SMALL HOLDER FARMERS' PERCEPTION OF EXTENSION BY GENDER IN TANZANIA

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Extension Officers in Their Villages

Sokoine University of Agriculture, Morogoro and the University of Illinois

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Agricultural extension is as old as food production as farmers assisted one another with ideas to increase production. In more recent times governments have also become involved in educating farmers on improved farming practices, as agricultural extension bridges the gap between technical knowledge and current practices. Several studies show that extension is cost-effective and has a significant and positive impact on farmers` knowledge, adoption of new technologies and productivity (Birkhaeuser, Evenson and Feder, 1991). In Sub-Saharan Africa, where women do more of the labor in smallholder farming than men, choose the seeds, and are increasingly making production decisions, extension information has been traditionally disseminated by male extension officers to male farmers. It has been documented that male extension agents visit female farmers much less often than male farmers as custom often restrains or reduces communication between genders, and husbands do not bring information home to their wives (Spring, 1988). Hence, it has been argued, especially in the last 15 years, that more female extension agents should be hired (Due et al., 1987, Chenoweth, 1987, Spring, 1988, Due and Magayane, 1990, Saito and Weideman, 1990, Due, Sikaponde, and Magayane, 1991, Gladwin, 1991, and Saito, 1994, to mention only a few). It has been documented also that female-headed households (with no able-bodied male present), which now account for almost 30% of smallholder farm households, are particularly omitted from extension visits.

As female extension officers have been hired and Tanzania now has one-third of its village extension officers (VEOs) female, what is the attitude of male and female farmers to them? Did they find them as equally effective as males in providing information? To our knowledge only one other person has returned to ascertain this

information, Rutachokozibwa, (1993), who interviewed 330 female farmers and found that 70% of them preferred female VEOs. To find male and female farmers' perceptions of extension officers by gender and answers to other questions, Magayane and Due interviewed 240 male and female farmers in October, 1995. Results of this research are the topic of this article.

Background

The Training and Visit (T&V) System, encouraged by the World Bank, was designed to improve extension programs and to be gender blind, but this has not happened (Due et al. 1987, Due et al., 1991, Gladwin, 1991). In Kenya it was found that extension positively affected the gross value of output of male farmers but not of female farmers, all other variables being held constant (Saito, 1994, p.74). Yet women still wanted extension services. In Zambia contact with extension positively affected the adoption of new technologies but, in a country with large numbers of female-headed households, 82% had not been visited in the previous year (Due, Sikapokade and Magayane,1991). Thus the arguments to hire more women extension agents became stronger; it was also documented that male extension agents lacked sensitivity to women farmers' time and credit constraints; they also often thought women's crops were not important.

Tanzania's extension program has been partially funded by the World Bank and the African Development Bank since 1987 (United Republic of Tanzania,. 1993 and 1995). Initiated as a pilot project in five districts of Dodoma, Singida, and Tabora regions, the project expanded by incorporating three regions annually starting in 1988. By 1992 the project had expanded into 13 regions with 57 districts (Ibid) It was the T&V system in which VEOs received instruction each fortnight and disseminated the information to contact farmers who, in turn, were supposed to transmit the information to a dozen or so non-contact farmers, male and female (Bonor

and Baxter, 1984). During the 1993 Mid-term Review of Phase 1 of the Extension Project, it was recommended that VEOs visit groups of farmers rather than contact farmers so as to increase the number of farmers contacted by the VEOs. This recommendation was, however, not widely adopted by some regions. Accordingly VEOs` visits to groups rather than to contact farmers was emphasized effective from 1994 (United Republic of Tanzania, 1995). Visits of VEOs to specialists for "impact points" (the information to relate to the farmers) are made once a month to reduce costs and VEOs are now to encourage farmers to form groups and deliver the impact points to groups of farmers (male, female, or mixed). Nineteen ninety five was the first year that groups were being formed to receive VEO instructions. It was after harvest in 1995 that our survey was undertaken.

The Sample and Sample Areas

Permission was obtained from the Morogoro Regional Development Director to undertake the research in the area. (Funds limited our research to one region.) In discussions with the district extension officers it was decided to select sets of villages in close proximity with similar crops and soils, one with a male and one with a female extension officer with the same training and experience. (All VEOS receive the same training; there is some training in human nutrition but the main emphasis is on crops and livestock.) It was decided to select villages in low, medium, and high potential areas. Twenty male and twenty female farmers were interviewed in each village.

Normally the village chairperson has lists of all families in his/her village and could delineate non-farmers. However currently these lists are no longer up to date so 10 cell leaders (a system developed under Tanzania`s former socialist government) were selected at random and farmers` names drawn from their lists. In walking through the villages visiting 10 cell leaders, it was apparent that many of them

were elderly, selected some time ago, as were the neighbors surrounding them. In an effort to get a cross section of farmers by age, additional names were requested of younger farmers as it was apparent that some of the older farmers were not farming actively and were not as interested in qualities of their VEOs.

The villages chosen and number of farmers sampled in each are shown in Table 1.

Table 1. Sampled Farmers per Village by Gender

Village	Farmers		Total
	Male	Female	
Gwata Ujembe	24	18	42
Fulwe	23	17	40
Manyinga	17	24	41
Kilimanjaro	20	20	40
Madoto	21	19	40
Rudewa Batini	19	20	39
Whole sample	124	118	242

Source: Tanzania Agricultural Extension Survey, 1995

A discussion arose concerning the definition of a "farmer". The agricultural economists defined farmers as those making more than 50% of their income from farming whereas the sociologists on the team defined persons' occupations in the manner in which they saw themselves–i.e. anyone who called himself/herself a farmer was a farmer. Thus the owner of a maize grinding mill, who made five times as much income from the mill as the farm but who said he was a farmer, was defined as a farmer. Since VEOs cannot support themselves on their income, they often farm small plots of land. The VEO in one village said he was a farmer! But the purpose of the study was to ascertain views of persons who earned most of their income from farming and, therefore, were knowledgeable about VEOs and their roles. Conversations with the Regional Extension Officer made it clear that she thought the study should include only persons earning their major income from farming as they are the persons most concerned with extension and VEOs. Thus this was the definition used and

persons like the grinding mill operator were excluded.

