zaire were at hand as casual labourers. In Mukunta women participated in rice growing as a cash crop; a factor facilitated by the recruitment policy of the donor project along with a difficulty in recruiting men for agricultural credit due to the higher returns from fishing in the area. While women were excluded from fishing they were the major fish traders in the area, and both married and unmarried women had access to this trade. A nutritional survey in Mukunta showed seasonal deficiencies in high energy foods for children and in the calorie intake during the rainy season.

In Mabumba, there were more differences between MHHs and FHHS than in Mukunta, but again these were not marked. No major crops were exclusive to one or other type of household. The most notable difference in cropping was that each FHH tended to have a groundnut field, but this was rare in MHHs. Moreover, growing maize and rice as a cash crop was confined mainly to MHHs. This may have been due to a combination of

two factors; a different donor being involved in the administration of credit and lack of fishing opportunities for men in the area. This notion is supported by the fact that some FHHs in the sample were active in fish trading as a source of cash income. A nutritional survey carried out in Mabumba showed a similar pattern to Mukunta, but with a bigger problem of high energy foods and calorie intake during the land preparation season. This was due to the virtual absence of fish in the diet and the greater distance from residence to fields, giving mothers less time for preparing food for their young children.

With regard to recommendation domains, the conclusion drawn from the findings is that it is not necessary to treat FHHs in TDR4 or TDR7 as separate target groups. However, research priorities have been adjusted. Ways and means of introducing more high energy foods into the cropping system (such as groundnuts and sunflower) and of ways of reducing the time and labour in cassava drying, storage and processing to give women more time for cooking and child-care have been more seriously considered and technologies addressing some of these areas are being tested. While it does not make sense to treat FHHs as a separate target group, it does ensure that at least one third of cooperating farmers in the area are FHH and that wives are actively involved in trial planning, site selection and trial assessment.

GENDER IN LUSAKA PROVINCE

Lusaka Province occupies the rural area adjacent to the national capital. It is characterised by a mix of cash cropping and subsistence farming. The Lusaka ARPT has divided the province into two traditional recommendation domains; TRD1, the tsetse fly infested area to the east and south-east of the capital where subsistence hand-hoe cultivation prevails, and TRD2, the tsetse fly free areas of communal lands closer to Lusaka where ox-cultivation and a mix of subsistence and cash cropping is common. The climate is much drier than in Luapula Province, with more extremities in temperature, rainfall, and altitude. The soils are very variable, ranging from deep clay loams of high fertility to less fertile shallow gravelly soils on higher ground. Clay dambos are cultivated in the higher rainfall area, and alluvial soils are important for cropping in the parts of TRD1 adjacent to the Luangwa and Zambezi Rivers which are prone to drought. Maize and sorghum are the main staples. Settlement is more scattered than in Luapula: villages are smaller, but more compact groups of households are found. FHHs are frequent, especially in the more remote district where they approach 45% of all households. TRD1 is habited by a mix of ethnic groups. The Senga and Kunda are matrilineal with a tradition of uxurilocal residence. Their Soli neighbours are also matrilineal, but with virilocal residence, while the Gova are patrilineal with patrilocal residence. Household income in TRD1 is supplemented by off-farm activities such as beer brewing, handicrafts and

gathering of wild produce for sale, and by money sent from relatives working in town.

In TRD1 a survey was carried out covering 99 households (67 MHHs and 21 FHHs) in which I ensured that gender was included as a variable. Unfortunately the survey did not include the full proportion of FHHs (24% in an area where the figure was about 40%), and the large size of households reported in some cases suggested that unmarried daughters with children were included in the households of their parents. While the results have yet to be fully analysed, some observations are possible on the basis of data analysis to date.

In terms of access to land there was very little difference between MHHs and FHHs. In spite of some variation in field types, the two types of household have similar access to all kinds of field. The two types of households had roughly the same proportion of children in school and also offspring in permanent employment. MHHs were on average about 20% larger than female households and their reported area cropped to staples was, on average, larger by a similar proportion. The methods of planting and land preparation and the main labour constraints in crop production were almost identical for the two types of household. The most significant difference was in the cropping pattern. FHHs were more than twice as likely as MHHs to grow maize as a sole staple crop and less than half as likely to grow sorghum as a sole staple. The other difference was that no FHHs grew cash crops but 10% of MHHs did so.

