



Centre for Social Research

Possibilities and challenges for gender neutral pro-poor agricultural growth in Malawi

By

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January 2015

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Abbreviations

AISP	Agriculture Input Subsidy Programme
CSR	Centre for Social Research
EPA	Extension Planning Area
FSP	Fertilizer Support Programme
RDP	Rural development Programme

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1.0 Background

In Malawi agriculture continues to be the most obvious means to stimulate broad-based rural growth and to provide levels of food security and income for the majority of the population (Peters, 2006). Over 85 per cent of the population in Malawi is rural and about 90 per cent of the labour force is employed in the agricultural sector. Despite employing most of the population and producing 72 per cent of Malawi's total exports, agriculture accounts only for 36 per cent of total value added to the Malawian economy, a large proportion of this coming from the commercial estates, mainly tobacco (Devereux et.al. 2006). The small-holder sector has consistently underperformed and the country is hardly food secure. The underperforming has, among other factors, been attributed to erratic rainfall, land constraints, lack of livestock, and constrained access to fertiliser and credit (ibid).

Since the turn of the millennium, a number of national initiatives that seek to enhance the role of smallholder agriculture sector as a driver of broad-based poverty reduction and growth have come about as a result of renewed political interest in African agriculture (Andersson Djurfeldt, 2013). This recent interest in smallholder agriculture as the key to African development has sought to democratise growth in the smallholder sector through the vague but politically appealing concept of "pro-poor agricultural growth". Two main criteria are considered important in this respect: first, pro-poor or agricultural growth should be inclusive, and secondly the concept rests on the gradual commercial integration of smallholders into national and sometimes global market chains, through the growth of a broad-based class of commercially oriented smallholders. In this context, the staple crop sector as the mainstay of smallholder production is considered especially important. While the comprehensiveness envisioned in the concept of pro-poor agricultural growth addresses the concerns of rural poverty, the role of women and gendered access to resources as part of this process need to be better understood. This is especially relevant in sub-Saharan Africa where women constitute 49 per cent of the agricultural labour force while female control of productive resources is limited.

1.1 Purpose of the research

The purpose of the project was to consider local level conditions for pro-poor agricultural growth in relation to gendered access to productive resources and markets and the institutional challenges for achieving gender-based inclusivity in this process.

1.2 Research questions

Against these national and regional contexts, the project sought to answer the following questions:

- Can gendered access to resources both within and among households in themselves encourage pro-poor agricultural growth?
- Does broad based commercialization accentuate or level socio-economic structures and gender roles that advantage men over women at the household and village level?
- How can local level institutional structures, such as property rights and extension services contribute to enhancing or restricting female inclusivity in the process of pro-poor agricultural growth?
- How does the interaction between non-farm and farm sources of income affect gender relations within agriculture?

2.0 Study Methodology

2.1 Site selection

The study was a follow-up to earlier studies done in 2002 (Round I) and 2008 (Round II). In this third round the study was conducted in the same Rural Development Programmes (RDPs) and Extension Planning Areas (EPAs) as in Rounds 1 and 2 and targeted the same households if they were happened to be in the same area. Table 1 presents the EPAs in question and they are: Malomo and Kalira from Ntchisi RDP; Kabwazi and Linthipe from Thiwi/Lifidzi RDP; Golomoti and Mtakataka from Bwanje Valley RDP; and Mombezi and Ntonda from Shire Highlands RDP (Kadzandira, 2008).

Table: 1 Distribution of extension planning areas and villages

RDP	EPA	Village
Ntchisi	Malomo	Cholamakanda, Byzobyzo
	Kalira	Mzandu, Matako
Thiwi/Lifidzi	Kabwazi	Kaphale
	Linthipe	Lingaka
Bwanje Valley	Mtakataka	Kansipa
	Golomoti	Dziko
Shire Highlands	Mombezi	Ngolonga
	Ntonda	Mang'omba

Each EPA is split into sections which are managed by a Field Assistant. In Round 1, lists of sections at each of the sampled EPAs were obtained and one section, which was recorded as high maize yielding potential section was selected for the study. At sectional level, 1-2 villages were selected at random on condition that the total number of households in each case should not exceed 250 as per study design. Selection of households for the interviews were done at random where the Research Assistants selected the households using a sampling interval which was determined at village level depending on the total number of farm families (households), thus allowing for variability and representativeness of the sample. The same procedure was followed in round 2. In Round 3, we interviewed households that were interviewed in Rounds 1 and 2. Owing to attrition, either because a household had ceased to exist or had moved out of the village, households that had sprung from the original households were also interviewed. Where original households could not be found, replacement households were interviewed. These replacements were made after compiling a simple listing of households in each village and selecting the required additional households.

