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**AFRICA RISING - Enhancing partnership among Africa RISING, NAFKA and TUBORESHE CHAKULA Programs for fast tracking delivery and scaling of agricultural technologies in Tanzania**  
**Africa RISING – NAFKA vegetable baseline survey report**



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*The Enhancing partnership among Africa RISING, NAFAKA, and TUBORESHE CHAKULA Programs for fast tracking delivery and scaling of agricultural technologies in Tanzania* is an interdisciplinary and inter-institutional project that aims to address small holder farmer's needs in the semi-arid and sub-humid zones of Tanzania. The 3-year project is funded by the USAID Mission in Tanzania as part of the U.S. government's Feed the Future initiative.

Through participatory and on-farm approaches, candidate technologies are being identified and evaluated for scaling by the project team. This is being achieved through the already established networks by Tanzania Staples Value Chain (NAFAKA), Tuboreshe Chakula (TUBOCHA) and other institutional grassroots organizations, creating an opportunity for mainstreaming into wider rural development programs, beyond Africa RISING's current zones of influence.

The project is led by the International Institute of Tropical Agriculture (IITA) and the USAID Tanzania mission funded programs NAFAKA and TUBOCHA. Developmental activities addressing the project objectives are being implemented in Manyara, Dodoma, Morogoro, Iringa and Mbeya Regions in Tanzania.



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# Introduction

This report aims to summarize the most important results from the baseline survey conducted in the first nine pilot villages for vegetable interventions under the *'Enhancing partnership among Africa RISING, NAFKA, and TUBORESHE CHAKULA Programs for fast tracking delivery and scaling of agricultural technologies in Tanzania'* project. The baseline survey was conducted from June to August 2015. The baseline survey aimed at providing qualitative and quantitative data on gender aspects of vegetable production, as well as on the importance of leafy vegetable production at farm level. It was further planned to analyze the market relevance of indigenous leafy vegetables produced by smallholder vegetable producers. In order to support women in rural households' vegetable production, consumption and selling activities with the above mentioned project, we needed to analyze their particular roles within the household, in comparison to the role of their husbands, their involvement in daily production and income generating farming activities, as well as the obstacles that impede women from improving their income and their decision making power in rural households. The questionnaire for the baseline survey was prepared based on several prior qualitative interviews with farmers, district and village extension officers, as well as vegetable traders and wholesalers. The qualitative interviews were conducted to improve the research team's understanding of the leafy vegetable value chains. Based on these qualitative interviews, the research team decided to conduct in addition to quantitative interviews with smallholder vegetable producer also quantitative interviews with traders and wholesalers located in all three project districts. Thus, 360 quantitative interviews with female and male members of smallholder farmer households were complimented with 86 quantitative interviews conducted with traders and wholesalers who were active at village and town markets of small urban centers.

## General findings from the baseline survey

The data obtained from the survey provides valuable information which is of relevance for the future interventions under this project. Table 1 shows the share of female respondents in the total number of respondents were higher in categories, farmers (56%) and traders (81.7%). In all, 82.2% of household were headed by males while 17.8% of the sample were headed by females. For traders the share of female headed households was higher. Only 69.5% of traders' households were headed by males. Households headed by women were more dominated by widows; only four female headed households reported "divorced" as marital status. This has an impact on households' decision making and property ownership of different production means and equipment's as will be discussed below.

**Table 1:** Respondents characteristics

	Farmers		Traders	
	Male	Female	Male	Female
No. of interviewees (share in %)	157 (44%)	203 (56%)	15 (18.3%)	67 (81.7%)
Age (average in years)	39.5	39.4	41	36
Education (average level)	Primary (7yrs)	Primary (7Yrs)	Primary (7Yrs)	Primary (7)
Household headed by (in %)	296 (82.2%)	64 (17.8%)	57 (69.5%)	25 (30.5%)

In Tanzania, leafy vegetables are generally seen as a women's crop. Survey findings confirm this and are shown in Table 2. For most of the crops, except for pigeon pea and maize, men and women are both equally involved in the production process. However, differences in the allocation of incomes generated from crops are more significant. Thus, in more than 72% of all households, men receive the income generated from growing maize (72.3%), sorghum (85.7%) and pigeon pea (77.6%), although the production activities (except for sorghum) are in more than 40% of the households carried out by both, men and women.