In TDR2 the rainfall (800 - 900mm per annum) is higher and more regular than TDR1, and the higher altitude makes for lower temperatures and a greater incidence of frost. Soils are similar, but with the notable absence of alluvial sands. Staple crops are the same, but maize is much more important relative to sorghum, and cash crops - cotton, sunflower, and soyabeans - are quite commonly grown. Cash earning opportunities from off-farm activities are more numerous, with charcoal burning and casual labour and petty trade being particularly important. Settlement tends to be scattered with the fragmentation of family groups into more isolated independent households, particularly in areas closer to the city where more cash cropping is found. The domain is comprised of a mix of Lenje, Soli, Tonga and peoples with a considerable sprinkling of other incoming groups. Kinship tends towards matriliney with virilocal residence.

In TRD2 a less extensive rapid survey of 34 households (16 FHHS and 18 MHHS) for the purposes of farmer selection revealed large differences between the two types of household. Four out of five FHHS grew maize only as their staple crop compared with only one out of three MHHS in the sample. MHHS were more than twice as likely as FHHS to grow a cash crop in addition to maize. The biggest difference was in access to draught power. Three in four MHHS were ox owners compared to one in four FHHS. There were also differences in household size, and size of land holdings; MHHS had more members and tended to have larger holdings. Because of the concentration

of oxen in MHHs it was difficult to separate oxen ownership from gender as a variable influencing cropping practices. However MHHs which lacked oxen had similar cropping patterns to FHHs suggesting that access to draft power was the more critical of the two variables.

This comparison within Lusaka Province reveals more differences between recommendation domains than the comparison in Luapula. In TRD1 the initial findings suggest that the extent of difference between households does not justify treating FHHs as a separate target group. However, research priorities need to be reconsidered in relation to the differences noted. Research on maize needs to be targeted more at FHHs. Perhaps more importantly womens' need for more labour saving technologies need to be addressed, particularly in relation to bird scaring on sorghum and weeding sorghum and maize (weeding was noted as the major bottleneck by all types of household). As fewer FHHs grew sorghum, one reason being that it requires more weeding and bird scaring than maize, such technologies would make this useful drought resistant staple more available to FHHs, and help in reducing risk of crop failure.

In TDR2 big differences between the two household types in combination with the similarities between FHHs and cattleless MHHs suggests the need for a subdivision of the domain into two target groups. Although further research is required to verify findings, the most obvious suggestion is to sub-divide the domain into ox owners and non owners; to use access to

draught power rather than gender as the critical variable. As in TRD2 women's activities need to receive higher priority in the search for labour saving devices, particularly those relating to weeding.

#### GENDER IN WESTERN PROVINCE

Western Province is inhabited by the Lozi and related peoples. Like Luapula, Western Province is characterised by subsistence agriculture and by fishing in areas adjacent the major rivers and swamps. It differs in that livestock, particularly cattle, are important for most households in the province. Other differences are much greater variation in ecology, more ethnic groups and resulting farming systems, and a greater dependence on imported staple foods. The latter feature is due to a combination of a more risk prone system of cropping susceptible to both drought and flooding on less fertile soils.

The case reported below arises from research in Senanga West District in the south west of the province during the planting season of 1983 (Sutherland, 1994). The research did not set out specifically to compare female and male headed households, but included type of household as a variable in a study of cropping patterns, land tenure, and access to draught power. As no previous surveys by the provincial ARPT had included gender of household head as a variable, the study was the first attempt in the province to look systematically at gender in relation to recommendation domains and research priorities. While the definition of

recommendation domains in the province had included gender of household head as a variable, responses from extension workers indicated that only 10% of household heads were females. It was only after the study was complete that a much higher proportion (38%) was found in the study area and examination of the 1980 national census data revealed a much higher figure across the province (31% to 39% in different districts)