Villages

The first village selected, Gwata Ujembe, had 330 families. The village was located not far from a paved road on light sandy soils with low rainfall it was one of two villages chosen in a low potential area. Most of the families cannot produce enough food to last them throughout the year; they reported having only two meals or less per day. Average size of crop acreage was 4.0 acres per household; average age of the head of household was 50 years; households averaged 4.9 persons. The female VEO lived in the village and knew her families by name. She had only two groups formed yet this year. There were many kiosks in the village, mostly selling the same articles. Tomatoes were ripe at the time of our visit; these were being sold in the kiosks and along the road. A canning factory is needed.

The village paired in the same area as Gwata Ujembe with a male VEO was Fulwe, which had 4,000 people (800 families) located between two low mountains. Many farmers` plots were some distance behind the mountains; average acreage in crops was 5.1; average age of the household head was 50 with 4.7 persons per household. The VEO also had formed only two groups this year, both women`s groups; he preferred women as he thought the male farmers "grumpy". The VEO did not know many of the farmers by name; many reported on the questionnaire that they never saw him. Crops grown in both villages were sorghum, millet, cowpeas, beans, maize, bananas, and other fruits and vegetables. In general farmers had a few poultry and a few goats but no other livestock.

The next two villages chosen were Kilimanjaro and Manyinga in Turiani division–a high potential area. These villages were in a wide valley between two mountains with dark productive soils and higher rainfall. Sugarcane and rice are the major crops grown with smaller amounts of coconuts, cotton, tobacco, coffee, cardamon, bananas, and other fruits and vegetables grown. There is a large state-owned sugarcane plantation (Mtibwa) in the district and many of the local farmers also grow sugarcane as out growers for the sugar mill.

Households in which major income came from working on the plantation were excluded from the sample. (Employees bicycled considerable distances to work on the plantation). On average net incomes were much higher than in the low potential area chosen; choices of crops to grow and sell were also much greater. Although villagers live in the valley, houses are jammed together along the main road with farms a considerable distance from homes. Since many people have moved into the area, population density on land is high.

Kilimanjaro has a female VEO; there were 770 families with mean crop acreage of 4.7 and 5.5 persons per household. The average age of the household head was 42 years. Most households have one acre of sugarcane along with other crops as they do in Manyinga, which has 3,040 families in a more densely populated area. Average crop acreage in Manyinga was 5.0 and household size 6.1 persons. Mean age of the household head was 65 years. In cultivating paddy and planting sugarcane, tractors are often used on the larger acreage. Most of the paddy and sugarcane were rain fed but some paddy was irrigated. Male farmers supplement their income by making bricks and working for other farmers; females brew beer, make crafts, sell fruits and vegetables, etc. It was only when we had begun interviewing in Manyinga that we learned the village had never had a female VEO; thus responses on preferences for a male or female VEO had to be coded to reflect no female VEOs.

The medium potential area chosen was in Kilosa district with Madoto village with a female VEO and Rudewa Batini with a male VEO. Madoto has 472 farm families and a total population of 1,964; Rudewa Batini has 651 farm families and a population of 3,032 (conversations with district extension officer). Major crops are maize, paddy, cotton, sunflower, fruits and vegetables. The Kilosa area was a large sisal plantation area at one time. Since world prices for sisal have fallen drastically since the 1970s, much of the sisal on the plantations has been removed or allowed to return to bush. But ownership of the land remains with the plantations. As a result it is reported that there is a shortage of land for private farmers while large acreage of former state-owned plantations remain uncultivated. Average

crop acreage in Madoto was 4.6; mean household size 5.6 persons and average age of the household head was 41 years. In Rudewa Batini average crop acreage was 4.5; household size was 4.9, and average age of the household head 37 years. The VEO in Madoto did not live in the village; she lived in a larger village nearby.

Dependency and Education

The average size of household per village and its age structure are shown in Table 2. It is evident from the table that the mean number of persons per household is 5.5 for the total sample. This included 2.2 children under 12, 1 child 12-18, parents and 0.3 other adults, male and female. Thus the dependency ratio (number of children under 14 (18 in our sample) plus population over 65 divided by the population aged between 14 (18) and 65) is 1.39 per household.

Table 2. Average Household Size by Village by Age of Members

Village	Parents	Children		Other	Total
		Under 12	12-18	Adults	sample
Gwata Ujembe	1.7	2.2	1.6	0.4	5.9
Fulwe	1.9	1.9	0.7	0.2	4.7
Manyinga	2.0	2.8	1.1	0.2	6.1
Kilimanjaro	2.0	2.2	0.9	0.4	5.5
Madoto	2.0	2.4	0.9	0.3	5.6
Rudewa Batini	2.0	1.7	0.8	0.4	4.9
Whole sample	2.0	2.2	1.0	0.3	5.5

Source: Tanzania Agricultural Extension Survey, 1995

Tanzania's dependency ratio as computed from Table 25 of the World Development Report is 1.0 (World Bank, 1995). Computed from the 1988 census, the Morogoro region dependency ratio is 0.96 (URT, Bureau of Statistics, 1990, Table 3, p.30). The dependency ratio of 1.39 for the study villages is clearly above the national and regional figure. Every individual in the labor force in the study area must, therefore, produce for 0.39 more

individuals, while country wise and region wise the individual has to produce for only one more.