**Table 2:** Gender disintegrated data on production and income distribution

	Who <b>mainly</b> manages the production of the concerning crop?						Who <b>mainly</b> receives income from sales?					
	Male		Female		Both		Male		Female		Both	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Maize	139	48.1	27	9.3	123	42.6	209	<b>72.3</b>	29	10.0	51	17.6
Sorghum	11	35.5	6	19.4	14	45.2	24	<b>85.7</b>	3	10.7	1	3.6
Pigeon pea	70	<b>65.4</b>	8	7.5	29	27.1	83	<b>77.6</b>	8	7.5	16	15.0
Tomato	69	31.7	50	22.9	99	45.4	85	39.0	80	36.7	53	24.3
African Eggplant	17	30.9	7	12.7	31	56.4	20	43.5	16	34.8	10	21.7
Onion	6	21.4	7	25.0	15	53.6	8	28.6	14	<b>50.0</b>	6	21.4
Amaranth	42	27.1	41	26.5	72	46.5	40	25.8	81	<b>52.3</b>	34	21.9
Chinese cabbage	64	29.0	62	28.1	95	43.0	67	30.3	104	47.1	50	22.6
Ethiopian mustard	29	25.9	41	36.6	42	37.5	35	31.3	57	<b>50.9</b>	20	17.9

In contrast, if we look at leafy vegetable and onion production, in more than 50% of the households the income from sales mainly goes to women (Chinese cabbage only 47.1%). The income from tomato and African eggplant production seems to be equally distributed. This already gives us an indication of whether or not, a distinction between female and male crops in smallholder agriculture exists. In all female headed households (FHH) who participated in our survey, production activities were conducted by women and the income also went entirely to the female household heads.

Table 3 provides a more detailed view on the different activities that are connected with the production of leafy vegetables, fruit vegetables and cereals. Also here, male household members are dominating the marketing of cereal crops. Female household members are more involved in selling leafy vegetables. However, most of the production activities are conducted by both, male and female members of MHH. A dominance of male household members is visible across all crops for the following activities: money related decision making such as input purchase, seed selection and pest and disease control. Even for leafy vegetables those activities are mainly carried out by men.

Furthermore, our data does not confirm observation from smallholder farmer household surveys conducted elsewhere in Sub-Saharan Africa. In Ghana for example, Cornish et al, 2001, Cornish and Lawrence, 2001 and Obuobie et al, 2004 reported that nursery management for vegetable crops is mainly in the hands of men. Except for cereal crops, where men are more strongly involved during the whole production process compared to leafy vegetables, nursery management activities are more often undertaken by men. Otherwise, even for cereals a joint management of nurseries is more common (63%).

**Table 3:** Gender disaggregated comparison of activities during leafy vegetable, fruit vegetable and cereal production (in %)

	Leafy vegetable production					Fruit vegetable production					Cereal production				
	MHH			FHH		MHH			FHH		MHH			FHH	
	women	men	both	women	men	women	men	both	women	Men	women	men	both	women	men
Making money related decisions (e.g. buying fertilizer)	<b>26.2</b>	<b>68.7</b>	<b>5.1</b>	<b>96.8</b>	<b>3.2</b>	<b>20.6</b>	<b>74.3</b>	<b>5.1</b>	<b>97.5</b>	<b>2.5</b>	<b>9.2</b>	<b>84.5</b>	<b>6.4</b>	<b>95.2</b>	<b>4.8</b>
Managing labor	31.2	44.6	24.2	96.6	3.4	22.5	47.8	29.7	97.5	2.5	11.1	54.2	34.7	95.2	4.8
Nursery management	29.8	33.9	36.3	96.9	3.1	24.1	36.2	39.7	97.6	2.4	8.5	27.9	63.6	96.7	3.3
Planting/Transplanting	30.1	28.1	41.8	96.9	3.1	23.8	28.5	47.7	97.6	2.4	10.2	25.1	64.7	96.7	3.3
Seed selection	<b>26.6</b>	<b>50.2</b>	<b>23.2</b>	<b>96.9</b>	<b>3.1</b>	<b>21.5</b>	<b>56.3</b>	<b>22.3</b>	<b>97.6</b>	<b>2.4</b>	<b>8.7</b>	<b>56.4</b>	<b>34.8</b>	<b>95.3</b>	<b>4.7</b>
Plowing	27.4	35.8	36.8	96.8	3.2	21.2	36.0	42.8	97.6	2.4	8.3	35.1	56.5	96.7	3.3
Pest and disease control	<b>21.7</b>	<b>73.8</b>	<b>4.5</b>	<b>96.6</b>	<b>3.4</b>	<b>16.7</b>	<b>80.5</b>	<b>2.8</b>	<b>97.4</b>	<b>2.6</b>	<b>6.2</b>	<b>86.9</b>	<b>6.9</b>	<b>96.0</b>	<b>4.0</b>
Irrigation	28.1	36.3	35.6	93.8	6.3	22.3	35.5	42.2	97.6	2.4	8.6	41.0	50.5	95.8	4.2
Weeding	33.4	21.4	45.2	96.9	3.1	26.0	22.4	51.6	97.6	2.4	9.2	22.0	68.9	96.3	3.7
Harvesting	34.0	22.8	43.2	96.9	3.1	26.0	22.8	51.2	97.6	2.4	8.2	20.4	71.3	95.0	5.0
Processing crops for consumption or sale	40.4	22.6	37.0	96.9	3.1	31.8	28.2	40.0	97.6	2.4	8.1	24.0	67.8	95.2	4.8
Selling products	<b>48.6</b>	<b>29.5</b>	<b>21.9</b>	<b>96.9</b>	<b>3.1</b>	<b>34.9</b>	<b>38.9</b>	<b>26.2</b>	<b>97.6</b>	<b>2.4</b>	<b>13.8</b>	<b>69.6</b>	<b>16.6</b>	<b>95.3</b>	<b>4.7</b>