Senanga West is a drought prone area with a subsistence economy which combines crops with cattle keeping and some fishing, hunting and gathering. Its 18,000 square kilometers are predominantly sandy flood-plain studded with forested ridges and termite mounds. However, along the banks of the main rivers of the district, especially the upper Zambezi, more extensive belts of forest with sandy loam soils are favoured for settlement and cultivation. A population density of 3.2 per square kilometer means that grazing is relatively abundant. Cattle are numerous, and are kept primarily for local subsistence uses; draught power, milk, manure, and sale in emergency. They also have a social role in local institutions such as brideprice, debt payments, funeral rites and adjustment. In the flood plain areas particularly, arable land is quite limited. Land tenure is administered through the office of the Lozi paramount chief by local indunas and village headmen and rights are secured by residence and by use. The division of labour in agriculture makes males responsible for livestock, and ox

ploughing and manuring. Adults of both sexes plant, while women weed and harvest.

Ecological variation gives rise to three main soil and field types: mutemwa - fields on sandy loams found on forested ridges; mazulu - fields on wooded termite mounds with sandy clay loam soils; and sitapa fields on seepage soils adjacent to rivers. In addition, many hamlets have manured gardens close by where cattle are penned at night. Settlement is scattered, people living in hamlets containing between 3 to 15 households: a household being defined as the owner (plus dependents) of a house and granary with independent rights to arable land. A hamlet is a discrete cluster of households related by kinship and usually sharing a cattle pen. A collection of hamlets of different sizes makes up a locality or "neighbourhood". This area is inhabited by three main ethnic groups; Lozi, Shanjo and Mbunda. Different ethnic groups do not share hamlets but often share the same neighbourhood. Lozi and Mbunda hamlets are situated on the banks of the main rivers and adjacent upland forest and along tributaries while Chanjo are confined to the drier flood plains.

Farming in Senanga West is typically subsistence. Cash cropping is almost unknown, and the district has been the recipient of famine relief due to three years of drought and an influx of refugees from neighbouring Angola and Namibia. Farmers reduce the risk of crop failure by using a range of drought resistant staples spread over different field types

and planted at different times. While all households have independent rights to arable land and its product, very few are truly independent in production. Rights in land and assistance in production are secured by virtue of membership in a hamlet and a neighbourhood. Nearly everyone is active in farming in spite of unfavourable soils and rainfall, frequent crop failure, and often pitiful yields. Relations of production are largely uncommercialised and the substitution of cash for other scarce factors is very infrequent. Kinship varies somewhat between groups. Lozi and Shanjo have cognatic kinship with virilocal residence, while Mbunda have matrilineal kinship with a mix of uxurilocal and virilocal residence.

The survey of 190 households revealed differences in farming practices and resource endowments which corresponded with two social variables in particular, ethnic group and sex of household head (polygamous households comprised 9% of the sample and were classified as male headed). There was no significant difference between the three main ethnic groups in the proportions of FHHs (38% - 40% for all groups). Lozi and Shanjo had, on average, significantly more fields, and more types of field, scattered over a wider geographical area than Mbunda. In Lozi and Shanjo settlements, FHHs had significantly fewer fields per household and also fewer types of field. With Lozi, FHH'S relied more on mutenwa fields while MHH's relied more on mazulu, sitapa and manured fields. Shanjo FHH'S relied more on mazulu fields, while Shanjo MHH'S

relied more on manured fields and mutemwa fields. The differences between household types suggest that FHHs are less likely to spread risks in cropping, and this places them more in a position of dependence on MHHs, especially in bad seasons.

With crop preferences and planting priorities, there were more differences between the three ethnic groups than between types of household in relation to preferences and planting priorities for the three staple cereals; maize, pearl millet and sorghum. Overall there was little difference between types of households' and staple crop preferences. However, with Shanjo and Lozi, FHHs using mazulu and sitapa were significantly more likely than MHHs to plant pearl millet as the first crop, while Mbunda and Lozi FHHs using mushitu fields were more likely to plant maize. There was also some variation between household types in relation to crop preferences and cropping patterns. FHHs were proportionately less likely to have planted early than MHHs. This tendency was most pronounced in Lozi and Shanjo FHHs depending on mazulu and sitapa fields. In fact on mushitu fields FHHs were proportionately more likely to have planted an early crop than MHHs. This is because most Mbunda FHHs relying on mushitu fields only, depend largely on hand hoe cultivation, and so do not have to wait their turn for oxen.