Levels of formal education of the household head varied by village and gender. Thus, while 55% of females had no formal education, only 45% of males had no formal education. The average level of formal education for female household heads was 2.8 years and for male 4.2 years. Spouses of the female household heads had 2.4 years of formal education on average while spouses of the male household heads averaged 3.4 years. In general male levels of education were higher than females' and male household heads, with higher levels of education, married females with more formal education (Table 3). The low potential areas (Gwata Ujembe and Fulwe) had the lowest levels of education.

Table 3. Average Years of Formal Education of Male and Female Farmers and Their Spouses by Village

Village	Male Farmers		Female Farmers	
	Farmer	Spouse	Farmer	Spouse
Gwata Ujembe	3.2	1.5	1.9	1.5
Fulwe	3.2	2.7	1.7	2.7
Manyinga	4.9	4.5	4.0	3.7
Kilimanjaro	4.8	4.2	3.1	1.8
Madoto	4.7	4.4	3.5	3.3
Rudewa Batini	5.1	3.3	2.4	1.0
Whole sample	4.2	3.4	2.8	2.4

Source: Tanzania Agricultural Extension Survey, 1995

Extension

Farmers interviewed knew the value of agricultural extension and wanted a VEO in the village whether they visited the VEO or not. A small number thought that if they visited the VEO they would have to pay him/her. Since the government is now requiring payments of school fees, clinic visits and prescriptions in public medical facilities in district, regional, and national headquarters, some farmers thought that payments would be required also for

VEO advice. This was not true. Farmers preferred to have the VEO live in the village; they also thought demonstration plots should be available in each village and field days held to let farmers see the advantages of demonstrations being made.

Morogoro region has over 311 VEOs in 458 villages (United Republic of Tanzania, 1995, Table 3, p.17). Farmers were asked the name of their VEO and the distance to the office. Thirty-six (15%) of the sampled farmers knew the name of the VEO; many others knew the VEO but not by name. The average time to walk to the VEO`s office was 9 minutes. (It must be remembered that in Tanzania almost all farmers live in villages and go out from their homes to their farms).

Is it Useful to Have a VEO?

The sampled farmers were asked if it was useful to have a VEO? Overall almost 90% reported in the affirmative.

Table 4. Reasons That a VEO Was Considered Useful by Gender of Farmer

Reasons	Farmers(%)		All(%)
	Male	Female	
Learn new things/new information	52	41	46
Information on agriculture	28	37	32
Good advice	13	9	11
Increase production	2	5	4
Other	5	8	7
Whole sample	100	100	100

Source: Tanzania Agricultural Extension Survey, 1995

There was little variation between gender of the farmers reporting affirmatively or among villages. What were the reasons given for having a VEO? Of the total sample reporting, 46% percent reported that they learned new things or obtained new information, 32% stated they obtained good information about agriculture, 11% believed they obtained good advice

generally, 4% learned to increase production and 7% either didn`t participate in VEO programs, found the VEO did not visit, or obtained information on pest control (Table 4). Pest control was an important problem in the area.

Contrasts between male and female farmers` responses to the usefulness of a VEO are interesting. Female farmers found VEOs more useful in giving information on agriculture than male farmers and less useful in learning new things or obtaining new information than male farmers. In the "other" category, more female (8%) than male farmers (5%) said they did not participate in VEO programs.

Preference for a Male or Female VEO

When asked their preference for a male or female VEO, of the 119 male farmers who had VEOs 35% preferred a male, 30% a female, and 35% were neutral as to the gender. Of the 114 female farmers who had VEOs, 26% preferred a male, 40% a female, and 34% were neutral. Of the total sample reporting, 31% preferred males, 35% preferred females and 34% were neutral (Table 5). These preferences for, or neutrality toward, female VEOs are surprising in a predominantly Moslem area.

Table 5. Preference for Male or Female Extension Officers by Male and Female Farmers

Gender of the preferred VEO	Male Farmers		Female Farmers		All Farmers	
	No.	%	No.	%	No.	%
Male	42	35	30	26	72	31
Female	35	30	45	40	80	35
No preference	42	35	39	34	81	34
Total	119	100	114	100	233	100

Source: Tanzania Agricultural Extension Survey, 1995

The null hypothesis of the independence between farmer's choice of VEO preference by gender and farmer's gender was tested using Chi-square statistics. The hypotheses could not

be rejected at 5% significance level when farmers' choice of VEO (male/female/neutral) is tabulated against farmers' gender (male and female). However, the hypotheses is rejected at 10% significance level when farmers with no preference are excluded from the analysis and a two by two table is used. It is therefore concluded that there is some evidence that farmers' preference of VEO by gender is dependent of farmers gender but some other factors may be more important than gender of the farmer. Farmers often stated that what was important was an extension agent who would assist them and not the gender of the agent. A district extension officer stated, "Character is more important than gender in assisting farmers."

When farmers were asked the reasons for their preferences, 22% of the men indicated their preference was because the VEO was active and responsive, 34% because there was no cultural bias (female agents visiting males, etc.), 21% because they gave better explanations regarding crops and livestock, and 17% stated that the VEOs had the same training and, therefore, they had no preference by gender.

Table 6. Reasons for the Preference of Extension Officers by Gender

Reasons	Male Farmers		Female Farmers		All Farmers	
	No.	%	No.	%	No	%
More active and responsive	25	22	14	12	39	17
No cultural bias	39	34	38	35	77	34
Explains better	24	21	25	23	49	22
Same training and equal	20	17	26	24	46	21
Other	6	6	7	6	13	6
Total	114	100	110	100	224	100

Source: Tanzania Agricultural Extension Survey, 1995

Female farmers gave similar reasons for their choices but the percentages varied. Twelve percent made their choice because the officers were active and responsive, 35% because there was no cultural bias, 23% because they gave better explanations on crops and agriculture, and 24% were neutral as the agents had the same training (Table 6). Female farmers stated that

they preferred a female VEO as she was freer to discuss problems with them. Women also expressed different time preferences for meetings than male farmers.