## Price related decisions and marketing of vegetables

An indicator for the market performance of vegetable producers is their impact on producer prices during price negotiations. Table 4 gives an overview of the roles of female and male household members fulfil during price negotiation with buyers for tomatoes and leafy vegetables. Obviously, farmers' willingness to negotiate prices instead of being price takers seems to be significantly higher for tomatoes than for leafy vegetables. The main reason for this observation is, according to interviewers' opinion, the high perishability of leafy vegetables. Farmers, who harvested leafy vegetables, have no other choice than to sell them as they lack storage capacities. However, even with storage capacities the perishability of leafy vegetables compared to tomatoes is higher. Another observation made relates to male and female respondents' willingness to accept traders' prices. For tomatoes and also for leafy vegetables male respondents are much more reluctant to accept the prices traders' offer compared to female respondents in MHHs. FHHs have the highest willingness to accept traders' prices (37%), while only 32% of female respondents in MHHs are willing to accept traders' prices without negotiation. These are important insights since it has been shown in table 1 that the income for leafy vegetables goes mainly to women.

**Table 4:** Farmer respondents: Price determination for tomatoes and leafy vegetables

Respondent	MHH		female		FHH	
	male		female		female	
	No.	%	No.	%	No.	%
I decide about the price	100	37.6	52	25.2	30	33.0
I ask the other farmers	24	9.0	35	17.0	6	6.6
I take what the trader/collector is willing to pay	<b>33</b>	<b>12.4</b>	<b>56</b>	<b>27.2</b>	<b>27</b>	<b>29.7</b>
I ask the trader and only sell when price is reasonable	108	40.6	63	30.6	27	29.7
Others	1	0.4	0	0.0	1	1.1
Total number of entries	266	100	206	100.0	91	100.0

Respondent	MHH		female		FHH	
	male		female		Female	
	No.	%	No.	%	No.	%
<b>I decide about the price</b>	<b>87</b>	<b>31.5</b>	<b>52</b>	<b>22.6</b>	<b>27</b>	<b>26.5</b>
I ask the other farmers	44	15.9	53	23.0	15	14.7
I take what the trader/collector is willing to pay	<b>51</b>	<b>18.5</b>	<b>73</b>	<b>31.7</b>	<b>38</b>	<b>37.3</b>
I ask the trader and only sell when price is reasonable	93	33.7	52	22.6	22	21.6
Others	1	0.4	0	0.0	0	0.0
Total number of entries	276	100	230	100	102	100



There is a large number of publications arguing that in particular farmer organizations (FOs) such as producer groups or cooperatives are able to strengthen farmers' role in price negotiations, as through FOs it is possible to gather a larger amount of produce from several farmers and thus to negotiate higher prices compared to individual farmers (see e.g., Gelhar and Regmi 2005; Kaganzi et al. 2009, and Markelova et al. 2009). We asked respondents, whether they are members of a formal producer group or whether they are cooperating with other farmers in a business relationship (see table 5). About one quarter of all male respondents replied to be a member of a producer group, whereas almost 72% of all male respondents mentioned to be involved in a business relationship with other farmers. For female respondents this share is much lower, and lowest for female respondents in MHH.