With the ownership of oxen, ploughs and harness, gender of household head was very significant. MHHs were six times as likely as FHHs to own oxen. On average, only one household in

five owned oxen, but with significant differences between ethnic groups. Ox ownership was confined to one in three Shanjo, one in five Lozi and one in 17 Mbunda households. With MHHs, polygamists were more likely to own oxen (47%) and more likely to own more than two pairs of oxen (29%) than were monogamists (29% and 6% respectively). This strongly suggests that in cattle owning hamlets, cattle ownership and polygamy are indicators of status and influence. The ownership pattern of ploughs and harness was similar to that of oxen; MHHs households being much more likely to own these. With co-operation in ploughing, a highly significant finding was that of the households which ploughed, on average only one in seven was, in terms of oxen and equipment, independent (one in five Lozi, one in seven Shanjo and no Mbunda). Only one in ten households hired for cash; the majority (72%) co-operated on the basis of kinship and neighbourly relationships. No FHHs were independent in ploughing. In Lozi and Shanjo hamlets, most FHHs depended on assistance from male relatives and neighbours, while in Mbunda villages they mostly hired for cash or relied on hand-hoe cultivation. In Lozi and Shanjo villages two in seven MHHs were independent in ploughing; no Mbunda MHHs were independent.

The findings Senanga West raise a question mark regarding the applicability of the concept of recommendation domains for Western Province. The high degree of variation over a small area and population make the notion of recommendation domains unworkable. Thus while gender of household is a significant

variable in accounting for differences in farming practises in Senanga West, the importance of ethnic and ecological variation overlays that of gender, making for a complex pattern. In place of recommendation domains, it is appropriate to look for technical options which will benefit the majority of households in the area, particularly, the resource poor households - which includes FHHs. In this context, there is a need for improved drought resistant varieties of pearl millet and maize, for more labour saving weeding technologies, and for ways of generating a cash income to enable cattleless households access to oxen as required. In the testing of new technologies cooperating farmers need to be sub-divided into ox-owners and non-owners, and about 40% of cooperators should be FHHs from all ethnic groups.

#### CONCLUSION

The comparison above provides an initial indication of the variability of womens' roles in Zambia's subsistence farming systems, as evaluated from the point of view of identifying recommendation domains and setting research priorities. Gender roles were significantly influenced by a range of factors; cultural, economic, political, and ecological.

In order to begin a basis for comparison, these influences are summarised in brief below:

a. The type of kinship systems influenced the degree of autonomy of women: matrilineal systems gave women greater

autonomy from spouses and male relatives than did cognatic systems. But kinship was overlaid by residence at marriage and by the existence or not of cattle and ox ploughing.

b. Perhaps more important than the type of kinship system was the type of residence at marriage: uxurilocal residence being associated with both greater female autonomy and more submission of younger MHHs to older FHHs than was the case with virilocal residence, where married women and FHHs were subject to more male authority.

c. The presence or absence of draught power was also a highly significant factor. Where draught power was important, then women generally, and FHHs in particular, were far more dependent on men and MHHs for successful crop production.

d. The availability of scarcer types of arable land was also a factor related to gender differences. This was most pronounced in Western Province where access to draught power and animal manure imposes limitations on the kinds of land that can be easily cultivated. Significantly, in parts of TRD1 in Lusaka Province where alluvial soils are highly valued but not dependent on draught power for cultivation available data suggested little difference between household types in degree of access.

e. The local availability of cash and labour/draught power also influenced gender differences. Where cash earning opportunities for women were plentiful and labour/draught power was easy to hire, FHHs are in a less disadvantaged position than where these area in short supply.

f. When ecological conditions make cropping a high risk activity and tillage is by ox ploughing FHHs and wives are more dependent on males for food supply than where ecological conditions favour a reliable cropping system which does not depend on ox ploughing.

These tentative observations relate to farming systems which are subsistence oriented. As a subsistence farming system moves towards a cash cropping system, as is beginning to happen in parts of Luapula and Lusaka Provinces, other factors more closely connected with the larger political economy influence gender differences (Chilivumbo, 1984). The reliance on credit and extension advice for cash cropping tends to favour males and the better off in spite of donor efforts to reach the rural poor (Due et. al. 1984, Mungate, 1984). Moreover, the fragmentation of settlement and weakening of kinship and neighbourly ties which accompanies the growth of cash cropping tends to place greater labour burdens on women in the households of cash croppers and makes it more difficult for FHHs to secure assistance from kin and neighbours in critical farming operations.