The large emphasis on "no cultural bias" is surprising as it was the principal reason given by 35% for both male and female farmers. However, these no cultural bias explanations were often also followed by "and gives good explanations regarding vegetables", or "and is helpful when asked for assistance."

Table 7. Farmers' Judgement as to Which Gender of VEO Would Provide Better Extension Information to Them

Information Type/Presentation	— VEO —			
	Male (%)	Female (%)	Either (%)	Never Had Female VEO (%)
Present information better	29.3	35.6	30.8	4.3
Present better material	24.4	43.1	31.5	1.0
Visit groups more frequently	26.1	38.2	31.8	3.8
Comes better prepared	29.0	34.6	32.7	3.7
Presents:				
Useful information	24.8	38.6	35.6	1.0
Information on crops	25.6	38.5	34.4	1.5
Information on livestock	25.4	32.0	39.1	3.6
Information on credit	19.4	36.8	39.6	4.2
Information on nutrition	7.2	60.5	28.3	3.9
Information on health	9.5	53.4	33.8	3.4
Information on income earning	21.5	40.9	34.2	3.4
Information on school fees	24.1	29.2	42.3	4.4
Information on prices	28.3	32.4	35.9	3.4
Information about markets	33.3	28.7	34.7	3.3
Information on garden seeds	24.3	43.8	31.4	0.6
Information on crop seeds	30.4	37.4	31.6	0.6
Whole sample	23.9	39.0	34.2	2.9

Source: Tanzania Agricultural Extension Survey, 1995

Farmers were further requested to respond as to whether a male or female VEO would provide better extension information on a number of factors--crops, livestock, credit, nutrition, health, marketing, crop prices, etc. Currently VEOs are expected to disseminate

information primarily on crops and livestock. But as privatization of the economy proceeds and inputs, marketing, etc. shift to the private sector, the authors assumed that VEOs would be expected to provide more types of information to the farmers. Responses to farmers' judgment as to whether a male or female VEO would give better information on these factors are shown in Table 7.

Table 8(a). Male Farmers' Judgement as to Which Gender of VEO Would Provide Better Extension Information to Them

Information Type/Presentation	VEO		
	Male (%)	Female (%)	Either (%)
Present information better	33.3	31.5	35.2
Present better material	24.0	40.0	36.0
Visit groups more frequently	23.4	39.0	37.7
Comes better prepared	32.5	31.3	36.3
Presents:			
Useful information	25.2	35.5	39.3
Information on crops	25.5	36.3	38.2
Information on livestock	25.0	31.0	44.0
Information on credit	17.4	39.1	43.5
Information on nutrition	4.1	64.9	31.1
Information on health	5.7	55.7	38.6
Information on income earning	21.3	40.0	38.7
Information on school fees	20.6	30.9	48.5
Information on prices	27.5	33.3	39.1
Information about markets	33.3	29.2	37.5
Information on garden seeds	22.4	45.9	31.8
Information on crop seeds	33.0	35.2	31.8
Whole sample	23.4	38.7	37.9

Source: Tanzania Agricultural Extension Survey, 1995

It is interesting to note that, in general, farmers believed that a female VEO could provide the best information on the items selected (39.0%); either male or female could provide the next best information (34.2%) and male VEOs the best information on 23.9% of items selected (Table 7). Female VEOs were thought to provide better or more information in total, present better material, visit groups more frequently, come better prepared, have more useful information and better information on crops, livestock, credit, nutrition, health,

income earning and obtaining garden seed than male VEOs. Males would have better information than females on markets and either gender would be equal on obtaining school fees, livestock, credit, prices, and markets. Three percent of the sample respondents had never had a female VEO and, therefore, could not respond.

Differences between male and female farmers' responses to this list of information are shown in Tables 8(a) and 8(b). Again, in general, male farmers thought female VEOs would do a better job on the types of issues listed than male VEOs. Female farmers believed even more strongly that female VEOs would do a better job than males, 42 to 26%.

Table 8(b). Female Farmers' Judgement as to Which Gender of VEO Would Provide Better Extension Information to Them

Information Type/Presentation	VEO Male (%)	VEO Female (%)	VEO Either (%)
Present information better	27.2	43.5	29.3
Present better material	25.0	46.9	28.1
Visit groups more frequently	31.1	40.5	28.4
Comes better prepared	27.6	40.8	31.6
Presents:			
Useful information	24.5	42.6	33.0
Information on crops	26.4	41.8	31.9
Information on Livestock	27.8	35.4	36.7
Information on credit	23.2	37.7	39.1
Information on nutrition	11.1	61.1	27.8
Information on health	13.7	54.8	31.5
Information on income earning	23.2	44.9	31.9
Information on school fees	30.2	30.2	39.7
Information on prices	31.0	33.8	35.2
Information about markets	35.6	30.1	34.2
Information on garden seeds	26.5	42.2	31.3
Information on crop seeds	28.0	40.2	31.7
Whole sample	25.8	41.7	32.6

Source: Tanzania Agricultural Extension Survey, 1995

Most Important Sources of Agricultural Information

In villages without daily newspapers, what do farmers believe are the most important sources of information? It was found that the three most important sources to the

sampled farmers were neighbors (69%), radio (67%) and VEO (66%); the sources not important were extension publications, newspapers/magazines, personnel from Sokoine University or other extension offices, and demonstration plots. Radio was slightly more important to the male than the female farmers (as males control the radio); however, extension personnel stated that good radio programs were often not available. VEOs too were judged slightly more important to male than female farmers. Several farmers mentioned the importance of their parents in providing agricultural information; they also said field days/demonstrations would be important but were not being held.

Crop Acreage, Farm Expenses, and Net Annual Incomes

Average acreage in crops for the sampled farmers was 4.7; these are shown by village in Table 9. The variation in mean acreage per village is not great but, as noted in the section on the villages, land productivity among villages differs. For example, land in Gwata Ujembe has lower productivity than land in Kilimanjaro because of differences in rainfall and soil conditions.