A comparatively lower engagement in joint formal or informal business and marketing relationships with other farmers might be one of the reasons for women's reservation in price negotiation processes compared to men. Evidence about a lower participation of women in group activities to improve business performance can also be found in the literature. Authors like Weinberger and Juetting, 2001 or Meinen-Dick and Zwarteveen, 1998 argue that group activities can be very time consuming and reduce women's interest in those groups as they often have to carry out house work in addition to their production and marketing activities. However, the fact that female respondents in FHHs are more active in groups could mean that respondents are in general aware of the benefits of collective action. This even confirms the result of a question asked to all respondents, whether or not they would join a producer group? 97.5% of all male respondents and 98.0% of all female respondents confirmed that they would join a producer group.

**Table 5:** Engagement in collective action (producer groups or joint business relationships)

	MHH		MHH		FHH	
	Male respondent		Female respondent		Female respondent	
	yes	no	yes	no	yes	No
Member of a producer group	25.6%	74.4%	10.3%	89.7%	15.6%	84.4%
Do you cooperate with other farmers in a business relationship?	71.5%	28.5%	48.9%	51.1%	50.7	49.3%

The market position of traders, even of female traders, is different from farmers' role during price negotiations. As table 6 shows, more than half of all male and female traders that have been interviewed, mentioned that they decide about the prices they receive from their customers for their products. For leafy vegetables the number of female traders, who indicated that they make decisions about the prices themselves, is smaller. However, this is only because it is common practice to buy at certain prices that are determined by the traders' community and then to add a certain percentage on top of the purchase price before selling leafy vegetables to the final consumer.

**Table 6:** Trader respondents: Price determination for tomatoes and leafy vegetables

<b>Who decides about the price you receive for your tomatoes and leafy vegetables during selling? (multiple answers possible)</b>								
<b>Respondent</b>	<b>tomatoes</b>				<b>Leafy vegetables</b>			
	<b>male</b>		<b>female</b>		<b>male</b>		<b>female</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>I decide about the price</b>	<b>10</b>	<b>55.6</b>	<b>40</b>	<b>51.3</b>	<b>10</b>	<b>55.6</b>	<b>31</b>	<b>37.8</b>
I ask the other traders	3	16.7	15	19.2	0	0.0	8	9.8
I always add ..... % to the purchase price	3	16.7	18	23.1	5	27.8	40	48.8
<b>I take what the customer is willing to pay</b>	<b>2</b>	<b>11.1</b>	<b>5</b>	<b>6.4</b>	<b>3</b>	<b>16.7</b>	<b>3</b>	<b>3.7</b>
Other (specify):	0	0.0	0	0.0	0	0.0	0	0.0
Total number of entries	18	100	78	100	18	100	82	100

Table 7 emphasizes the strong market position of traders compared to farmers. Especially for leafy vegetables traders are able to realize a margin of more than 50% of the final selling price for themselves, whereas their margins for fruit vegetables, except for African eggplant traded by male traders, are 10% to 15% lower. These results confirm the comparatively low market power of female leafy vegetable producers compared to traders. Interestingly, in particular for leafy vegetables, female traders seem to be more successful than male traders. One reason for this observation are the slightly different market channels male and female traders are using. Table 8 reveals the market channels traders are using and the shares of their produce which is marketed through each of the market channels. Male traders mentioned also to predominately sell to final consumers, however, this share for male traders is much lower than for female traders, since male traders in particular for leafy vegetables also sell to restaurants, grocery stores or to urban traders, while female traders prefer selling directly to consumers.