At a more immediately applicable level, some tentative recommendations regarding the treatment of gender issues in the identification of recommendation domains and setting of research priorities for FSR in Zambia conclude this paper.

1. The gender issue needs to be broadened beyond the consideration of whether or not to treat female headed households as a separate target group. From the data

available in Zambia and elsewhere, FHHs are often an internally differentiated group, while married women often face similar constraints to single women in the management of their farms and households (Fortmann, 1984). This suggests that when setting research priorities, it should be women's interests as a group, whether married or not which should be considered.

2. When oxen are introduced into farming at the subsistence level, and cash earning opportunities are restricted mainly to males, this tends to create bigger wealth differences between MHHs and FHHs and thus relegate most FHHs to a level of impoverishment and dependence on MHHs; a 'feminisation of poverty' occurs (Brown, 1981:17). However, FHHs are not the only households affected by this impoverishment and it probably makes more sense to identify recommendation domains on the basis of a household's access to draught power than on the basis of the gender of its head.

3. When setting research priorities and conducting trials on farmers fields in Zambia there is a tendency not to consider the gender aspect. Instead, returns to cash invested or labour input (measured as a genderless input) is the main yardstick of evaluation. There is, moreover, a real shortage of technical scientific expertise to develop and test appropriate technology to reduce womens' burden in household work not directly connected with crop production (Keller, 1984). This is a problem which cannot be tackled only by improving the gender sensitivity in setting research

priorities and testing new technologies. There is a need to lobby for national commitment to developing and testing appropriate household technology as one of the activities of the Research Branch of the Ministry of Agriculture.

4. While there is a place for thorough studies of gender roles, it is quicker and cheaper to ensure that gender is included as a variable during survey work. Yet the results of such surveys often do not tell the whole story, and too much time can be spent on detailed studies of gender roles in agriculture with little visible benefit to research. It is necessary to continue to explore the importance of gender in a particular system by ensuring that women are actively involved in problem diagnosis, pre-screening, testing, and evaluation of new technologies. To effect this it is necessary to sensitise farming systems practitioners to the importance of involving women farmers at all stages of the farming systems research and extension process, and to set out clear guidelines as to how this can be achieved.

5. In establishing the significance of gender through application of the diagnostic sequence put forward by CIMMYT (Collinson, 1981) great care is required during the delineation of recommendation domains. The experience from Zambia is that extension workers, local leaders (and often local social scientists also) underestimate the proportion of female headed households. Data from reliable sources such as census data should be used to supplement information, and a sociologist may be needed to carry out rapid estimates in the

field. When carrying out surveys social scientists on the FSR team must ensure that a representative proportion of FHHs are included in the interview sample. Moreover, steps must be taken to ensure that women are involved in the interview if necessary by identifying specific questions to be answered by women only. The opinion of women farmers should be sought when setting research priorities and designing on-farm trials. Moreover, a representative proportion of farmer cooperators should be FHHs.

The above suggestions should serve to make FSR in Zambia more sensitive to the importance of gender and more effective in incorporating a gender perspective into the research programme. In order to facilitate this, rural sociologists working with ARPT have a gender component written into their terms of reference. A sample of these is contained in Appendix A.

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#### REFERENCES

- Brown, Barbara  
1981 The Impact of Male Labor Migration on Women in Botswana Paper presented at the Annual Meeting of the African Studies Association, Bloomington, Indiana
- Chilivumbo, Alufeyo  
1984 "Small-Scale Farmer Resource Endowment; Evaluation, Research and Development Issues" Paper presented at ARPT/CIMMYT Workshop on 'Role of Rural Sociology (and Anthropology) in Technology Generation and Adoption', 27 - 29 November, Ridgeway Hotel, Lusaka.