Table 9. Average Acreage Cultivated in 1994/95 Cropping Season per Household by Village

Village	Average
Gwata Ujembe	4.0
Fulwe	5.1
Manyinga	5.0
Kilimanjaro	4.7
Madoto	4.6
Rudewa Batini	4.5
Whole sample	4.7

Source: Tanzania Agricultural Extension Survey, 1995

Major farm expenditures also varied significantly among villages (Table 10); these farm expenditures were highest in Manyinga and Kilimanjaro where tractor hire was

more frequent and improved seed and some fertilizer was used. In other villages expenditures included little beyond hired labor and small amounts of improved seed; in the low potential areas farmers could not afford fertilizer. Twenty-three percent of the households reported no farm expenses! For the sample as a whole, only 28% of the farmers used improved seeds. Household labor is not included as an expense in the above.

Table 10. Average Farm Income, Farm Expenses and Net Farm Income per Household by Village (Tshs. 1000)

Village	Farm cash Income	Farm Expenses	Net Farm Income
Gwata Ujembe	28.5	3.2	25.3
Fulwe	67.8	19.9	48.0
Manyinga	221.4	35.3	186.0
Kilimanjaro	230.0	41.3	188.6
Madoto	98.3	20.1	78.2
Rudewa Batini	67.8	25.3	42.5
Whole sample	119.2	24.0	95.1

Source: Tanzania Agricultural Extension Survey, 1995

As expected, farm income was highest in the high potential areas of Manyinga and Kilimanjaro (Table 10). Total farm cash income per sampled farmer averaged Tsh.119,200 (Tanzanian shillings) in 1995 or approximately $199. (Value of farm production consumed by the household is not included). Farm expenses per household averaged only Tsh. 24,000 or $40. Net farm cash income per household averaged Tsh. 95,100 or $159. Fourteen percent of the sampled households had zero farm income–that is they consumed all they produced and had nothing for sale. Some of these families received support from relatives(Table 12). As mentioned earlier, in the low potential villages many families did not have more than two meals a day and illness was often reported.

Non-Farm Income

Families also reported non-farm income–that is income which arose from members undertaking non- crop or livestock enterprises. This non-farm income averaged Tsh.106,400 per family or approximately $177(Table 11); average non-farm income per household was 89% of farm cash income. Female farmers sampled and their spouses generated more non-farm income (Tsh.135,100 or $225) than male farmers and their spouses (Tsh.78,800 or $131) Table 11. Thirty-two percent of the heads of sampled households generated no non-farm income compared with 60% of spouses.

In male-headed households males earned Tsh.54,600 of non-farm income on average compared to Tsh. 24,200 earned by their spouses; in female-headed households female operators earned Tsh.69,500 compared to Tsh. 65,600 by their spouses. On average female farmers' households earned 58% more than male farmers' households (Table 11). Thus the heads of households earned more off-farm income than their spouses, in general.

Table 11. Average Non-Farm Cash Income of Male and Female Farmers and Their Spouses by Village (Tshs. 1000)

Village	Male Farmers		Female Farmer		Sample H'hold	
	Farmer	Spouse	Farmer	Spouse	Male	Female
Gwata Ujembe	24.4	8.0	24.2	16.2	72.8	40.4
Fulwe	40.7	26.4	124.0	69.5	67.1	193.5
Manyinga	78.7	43.1	101.6	59.0	121.8	160.6
Kilimanjaro	84.8	16.9	70.3	63.5	101.7	133.8
Madoto	45.7	40.5	28.3	158.4	86.2	186.7
Rudewa Batini	64.5	21.1	63.9	28.4	78.0	92.3
Whole sample	54.6	24.2	69.5	65.6	78.8	135.1

Source: Tanzania Agricultural Extension Survey, 1995

The sources of non-farm income varied by district. In the low potential areas the source was mainly from selling fruits and vegetables, poultry, charcoal, working for other farmers as farm laborers, trading, making and selling crafts and from traditional healing. Little

opportunity existed for earnings in the surrounding villages. In the medium potential areas non-farm income came primarily from selling coconuts in the shells or as beer, brewing beer from other sources, making and selling bricks, and charcoal. In the high potential areas the major sources were making and selling bricks, charcoal, selling thatch for roofs, carpentry, oil extraction, food vending, operating a small shop (kiosk), repairing bicycles, and occasional wage labor from working in the sugar estates.

In the low potential areas, especially, 14 families (6%) received gifts from relatives to increase their incomes. Households in Fulwe village received the highest total amount from gifts whereas Kilimanjaro, Medoto and Rudewa Bamboi did not report any gifts. On average households received Tsh.1,100 in gifts (or the equivalent of $2.67).

Total Cash Income by Source

Total cash income per household sampled is made up of cash sales of crops and livestock (farm cash income) minus farm expenses which gives net farm cash income. Then non-farm income and gifts are added to obtain total household cash income. Average total household cash income for 1995 was Tsh. 203,100 or approximately $338. Per capita total cash income averaged Tsh. 36,927 or $62.

Average total cash income per household per village is shown in Table 12. Because of the large variation in off-farm income per village, total cash income also varied materially with the highest average household cash income earned in Manyinga and Kilimanjaro villages.

Average total household net cash income earned by gender of household head is shown in Table 13. Male-headed households earned greater net cash income than females (Tsh. 221,200 compared to Tsh. 201,500).

Use of cash income by the sampled families was primarily for food and medicine, clothing and household utensils and housing improvements, school fees and agricultural inputs. There was no noticeable difference between male and female farmers in

use of cash income. There were major differences by village with Fulwe and Madoto listing no agricultural inputs and a much larger percentage for school fees.