**Table 7:** Comparison of purchase and selling price at traders' level for fruit and leafy vegetables

<b>Crop</b>	<b>Purchase price per comparable unit (TSH per kg or stems)</b>		<b>Selling price per comparable unit (TSH per kg or stem)</b>		<b>Difference between purchase and selling price (TSH per kg or stem)</b>		<b>Share of traders margin in total selling price (in %)</b>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
Tomatoes	558/kg	591/kg	853/kg	900/kg	295/kg	308/kg	35%	34%
African eggplant	144/kg	131/kg	317/kg	210/kg	172/kg	79/kg	54%	38%
Sweet pepper	59/kg	39/kg	74/kg	52/kg	15/kg	13/kg	20%	25%
Onion	811/kg	541/kg	1171/kg	770/kg	360/kg	229/kg	31%	30%
Amaranth	<b>1.9/stem</b>	<b>2.9/stem</b>	<b>3.8/stem</b>	<b>6.7/stem</b>	<b>1.9/stem</b>	<b>3.8/stem</b>	<b>50%</b>	<b>57%</b>
Chinese cabbage	<b>7.7/stem</b>	<b>8.2/stem</b>	<b>15.0/stem</b>	<b>18.5/stem</b>	<b>7.3/stem</b>	<b>10.3/stem</b>	<b>49%</b>	<b>56%</b>
Ethiopian mustard	<b>5.1/stem</b>	<b>5.6/stem</b>	<b>10.3/stem</b>	<b>13.3/stem</b>	<b>5.2/stem</b>	<b>7.7/stem</b>	<b>50%</b>	<b>58%</b>

**Table 8:** Market channels male and female traders use to sell their products

<b>Crop</b>	<b>Share of produce sold through different market channels</b>		<b>Market channel used for selling leafy vegetables (in %)</b>	
	<b>Markets channels used for selling tomatoes (in %)</b>			
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
Consumer	46%	67%	57%	76%
Restaurant/Hotel	9%	5%	19%	6%
Retailer/Grocery store	4%	3%	19%	2%
Commission agent/Broker	0	0	0	0
Urban collector/Wholesaler	14%	0	5%	1%
Village collector	0	0	0	1%
Hawker/Door-to-door seller	0	0	1%	1%
Other:	0	0	0	0

## Access to land, finance and extension

In general, MHHs cultivate in average 6.93 acres of land and thus almost two acres more than FHHs (5.11 acres). However, the huge differences between men and women with regard to access to land are not necessarily visible if one observes which person is responsible for the cultivation of the land. Immense gaps between men and women exist concerning the ownership of the land. In all 295 MHHs, there was only one woman who was had an official documented title as owner of her piece of land (table 9). The majority of land cultivated by a household was owned by husbands (64.1% for plot 1), one quarter was rented in, and a minor share belonged to the husband's or wife's clan. Also in FHHs, and even in widowed household, at least one fifth of the land under cultivation still belongs to the husband officially. A higher landownership of women in FHHs could only be verified for smaller plots (plot 3), which were often used for vegetable production. Larger plots are generally used for maize production. The four divorced FHHs that has been surveyed showed no private ownership of land by the female household head. 75% of the land cultivated in those four households belonged to the clan of the female household head and 25% was rented in.

**Table 9:** Cultivation and ownership of farm plots in FHHs and MHHs

FHH	Average size	Who cultivates? %				Who own the land (based on certificate)?						
		male	female	both	son/daughter	husband	wife	both	rented	husband clan	wife clan	others
Plot 1	3.7	1.5	89.2	1.5	7.7	20.0	30.8	0.0	24.6	0.0	23.1	1.5
Plot 2	0.9	1.6	89.1	1.6	7.8	26.6	28.1	0.0	20.3	0.0	23.4	1.6
Plot 3	1.0	3.8	88.5	3.8	3.8	23.1	42.3	0.0	23.1	0.0	11.5	0.0
Plot 4	1.3	0.0	100.0	0.0	0.0	10.0	50.0	0.0	30.0	0.0	10.0	0.0
Plot 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MHH	Average size	Who cultivates?				Who own the land (based on certificate)?						
		male	female	both	son/daughter	husband	wife	both	rented	husband clan	wife clan	others
Plot 1	4.6	25.4	7.5	56.9	10.2	64.1	0.3	0.3	25.1	2.7	1.7	5.8
Plot 2	1.4	19.9	15.1	55.3	9.6	57.0	0.3	0.3	29.9	3.1	3.1	6.2
Plot 3	1.2	13.6	14.8	62.5	9.1	54.5	0.0	1.1	35.2	2.3	1.7	5.1
Plot 4	0.9	12.9	9.7	72.6	4.8	56.5	0.0	0.0	40.3	0.0	0.0	3.2
Plot 5	2.1	0.0	42.9	42.9	14.3	28.6	14.3	0.0	28.6	0.0	14.3	14.3

These results document the huge gap between men and women with regard to land ownership, albeit with most women having user rights. In particular the negligible land ownership of women in MHHs gives reason to expect a high dependence of women on their husbands in those households and let us assume that women might have a much lower bargaining power in marriages compared to their spouses.