2.2 Study tools

The main study tools used in this study were (i) a structured household questionnaire which was administered to the household farm manager who was defined as the one responsible for the day to day decision-making on the operations of the family farm, (ii) a guide for focus group discussions, and (iii) guide for in-depth interviews with a selected number of farmers. Just as in 2002 and 2008, the farm manager was often the head of household as well. In their absence, interviews were held with their spouses. The household questionnaire, among other issues, covered the following: demographics, housing conditions, ownership of assets, ownership of livestock, cropping patterns, access to productive

assets including livestock, availability of labour and its distribution, access to information, marketing, household incomes and expenditure. In total, 400 interviews were conducted in the four RDPs.

2.3 Field work

Data was collected by eight research assistants. Each team comprised four research assistants, one supervisor and one driver. Training of the research team was done in Zomba in two segments. For the qualitative study, training took place from 16-17 November 2012. The training was conducted by the Centre for Social Research (CSR). This was immediately followed by data collection which lasted until 10th December 2012. A total of 102 interviews were conducted from three EPAs of Linthipe, Malomo and Kalira.

On the other hand, training for the quantitative study took place from 17th to 22nd March 2013. Training was conducted by study team members from CSR and Lund University. Since we were using a questionnaire that had been developed and used during the first two rounds, it was not necessary to do a pilot. Instead, mock interviews were done for the research assistants to understand the questionnaire and get used to the wording of the questions. The teams departed for the field on the last day of training and field work commenced on 23rd March. Data collection was completed by the 9th of April 2013.

3.0 Results

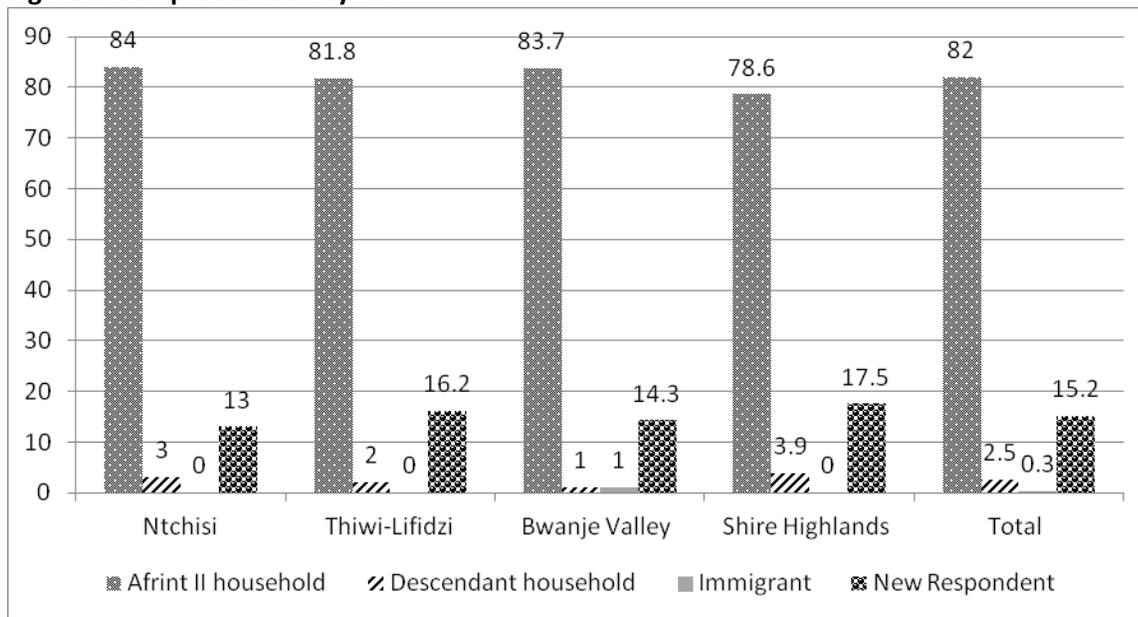
3.1 Demographics

This chapter presents demographic characteristics of the study households, attrition rates of households from the original sample, headship of household, gender of farm managers, educational attainment of heads of the households and housing characteristics. We present the results at the RDP level because of the small samples at the village and EPA level. Furthermore, in terms of agricultural and marketing practices, there is a lot of interconnectedness within the RDP. Villages are largely not self-contained.