Table 12. Total Household Cash Income by Source by Village

Village	Farm(net)	Non-farm	Gift	Total Cash Income
Gwata Ujembe	25.2	35.9	1.1	62.2
Fulwe	48.0	120.8	7.1	168.9
Manyinga	186.0	144.6	1.5	332.1
Kilimanjaro	188.6	117.8	0.0	306.4
Madoto	78.2	134.0	0.0	112.2
Rudewa Batini	42.5	85.3	0.0	127.8
Whole sample	95.1	106.4	1.6	203.1

Source: Tanzania Agricultural Extention Survey, 1995

Table 13. Total Household Net Cash Income Including Gifts by Village by Gender of Household Head

Village	Male headed households	Female headed Household
Gwata Ujembe	52.6	74.7
Fulwe	123.3	284.5
Manyinga	493.7	274.1
Kilimanjaro	375.8	249.4
Madoto	207.6	217.2
Rudewa Batini	147.1	109.5
Whole sample	221.2	201.5

Source:Tanzania Agricultural Extention Survey, 1995

Credit

Very few of the farmers reported obtaining formal or informal credit except a few in the high potential area to obtain fertilizer and tractor hire for sugarcane. Two women farmers obtained credit under a special women`s credit program; otherwise farmers reported no credit at all.

Agricultural Extension Information This Past Year

As mentioned earlier, 1995 was a year of transition for the VEOs from disseminating information primarily through contact farmers to reporting through groups of farmers, male, female or mixed. In each of the villages visited the VEOs had only formed two groups of approximately 10-12 persons each. Thus the number of farmers who were being provided "impact points" directly was very low. Of course a number of others were obtaining information from the VEO on a one to one basis. That number is hard to estimate.

It was mentioned earlier that farmers indicated they knew the value of extension and wanted an agent in their village. However, when asked, "Did you feel you obtained good agricultural information this past season?" only 34% of the farmers (82) responded positively; 66% or 152 farmers said, "No." However, there was a marked difference between male and female farmers; 46% of the male farmers believed they had obtained good advice this past season whereas 76% of the women did not (Table 14). Further, when sampled farmers were asked if that information this past season was obtained primarily from their VEO, only 35% responded positively! Again, more male than female farmers obtained useful information from the VEO this past season--44% compared to 25%.

Table 14. Farmers' Assessment of the Agricultural Extension Information 1994/95

Information	Male Farmers		Female Farmers		Whole Sample	
	Yes	No	Yes	No	Yes	No
Good information	45.5	54.5	23.9	76.1	34.1	65.9
Primarily from VEO	44.2	55.8	25.0	75.0	34.6	65.4
New information	60.3	39.7	67.5	32.5	63.8	36.2
Timely information	90.0	10.0	85.4	14.6	87.7	12.3

Source: Tanzania Agricultural Extension Survey,1995

Was the information received from VEOs this past season new and timely?. Sixty-four percent of the farmers believed the information was new and 88% thought it was timely (Table 14).

Sources of Agricultural Information if Needed Quickly?

The sampled farmers were asked where they would go if they needed agricultural information quickly? These responses were VEO(60%), neighbors (65%), and experienced farmers(65%). Male farmers would go first to the VEO; famale farmers would go first to another female farmer or a neighbor.

Additional Advice Which Would be Beneficial

With privatization being emphasized, input supplies are moving from state owned enterprises to privately owned ones; for example, seeds are available in many small shops and in the markets where agricultural products are sold; fertilizer is available in many shops as are hoes and other small agricultural implements. Marketing also has been privatized to a large extent. Does this not mean that VEOs will be expected to give farmers information about sources of agricultural inputs, current prices, markets, etc. in the near future?

On the basis of this assumption, farmers were asked what additional information would be beneficial to them? Responses and number of farmers responding are given in Table 15. The additional information which farmers believed would be most beneficial to them, with percentages of those responding were: more information on crop storage (94%), new seed varieties (93%), crop diversification to increase income (90%), new crop varieties, drought varieties, health, and ways to increase income (87%), information as to where garden seeds were available (86%), and information on nutrition (82%) and credit (82%). Other items questioned are shown in Table 15. The lowest response of interest came from information on division of labor between males and females (56%)!

Table 15. Percentage of Farmers Who Responded Positively Additional Information Would be Beneficial to them

Type	Percent (%)	Number respond
New type of crops	87	237
Crops for drought	87	239
New types of seeds	93	240
Obtaining garden seeds	86	239
Fertilizer use	81	235
Weeding	83	232
Crop diversification to increase income	90	220
Crop marketing	69	234
Crop prices	71	234
Credit availability and terms	82	240
Increasing income	87	240
Earning school fees	58	223
Managing income:family versus farm	66	218
Crop storage methods	94	232
Division of tasks between men and women	56	222
Nutrition	83	232
Health	87	237
Family planning	69	231
AIDS	76	233
Environmental concerns	73	205

Source:Tanzania Agricultural Extension Survey,1995

Differences in choices of new information requested between male and female farmers were not great except that female farmers put more emphasis on health, increasing income, drought management and nutrition.

The VEOs Speak

A separate questionnaire was developed for the six VEOs but only four interviews were obtained due to VEOs being away at the time of the farmer interviews. Thus this information is suggestive only of all the VEOs' opinions.

Of the four VEOs interviewed, only one did not live in the village she served; she lived in a larger village 5 km. away. Two of the VEOs had certificate training and two diplomas.

VEOs are required to attend training sessions once a month to acquire "impact

points" to transmit to farmers. All four VEOs said that they attended once per month if funds were available; this year funds ran out before the end of the year; on average they attended 10 times each. Distances to training sessions varied from 3 to 50 kms. for an average of 24 kms. Each VEO travelled by bicycle except for the 50 km. distance which was by bus.

Do VEOs Find Training Sessions Helpful?