With regard to access to finance the situation between men and women in rural areas seems to be very different. Table 10 gives a slightly surprising picture. The highest share of respondents who reported to have access to credits, even of an amount higher than TZS 1,000,000, are women in MHHs (77.7 %), followed by women in FHHs (76.6%). In contrast, only 66.9% of male members of MHHs confirmed to have access to credits with a volume of TZS 1,000,000 or more.

The factual access to credits from formal credit institutions for male and female household members is surprisingly high, and for male household members slightly higher than for female members. Thus, 96% of male household members confirmed to have received a credit, whereas 95% of female respondents in MHHs stated the same, and only 89% of female respondents in FHHs. The data for male and female household members in MHHs also show that more or less all who previously applied for a credit, also received a credit in the past. For female household members in FHHs the number of respondents who applied for a credit in the past (92.2%) is slightly higher than the number of respondents who also received a credit before (89.1%). The main reason for the latter discrepancy that was mentioned by the interviewees, who have not received a loan after handing in an application, was the lack of collateral.

**Table 10:** Access to finance for male and female household members in FHH and MHH (in %)

	MHH		FHH			
	male		female		female	
	yes	no	yes	no	yes	no
Do you personally have access to micro credits at reasonable costs?	65.0	35.0	73.6	26.4	68.8	31.3
Has your spouse access to micro credits at reasonable costs?	65.6	34.4	73.4	26.6	76.6	23.4
Do you personally have access to credits >1,000,000 TZS at reasonable costs?	66.9	33.1	77.7	22.3	76.6	23.4
Has your spouse access to credits >1,000,000 TZS at reasonable costs?	67.5	32.5	77.0	23.0	76.6	23.4
Have you ever received a credit?	96.2	3.8	95.0	5.0	89.1	10.9
Have you ever applied for a credit?	96.8	3.2	95.0	5.0	92.2	7.8

Another factor that can have a significant effect on crop production and productivity, and may therefore lead to an increase of income for women in the household, is the access to an extension system. Tanzania maintains a comprehensive agricultural extension system. It employs subject matter specialists at district level and for each village extension officers. In our survey we asked respondents a) whether they met an extension officer during the last four months, and b) whether they participated in extension training during the last two years. The

results show that male respondents and female respondents in FHHs are those who meet extension officers most frequently. Female respondents in MHHs, in contrast, seem to be disadvantaged in this regard. This was also the group with the lowest number of respondents who participated in extension training over the last two years (18.7%). The number of participants in extension trainings over the last two years was slightly higher in FHHs (21.9%), whereas almost 30% of all male respondents from MHHs participated in extension trainings before.