- Chilivumbo, Alufeyo and Kanyongwa, Joyce  
n.d. Women's Participation in Rural Development Programmes: the case of SIDA-LIMA Programme. Mimeograph: Rural Development Studies Bureau, University of Zambia.
- CIMMYT  
1985 "CIMMYT'S Experience with the User's Perspective in Technology Development" in Rockefeller Foundation and ISNAR (eds) Women and Agricultural Technology: Relevance for Research Vol. II - Experiences in International and National Research. The Hague, Netherlands pp. 13 - 26
- CIP  
1985 "Women and Potatoes in Developing Country Food Systems: The CIP Experience" in Rockefeller Foundation and ISNAR (eds) op. cit. pp. 27 - 34
- Collinson, Mike  
1981 "A Low Cost Approach to Understanding Small Farmers" Agricultural Administration 3: 433 - 450.
- Due, Jean and Mudenda, Timothy with Patricia Miller and Marcia White  
1984 Women's Contribution Made Visible: of Farm and Market Women to Farming Systems and Household Incomes in Zambia, 1982. Illinois Agricultural Economics Staff Paper No. 84 E-285: University of Illinois at Urbana-Champaign.
- Ferguson, Anne E. and Horn Nancy  
1985 "Situating Agricultural Research in a Class and Gender Context: the Bean/Cowpea Collaborative Research Support Programme." Culture and Agriculture, 26, Spring 1985, Special Issue: Women in Farming Systems: Cameroon, Botswana, Zambia, Tanzania, Taiwan
- Fortmann, Louise  
1984 "Economic Status and Women's Participation in Agriculture: A Botswana Case Study" Rural Sociology 49(3):452-464
- Haalubono, Albertina  
1984 Causes and Characteristics of Female Farming in Mansa and Nchelenge Districts, Luapula Province (Draft) Adaptive Research Planning Team Special Study Report, Ministry of Agriculture and Water Development, Lusaka

- Kean, Stuart  
1985 Institutionalising Zambia's Farming Systems Research Programme: the Case of the Adaptive Research Planning Team Mimeograph, Research Branch, Ministry of Agriculture and Water Development, Lusaka.
- Kean, Stuart and Sutherland, Alistair  
1984 "Institutionalising Rural Sociology into Agricultural Research - The Zambian Case Study" Paper presented at ARPT/CINMYT Workshop on 'Role of Rural Sociology (Anthropology) in Technology Generation and Adoption' 27 - 29 Nov. Ridgeway Hotel, Lusaka.
- Keller, Bonnie  
1984 Report on Current Efforts to Integrate Zambian Women in Development Mimeograph, University of Zambia
- Keller, Bonnie  
n.d. An Inventory of Current Efforts to Integrate Zambian Women in Development Mimeograph, Dept. of African Development Studies, University of Zambia, Lusaka
- Lele, Ulla  
1985 "Women and Structural Transformation" in Rockefeller Foundation and ISNAR (eds) op. cit. pp. 243 - 265
- Mungate, Dennis  
1983 "WOMEN, The silent farm managers in the small scale commercial areas of Zimbabwe" Zimbabwe Agriculture Journal 90(6):245 - 249
- Safilios-Rothschild, Constantina  
1984 The Policy Implications of the Roles of Women in Agricultural Research in Zambia. (preliminary draft) Mimeograph, The Population Council and National Council for Development Planning, Lusaka
- Safilios-Rothschild, Constantina  
1985 "The Persistence of Women's Invisibility in Agriculture; Theoretical and Policy Lessons from Lesotho and Sierra Leone" Economic Development and Cultural Change 33(2): 299 - 317

- Sharpe, Barrie  
1985 "Social Knowledge and Farming Systems Research: Ethnicity, Power and the Invisible Farmers of North-Central Nigeria" African Social Research 38, Sutherland and Chileya (eds) Special Issue on 'African Farming Systems: Contributions of Anthropology and Sociology'
- Sutherland, Alistair  
1984 Draft Paper and other socio-economic aspects of farming systems in Senanga West District, Western Province: A Preliminary Report Mimeograph, Adaptive Research Planning Team, Ministry of Agriculture and Water Development, Lusaka.
- The Rockefeller Foundation and International Service for National Agricultural Research (ISNAR) (eds)  
1985 Women and Agricultural Technology: Relevance for Agricultural Research. Volume 1 - Analyses and Conclusions, The Hague, Netherlands
- Zambia Association for Research and Development (ZARD)  
1985 Womens Rights in Zambia Proceedings of the Second National Women's Rights Conference, held at Mindolo Ecumenical Foundation, Kitwe, 22 - 24 March 1984.
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Appendix A