VEOs stated that they found the training sessions helpful to both male and female farmers. What would make them more helpful? Meeting the farmers in groups, visiting them in their fields or at the adoption plots (of which there were none in 1995) to avoid cultural bias, providing adoption/demonstration plots, availability of credit, inputs available at a closer distance, and labor saving techniques (especially for women). Except for the last entry, the helpful items mentioned were the same for both male and female farmers.

What Would Make the Training More Helplful to the VEOs?

When first asked this question the VEOs would answer plant spacing, row spacing, etc. However, when the question was rephrased emphasizing "impact point" changes which would be more helpful to them, replies were: availability of inputs, more supervisor visits, allowances paid on time, learning more things, information on insecticide application, information on fertilizer availability and price, and higher bicycle allowances. The VEOs are supposed to take information they need for their work and farmer requests to the training sessions so that it can be included in the training. It would appear that this is not being done or items like location of fertilizer and price would have been given much earlier in the growing season. It was also apparent that at times the VEOs have insecticides, animal pharmaceuticals, and other items in their offices for sale to farmers; that was not possible this year, making it more difficult for both the farmers and the VEOs.

Meeting Farmers in This Transitional Year

Three of these four VEOs had formed groups of farmers this year; all three had only two groups. Two had two women`s groups and the other a man`s and a mixed group. Each had 10-12 members. These groups preferred to meet at the adoption plot or the VEO office once a week. The VEOs also met farmers on an individual basis but it was difficult for them to estimate the number visited or the percentage of farmers served. On average, the VEOs estimated they met 115 male farmers a year and 30 female farmers on an individual basis; one VEO did not meet with any female farmers. Thus the percentage of total farmers in the village who meet with the VEO at least once a year is very low.

Although farmers thought the ideal number of meetings with the VEO would be once a week, three of the VEOs thought it most ideal to meet with farmers twice a week for twelve months and one of the three from May to October. One of the VEOs thought it most ideal to meet farmers four times a week! This would mean that they could not meet with many farmers` groups.

How do the VEOs recruit groups of farmers under this new emphasis? The farmers were recruited by the VEO in three of the four cases; they came on their own in one case. All three who had groups said that men and women were recruited in the same manner. One supervisor informed me that some of the women`s groups were already meeting and the VEO invited them to meet with her/him on agriculture.

What Kinds of Technical Information Would be Most Helpful to VEOs?

The questionnaire asked the VEOs to rank the kinds of technical information which would be most helpful to them. The monthly training was number 1, field days was number 2 (no field days are held currently), experienced male and female farmers tied with research bulletins as number 3, and Sokoine University personnel number 4. Other less important items were friends, experienced farmers (male and female), newspapers and radio

(there are not many radio programs), and field demonstrations in that order.

Are the VEOs Comfortable Working with Farmers of the Opposite Sex?

The VEOs were asked if they were comfortable working with male and female farmers. One female and one male VEO was very comfortable working with male farmers; one of each was uncomfortable because the men were "too grumpy" (stated by the male VEO) or they did not pay attention to information given (stated by the female VEO). Both female VEOs and one male VEO were comfortable working with female farmers as they were said "to pay attention and follow instructions". One male VEO was very uncomfortable working with female farmers; he did not give a reason. So three VEOs were comfortable working with female farmers and two with male farmers in this small sample. It would appear that the comfort level was determined more by the personality of the VEO than by gender. More training may be necessary to improve dissemination to both gender of farmers.

What Could be Done to Improve Extension to Smallholder Farmers?

At the end of the interview with the VEOs, the question was again raised as to what could be done to improve agricultural extension to smallholder farmers, both male and female. Responses were the same regardless of gender: to provide: more information on credit (reported by 2 VEOs), training opportunities (2), visit other villages to obtain new ideas (1), new technology (1), ideas to increase income (1), have more inputs available in the village (1), obtain assistance of government leaders (1), and improve health by overcoming food shortages (1).

What Do You Recommend to Make <u>Your</u> Extension Work More Effective?

Again there were many responses which were quite different from answers when the question was raised at the beginning of the interview. It may be that the VEOs had more confidence in the interview process by this time and realized the information was

confidential. Responses, with the number of times mentioned in brackets, were: Allowances paid on time (3), more reliable transport, including a motorcycle (3), more training (2), being able to attend an annual workshop at Sokoine University (2), develop more groups (1), have better information (1), have researchers come to the village and talk to farmers (1), and more training on livestock (1).

Topics Covered Now and in the Future?

Under the modified T & V extension system used in Tanzania, VEOs are primarily responsible to inform farmers regarding crops and livestock. In the past the government parastatals were supposed to provide seeds (but not necessarily at places easy for farmers to access), marketing, credit (through the village coops), inputs (through village coops), etc. Farmers complained that inputs were often not available at the coops or were late arriving as were payments for grain sold at the coops. In addition the seed obtained from the parastatal Tanseed was not available in locations convenient for smallholder farmers, especially female farmers who had no method of transport except local buses.

As privatization progresses and more of the marketing and inputs are provided by the private sector in a multitude of ways, are the VEOs being informed of new information which the farmers will require? The VEOs confirmed that their responsibility currently primarily was to provide information on crops and livestock; they also stated that livestock was becoming increasingly important, especially goats. In order to ascertain what the VEOs perceived in terms of the influence of privatization and the future, questions were asked as to whether or not current meetings with farmers normally covered a number of items. Their responses are as follows: (the numbers in brackets are the number of positive responses from the 4 VEOs): information on where to obtain crop seeds (3); where to obtain garden seeds (3); suggestions for crop diversification (3); information on dairying/goats (3); information on other livestock (4); and information on budgeting decisions regarding, for example, input purchases versus school fees (3). Only two VEOs gave any information on methods of increasing income

and only one on agricultural product prices, methods of obtaining credit, and methods of earning school fees. None of the VEOs gave information on agricultural marketing! When these data are compared with additional information which farmers desired (Table 15), it is obvious that increased training is needed in this regard.