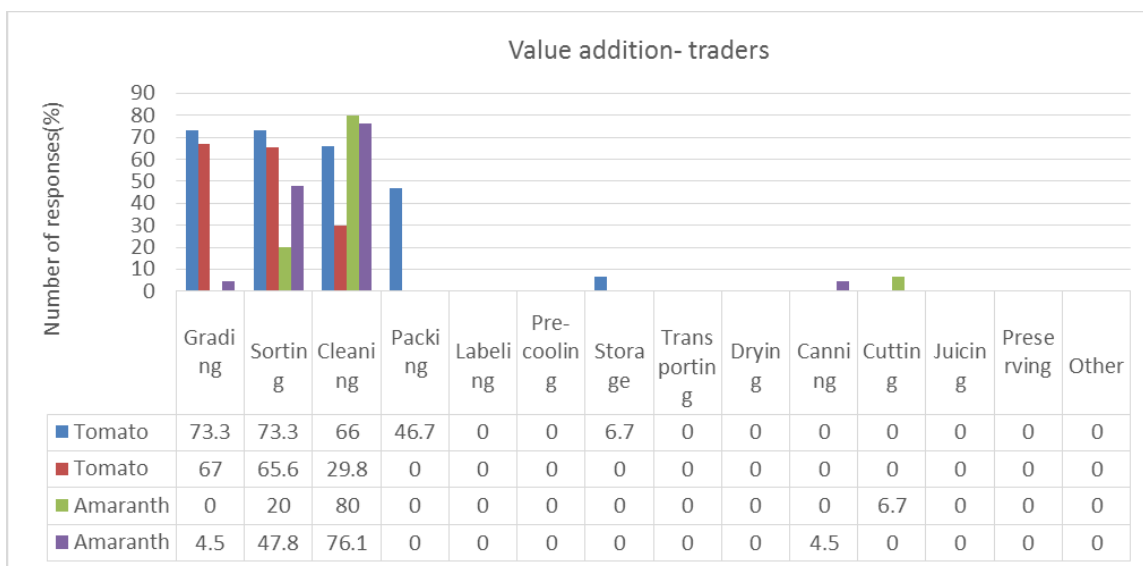
Considering a network of village extension officers, who are mainly responsible for the provision of extension and production training in Tanzanian villages, this number, is very low. It may further support the observation made by Weinberger and Juetting, 2001 or Meizen-Dick and Zwarteveen, 1998, who argue that due to the higher workload in the household, women are more reluctant to participate in group activities, which would include trainings as well. However, more qualitative research is required to identify the particular reasons for the lower participation of women, and especially of women in MHHs in training activities. In addition to the work load in the household, the timing of the training courses, the gender of the trainers in particular in Muslim regions, or the topics of the training courses might be reasons for an absence of female participants in extension trainings.

**Table 11:** Access to extension services for male and female household members in FHH and MHH (in %)

	<b>MHH</b>		<b>female</b>		<b>FHH</b>	
	<b>male</b>		<b>female</b>		<b>female</b>	
	<b>yes</b>	<b>no</b>	<b>yes</b>	<b>no</b>	<b>yes</b>	<b>no</b>
Have you met the village extension officer in the last four months?	42.0	58.0	30.9	69.1	39.1	59.9
Have you attended an extension training during the last 2 years?	29.9	70.1	18.7	81.3	21.9	78.1

# Value addition in vegetable production and business

In a business environment value addition is of vital importance since it allows producers to reach higher value markets. We collected information on whether farmers and traders conduct value addition activities or not. The majority of them carry out only three value addition activities; grading, sorting and cleaning both traders and farmers as shown in figure 1 and 2 below. It shows the need for more postharvest training to both farmers and traders. The data shows that value addition is done mainly for fruit vegetables. Furthermore, male traders were even carrying out more value addition activities as 62.1% of male traders graded, sorted and cleaned the tomatoes they supplied, whereas only 54.3% of female traders were doing the same. On the other side, 81.2% of male farmer respondents reported to add value to their produce before selling it, while 73.7% of female farmer respondents did the same.



**Figure 1:** Value addition activities by traders



**Figure 2:** value addition activities done by farmers



## Conclusion

In general, the survey findings show that female farmers in MHHs and FHHs, particularly with regard to access to land and extension, but also with regard to access to markets are disadvantaged. On the other hand, these results also show that there is a special niche that women were able to occupy at farm and market level. Income from leafy vegetables mainly goes to female farmers, both in MHHs and FHHs. This confirms the projects' considerations to not only focus on vegetable cash crops such as tomatoes or African eggplant, but also on leafy vegetables, which have a higher nutrient content, too. For all nine pilot villages we can conclude that supporting vegetable production, fruit vegetables as well as leafy vegetables, may have a substantially higher impact on women's income than providing advice on staple crop production only.

However, our findings also show that AVRDCs and HORTI-Tengeru's project intervention should not only focus on introducing new varieties and improved production practices to farmers. Compared to traders, in particular in the field of leafy vegetable trading, farmers are disadvantaged compared to traders. Therefore, there is a need to improve farmers' agribusiness, marketing and record keeping skills. That is, farmers need to be brought into the position that they are able to decide based on the costs and benefits they make from each crop, which vegetable crops and/or varieties are under current market conditions the most profitable ones. Furthermore, group activities among producers and linking them to larger buyers may have a substantial impact on farmers' income, since they may realize price increases of up to 50-60%, if they are able to sell their produce directly to consumers and larger buyers instead of selling them at farm gate level. The vegetable project team has therefore started with record keeping/agribusiness trainings in the pilot villages and selected one pilot village for concrete market access interventions. However, the latter interventions are very time and cost intensive and can only be conducted at pilot level in 1 or 2 villages considering the current budget constraints.