3.1.1 Sample attrition

In general, 82 percent of the original sample was interviewed in the third round (Figure 1). The rest of the sample comprised replacement households (15.2%), descendant households (2.5%) and immigrant households (0.3%). The highest attrition rate was in the Shire Highlands RDP where only 78.6 per cent of the original households were found, and the lowest was in Ntchisi RDP where 84 per cent of the original sample was interviewed in the third round. The high attrition rate in Shire Highlands was also the case in Round 2 and this was probably due to the proximity of the site to Blantyre City and some of the households may have migrated to town.

Figure 1: Sample attrition by RDP

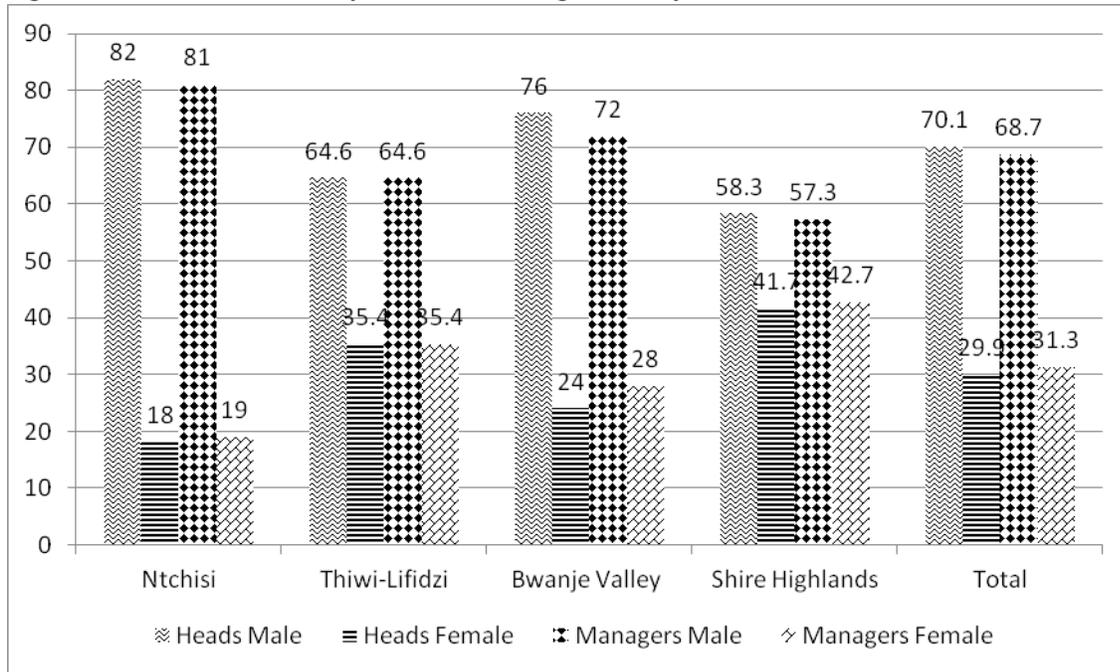


3.1.2 Household headship and farm management

Overall, 29.9 per cent of the sampled households were headed by women (Figure 2). The highest number of female headed households was in the Shire Highlands RDP (41.7%) followed by Thiwi-Lifidzi RDP (35.4%). The higher proportion of female-headship in Shire Highlands could be as stated above due to its proximity to the city of Blantyre where a lot of men work and some commute on a daily basis. Hence, day to day decisions regarding farming are done by women who are left at home. In terms of farm management, 31.3 per cent of the farms of the sampled households were managed by women and the Shire Highlands RDP reported the highest number of female farm managers at 42.7 percent followed

by Thiwi-Lifidzi (35.4%). The figures suggest that household headship and farm management largely overlap.

Figure 2: Household headship and farm management by RDP



3.1.3 Age distribution of household heads and farm managers

Female heads of households were slightly older with a mean age of 49.7 years while male heads of households were slightly younger at 46.8 years (Table 2). There were slight variations across the RDPs but these were not significant. The trend was the same upon examination of the age of the farm managers. This probably confirms that household heads were often the same people that acted as farm managers as well. This is more so in female-headed households.