Summary and Conclusions

In Tanzania there is an attempt to have a village extension officer (VEO) located in every village. Until recent years most of the VEOS were male. Research indicated that male VEOS did not often visit female farmers due to cultural mores and that male farmers frequently did not bring information home to their wives. Since women contribute more of the agricultural labor than men it was recommended that more female VEOs be hired. Now one-third of the VEOs are female and males and females receive the same training (either a diploma or a certificate in agriculture).

Although one-third of the VEOs are female, by 1995 only one person had returned to the farmers to enquire as to their preference for VEOs by gender. That researcher interviewed only female farmers as to how they evaluated female VEOs. In this study a sample of 240 farmers, male and female, in six villages in Morogoro Region were interviewed to ascertain their preferences for a male or female VEO, the reasons for their preferences, and a great deal of additional data from the farmers and the VEOs.

What did the researchers ascertain? Farmers knew the kinds of information agricultural extension officers should provide and wanted VEOS in their villages. Thirty-five percent of male farmers preferred a male VEO, 30% a female VEO and 35% were neutral as to gender. Forty percent of female farmers preferred a female VEO, 26% a male, and 34% were neutral. What were their reasons for their preferences? In each case 34% of the farmers` stated preference was because of no cultural bias (women VEOs working with men, etc.), 22% because they gave good agricultural advice, 17% because the officer was active and responsive, 21% were neutral while 6% gave other reasons. Differences in responses between

male and female farmers are shown in Table 6. Women farmers often stated that they preferred women VEOs because they felt freer to discuss their problems with other women. Other women stated male VEOs never talked especially to female-headed household women. The predominance of preferences based on no cultural bias was surprising but this is a predominantly Moslem area where cultural norms are still quite strong.

Data are provided on average crop acreages per household (4.7), average farm income from sales of farm products (Tsh. 119,200 or $199 at current exchange rates of Tsh. 600 per $1.00), and average net farm income per household (Tsh. 95,100 or $159). Value of home-produced food was not calculated.

Non-farm or off-farm income generated by members of these households from working for other farmers, crafts, trading, making bricks, brewing beer, selling fruits and vegetables, etc. averaged Tsh. 106,400 (or approximately $177). Female farmers` households generated a greater amount of non-farm income than male farmers` households and heads of households in each case earned more than spouses and other members. Thus average non-farm income per household was an important income source for the sampled households and provided 12% more income than farm produce sales minus farm expenses.

With privatization of the economy a current government policy and with many farming factors affected--marketing, pricing, input supply and availability, agricultural implements, availability of credit, etc.–all being transferred to private rather than government sources, it would appear than VEOs would need to know much more than their current emphasis, which has been on crops and livestock. Farmers agreed with this assumption and the following are the responses as to their priorities for additional information: crop storage (94% of respondents), new seed varieties (93%), health, means of increasing income, drought management and new crop varieties (87% each). These are shown in Table 15.

VEOs also were asked a number of questions; only four of the six VEOs were available for interview. VEOs believed the monthly training sessions were helpful; they could attend more often if transport and other costs were paid on time.

Only three of the four VEOs had formed groups, as required, this year. Are the VEOs comfortable working with farmers of the opposite sex? One male and two female VEOs said they were comfortable working with female farmers as they were said to "pay attention and follow instructions". One of each was uncomfortable working with male farmers as they were "too grumpy" or did not pay attention to information given. One male VEO was uncomfortable working with female farmers but did not give a reason; thus three VEOs were comfortable working with female farmers and two with male farmers in this small sample. It would appear that the comfort level has more to do with personality than with gender. It also appears apparent that more sensitivity training is needed to assist VEOs to be comfortable working with either gender of farmers.

VEOs had several suggestions as to what would improve their extension to smallholder farmers: more information on credit, better training of the VEOS, have the farmers visit a more progressive village to learn new ideas, new technology, more inputs available, and improve health by overcoming food shortages. In the low potential villages, especially, food production did not meet family demands and families often ate only two meals a day. VEOs should receive training in ways to increase production, especially of dry season crops, and income in those areas.

VEOS appeared to have thought very little about the new demands privatization would place on them; they appeared to have thought about it less than the farmers.

With the new emphasis on meeting farmers in groups rather than through contact farmers, little progress was made forming groups this first year with an average of only two groups of 10 to 12 farmers each being formed per VEO. Thus farmers were very poorly served by the VEOs in these villages in 1995.

What would assist the VEOs in making their work more effective? VEOs replied: advances paid on time, more reliable transport, including a motor cycle, more training, being able to attend an annual workshop at Sokoine University, develop more groups and better information.

It must be remembered that VEOs do not receive sufficient salary to support their famlies; thus they have to do other types of work to survive. This drains their time, energy, and incentives from their primary employment. Yet the government must reduce expenditures to assist in balancing the budget. Supervisors have a real challenge in increasing the productivity of the VEOs.

Policy Recommendations

(1) More female VEOs should be hired as the female farmers prefer them and the male farmers do not object to them. Farmers believed female VEOs provide better information in many cases.

(2) More training of male VEOs as to why they should work with both female and male farmers.

(3) VEOs should be assisted in group formation and should be sympathetic to preferred times of meetings of female and male farmers.

(4) VEOs should receive additional training in provision of dry season food crops and income earning possibilities–income both for family and farm expenses. Impact points should be tailored to specific areas.

(5) VEOs should receive more training in the challenges to farmers brought about by privatization. VEOs seemed less prepared than farmers to deal with the changes which are and will occur with this government policy. It is apparent that as the market economy continues to develop, many farmers will start accruing more and more income from non-farm activities. These activities are

important in providing the needed cash income for buying farm inputs. Extension officers should be equipped with the marketing knowledge and advice that incorporates forward linkage activities in agriculture in addition to the knowledge they have in production agriculture.

(6) More field days should be held as requested by farmers.

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