(DRAFT)  
JOB DESCRIPTION

ARPT Rural Sociologist for Region 1 (Northern and Luapula Provinces)

GENERAL

The rural sociologist for Region 1 will work within the Adaptive Research Planning Team (ARPT) of the Research Branch of the Department of Agriculture, MAWD. ARPT brings together social and biological scientists to provide a socio-economic and "farming systems" input into the national agricultural research programme, with particular emphasis on helping small farmers. The provincially based ARPT teams are comprised of farming systems agronomists and economists who carry out survey work and conduct on-farm trials to identify problems and test technical solutions among targeted groups of farmers in each province. The methodology used is based on the CIMMYT approach, but with the recognition that this approach needs to be broadened and modified to suit local

conditions in Zambia's nine provinces.

The rural sociologist has a key role to play in the broadening and modification process, both by contributing to the effectiveness of existing activities and by carrying out specific activities to meet local needs not covered in the CIMMYT sequence. Of particular importance in Zone 1 is the fuller inclusion of women and gender differences into the adaptive research process. In both Northern and Luapula Provinces women play the major role in food production and processing, and female headed households comprise a significant minority of the rural population (30-40%). The involvement of women is not an isolated activity, but one which can be effectively tackled by taking into account the position of women within the local community and kinship organisation. These three aspects - women, community, and kinship - have been largely neglected in previous adaptive research. But they are crucial when dealing with the improvement of subsistence farming systems with technologies which relate to storage and processing as well as production, and which involve cash investment and/or cooperation between households. Improved storage structures and methods, new food crops, agroforestry, and the introduction of animal draft are all technologies which require the consideration of local gender and community arrangements and structures before they can be successfully tested, evaluated and disseminated through the local extension service in a way that benefits poorer (including female headed) households.

#### DUTIES

1. To assist the ARPT in Luapula and Northern provinces with zoning/target grouping. In zoning attention must be paid to including female headed households within a community perspective and ensuring maximum use is made of local knowledge relating to agriculture and socio-economic factors. Avoiding extension biases, particularly the neglect of female headed households and married women, is another area requiring sociological expertise.
2. To assist provincial teams with diagnostic survey work. During informal surveys reduction of extension bias and a full inclusion of women (both as wives and as household heads) require particular attention. Attention should also be given to ensuring the selected "target area" is representative from a socio-economic point of view. During formal surveys, sampling and framing of questionnaires requires special attention to gender issues and the inclusion of an indigenous knowledge perspective in surveys. Assistance with training enumerators and analysing and interpreting results will also be a duty.
3. Full participation in technology screening, with

particular emphasis on representing local household and womens' interests (eg. food security, labour implications, food processing and storage) as distinct from technology explicitly geared to cash cropping, and anticipating likely social consequences of any technology under serious consideration.

4. Provide assistance in the design of on-farm experiments and the selection of farmer co-operators to ensure the target group farmers (especially women) are represented and participate as fully as possible in the on-farm research process.

5. To sensitise other ARPT staff, and related staff, to the importance of including and considering the interests of women in all stages of the adaptive research and extension process, and to the relevance of intra-household and community structures to technology design and adoption.

6. In consultation with provincial teams and with the national rural sociologist and national co-ordinator, design and execute special studies to investigate social and cultural issues, such as the appropriateness of technology for women, having first established that these issues cannot be adequately covered within the current methodology.

7. Provide assistance as required to the provincial RELOs in:- the framing of technical recommendations to ensure correspondence with local units of measurement; training field extension staff in farmer classification; and developing methods of advice delivery which ensure that that female and resource poor farmers are reached by new messages arising from ARPT on-farm research.

8. To serve as an informal liaison person between Northern Province ARPT and Luapula ARPT, thus facilitating better communication and co-operation in research effort.

#### QUALIFICATIONS

Minimum of a Masters Degree in Rural Sociology or Anthropology and at least three years experience in agricultural development, preferably in Africa. Sensitivity to the important role of women in agriculture is essential, and a working knowledge of farming systems research is desirable.