Table 2: Age distribution of household heads and farm managers by gender of household head by RDP

Gender of head of household	RDP	Heads		Managers	
		Mean	Median	Mean	Median
Male	Ntchisi (n=81)	45.4	43.0	45.5	43.0
	Thiwi-Lifidzi (n=64)	49.5	50.0	49.6	50.0
	Bwanje Valley (n=68)	46.0	41.5	46.4	42.5
	Shire Highlands (n=58)	46.7	44.0	46.4	44.0
	Total (n=271)	46.8	44.0	46.9	44.0
Female	Ntchisi (n=19)	45.0	50.5	44.2	50.0
	Thiwi-Lifidzi (n=35)	49.6	49.0	46.4	48.0
	Bwanje Valley (n=26)	49.1	51.5	47.6	45.5
	Shire Highlands (n=42)	52.1	50.0	52.4	50.5
	Total (n=122)	49.7	50.0	48.4	49.0

3.1.4 Education of household heads

The majority of the heads of households had either no education or were educated up to level of upper primary (Table 3). Only 14.0 per cent among male heads and 4.8 per cent female heads were educated up to secondary level or above. Twice as many female heads (27.4%) as male heads (12.2%) did not have any formal education, and close to a fourth of female-headed households went as far as lower primary. Only 28 per cent of female-headed household heads did up to upper primary. This may have a bearing on the level of comprehension of new farming techniques or extension messages and also of access to written messages since people with low levels of education cannot read or write. In Malawi, a person is considered illiterate if they do not complete up to standard 4 of the lower primary school or attend adult literacy classes.

Table 3: Educational level of farm managers by gender of household head by RDP

Gender of HH head	RDP	No education	Lower Primary	Upper Primary	Education Level Secondary +
Male	Ntchisi (n=78)	9.0	41.0	38.5	11.5
	Thiwi-Lifidzi (n=64)	9.4	42.2	40.6	7.8
	Bwanje Valley (n=72)	22.2	36.1	34.7	6.9
	Shire Highlands (n=57)	7.0	21.1	38.6	33.3
	Total (n=271)	12.2	35.8	38.0	14.0
Female	Ntchisi (n=18)	27.8	38.9	33.3	0.0
	Thiwi-Lifidzi (n=35)	11.4	60.0	25.7	2.9
	Bwanje Valley (n=28)	50.0	17.9	25.0	7.1
	Shire Highlands (n=43)	25.6	37.2	30.2	7.0
	Total (n=124)	27.4	39.5	28.2	4.8

3.1.5 Size of households and dependency ratios

Overall, female-headed households had lower mean average of 4 persons compared to 6 among male-headed households (Table 4). There were variations across the RDPs with the highest mean of 6 among both male-headed and female-headed households in Ntchisi. The lowest mean was in Thiwi-Lifidzi with 5 persons among male-headed households and 4 amongst female-headed households. Thus, in terms of the amount of labour available, female-headed households had less compared to male ones.

Table 4: Average and median household sizes by RDP by sex of household head

Gender of household Head	RDP	Mean	Median
Male	Ntchisi (n=82)	5.9	6.0
	Thiwi-Lifidzi (n=64)	4.5	4.0
	Bwanje Valley (n=66)	6.3	6.0
	Shire Highlands (n=57)	5.5	5.0
	Total (n=269)	5.5	5.0
Female	Ntchisi (n=18)	5.0	5.0
	Thiwi-Lifidzi (n=35)	3.5	4.0
	Bwanje Valley (n=15)	6.0	7.0
	Shire Highlands (n=40)	4.1	4.0
	Total (n=108)	4.3	4.0

In terms of age distribution of the household members, male-headed households have more (3) economically active persons (aged 15-60 years) compared to female-headed households which have an

average of 2 people (Table 5). In terms of dependency ratios though, female-headed households have higher ones than male-headed households. Overall, in female-headed households, for every 1 member of the working group there is 1.6 persons depending on them whereas among male-headed households, it is 1.37 persons that depend on 1 working person. This is consistent across the four RDPs.

Table 5: Age categories, dependency ratios by gender of household head by RDP

RDP/Gender of household Head		15-60	<15	>60	Dependency Ratio
Male	Ntchisi (n=82)	2.6	3.0	0.3	1.38
	Thiwi-Lifidzi (n=64)	2.2	2.2	0.1	1.28
	Bwanje Valley (n=74)	2.7	3.3	0.4	1.60
	Shire Highlands (n=57)	2.9	2.2	0.3	1.15
	Total (n=277)	2.6	2.7	0.3	1.37
Female	Ntchisi (n=18)	1.6	2.8	0.6	1.82
	Thiwi-Lifidzi (n=35)	2.0	1.9	0.4	1.52
	Bwanje Valley (n=18)	2.4	3.3	0.4	1.93
	Shire Highlands (n=40)	2.0	1.9	0.3	1.43
	Total (n=111)	2.0	2.3	0.1	1.60

3.2 Labour

3.2.1 Division of labour

In light of the above, the research also sought to establish the actual number of people that provided labour on the farm, and Table 6 below gives the results. Overall, there were more people (3) among male-headed households that provided labour on the farm than among female-headed households (2). The situation is worse though among female-headed households in Thiwi-Lifidzi who had only one person providing labour on the farm and yet the dependency ratio was just as high as in the other RDPs.