Most of the production practices in vegetable farming were undertaken by both, men and women. An exception are rural financial related decisions e.g. with regard to input purchase, seed selection and pest and disease control. Those activities are predominately in the hands of men. Here, more qualitative research will be needed to identify the main reasons for this observation. It needs to be clarified whether the reason for men's dominance in these activities is rooted in the fact that men decide about most of the financial questions in households anyway, or that women in particular in MHHs are possibly lacking the technical knowledge to decide properly about input use.

Concerning access to markets, the study results show that female respondents, and in particular those coming from FHHs, are more reluctant to negotiate prices with traders than men. An increase in their negotiation power could therefore enable an increase of income for women in particular from leafy vegetables. Since the perishability of leafy vegetables is very high, even improved storage facilities might not improve women's power in the price negotiation process with traders. In contrast, supporting women marketing groups might have more potential to show positive results for women. However, supporting women marketing groups would require

further qualitative data explaining why men are more active in producer groups than women as shown in this study. Lack of social capital among women or stronger mistrust among women compared to men, but also higher workloads at home might be important reasons that require further research.

Regarding access to resources, the most apparent inequality between men and women concerns access to land. Land is in Tanzanian rural areas the most important asset for food production. But land ownership also strengthens women's role in households and serves as security especially for divorced or widowed women. The fact that in our survey only one woman out of 295 MHHs had a documented ownership of a land plot is therefore alarming. Legislation needs to assure that both men and women are equally qualified to acquire land and titles.

Further need for action, however, is required concerning the provision of technical training and extension services. Also in this field, in particular women in MHHs are disadvantaged. Tanzania maintains a wide net of extension officers down to village level, but the participation of farmers in extension trainings in general, and female farmers in particular, seem to be very low. Promotion activities encouraging the participation of both husband and wife in training sessions, a scheduling of trainings at times, where the workload for women in households is low, and the employment of female trainers in regions, where women are not empowered, may improve women's role in households as well. These findings support the training approach that the vegetable project team applies. Working closely with the village extension officers and training them during the training-of-trainer sessions at pilot village level will enable the latter to provide more qualified advice to farmers. It further shows the importance of including a large share of female participants in the training groups. With the exception of the Babati district, the share of women in total training participants varied always between 45-55%.

## Literature

1. Alderman, H., Hoddinott, J., Haddad, L.J. and Udry, C., 2003. Household Decision, Gender, and Development: A Synthesis of Recent Research. International Food Policy Research Institute, Washington, DC.
2. Cornish, G.A., Lawrence, P. and Wallingford, H.R., 2001. Informal Irrigation in periurban areas: A summary of findings and recommendations. In Informal irrigation in periurban areas: a summary of findings and recommendations. DFID/HR Wallingford.
3. Cornish, G.A., Aidoo, J.B. and Ayamby, I., 2001. Informal irrigation in the peri-urban zone of Kumasi, Ghana-an analysis of farmer activity and productivity.
4. Gehlhar, M., Regmi, A.: 2005, Factors shaping global food markets; In: Regmi, A., Gehlhar, M. (Eds.): New Directions in Global Food Markets; Agriculture Information Bulletin Number 794; United States Department of Agriculture, pp. 5–17.
5. Kaganzi, E., Ferris, S., Barham, J., Abenakyo, A., Sanginga, P., Njuki, J.: 2009, Sustaining linkages to high value markets through collective action in Uganda; Food Policy 34 (2009), p. 23-30.
6. Markelova, H., Meinzen-Dick, R., Hellin, J., Dohrn, S.: 2009, Collective action for smallholder market access, Food Policy 34 (2009), p.1-7.
7. Meinzen-Dick, R. and Zwarteveen, M., 1998. Gendered participation in water management: Issues and illustrations from water users 'associations in South Asia. Agriculture and Human Values, 15(4), pp.337-345.
8. Obuobie, E., Drechsel, P., Danso, G. and Raschid-Sally, L., 2004. Gender in open-space irrigated urban vegetable farming in Ghana. Urban Agriculture Magazine, 12(1), pp.13-15.
9. Weinberger, K. and Jutting, J., 2001. Determinants of participation in local development groups: Experiences from group based projects in Kashmir and Chad. University of Bonn Center for Development Research Bonn, Germany.