Table 6: Average number of household members providing labour on the farm by gender of household head by RDP

Gender of household Head	RDP	Mean	Median
Male	Ntchisi (n=82)	2.8	2.5
	Thiwi-Lifidzi (n=63)	2.6	2.0
	Bwanje Valley (n=76)	3.1	3.0
	Shire Highlands (n=60)	3.2	3.0
	Total (n=281)	2.9	3.0
Female	Ntchisi (n=18)	1.9	1.5
	Thiwi-Lifidzi (n=35)	1.3	2.0
	Bwanje Valley (n=24)	2.4	3.0
	Shire Highlands (n=43)	1.9	2.0
	Total (n=120)	1.8	2.0

The study assessed the division of labour in farming by looking at 11 activities, namely: land preparation, planting, weeding, fertilising, watching crops, harvesting, transporting crops, feeding livestock, shelling and bagging produce, pruning, and spraying crops. Overall, with the exception of pruning and spraying, in all the other activities, men and women participated equally in more than 50 per cent of the sampled households in male-headed households but this was not the case with female-headed households where most of the tasks are carried out by women (Table 7). The picture remains the same when one examines differences between RDPs (Table 8). The story is different though when one considers female-headed households where only in fertilizing, harvesting, and shelling and bagging was there equal

participation of men and women in just about 50 per cent of the households (Table 8b). No clear explanation is available for this and thus it needs some qualitative investigation to understand it. It is of course possible that some of the labour on these activities is performed by children. Otherwise, all the other activities are mainly done by women. There were variations between the RDPs and these can be seen in Tables 8a and 8b below.

Table 7: Division of labour between males and females for selected farming activities by gender of household head

		Male-headed (N=257)	Female-headed (N=104)	Total (N=370 ¹)
Land preparation	Mainly men	16.0	7.1	13.2
	Mainly women	5.8	48.7	18.9
	Equal participation	78.8	44.2	67.8
Planting	Mainly men	6.6	3.5	5.7
	Mainly women	7.8	47.8	20.0
	Equal participation	85.6	48.7	74.3
Weeding	Mainly men	8.9	5.3	7.8
	Mainly women	4.7	47.8	17.8
	Equal participation	86.4	46.9	74.3
Fertilising	Mainly men	9.8	3.8	8.0
	Mainly women	5.1	46.2	17.7
	Equal participation	85.1	50.0	74.3
Watching crops	Mainly men	36.5	13.5	29.6
	Mainly women	7.2	53.1	29.1
	Equal participation	56.3	33.3	49.4
Harvesting	Mainly men	8.9	3.5	7.3
	Mainly women	6.6	46.0	18.6
	Equal participation	84.4	50.4	74.1
Transporting crops	Mainly men	20.1	9.8	16.9
	Mainly women	5.1	42.9	16.7
	Equal participation	74.8	47.3	66.4
Feeding livestock	Mainly men	26.0	18.6	23.8
	Mainly women	12.0	44.2	21.4
	Equal participation	62.0	37.2	54.8
Shelling and bagging	Mainly men	9.7	1.9	7.3
	Mainly women	14.5	47.2	24.4
	Equal participation	75.8	50.9	68.3
Pruning	Mainly men	72.3	27.3	58.0
	Mainly women	2.7	43.2	15.6
	Equal participation	25.0	29.5	26.4
Spraying of crops	Mainly men	57.6	24.4	46.2
	Mainly women	3.5	40.0	16.2
	Equal participation	38.8	35.6	37.7

¹ The total does not add up to 400 since some people did not answer this question

Table 8: Division of labour between males and females for selected farming activities disaggregated by RDP

Activity	Labour division	RDP				Total (N=370)
		Ntchisi (n=87)	Thiwi-Lifidzi (n=81)	Bwanje Valley (n=99)	Shire Highlands (n=103)	
Land preparation	Mainly men	11.5	18.5	13.1	10.7	13.2
	Mainly women	14.9	17.3	14.1	28.2	18.9
	Equal participation	73.6	64.2	72.7	61.2	67.8
Planting	Mainly men	9.6	7.4	3.0	5.8	5.7
	Mainly women	13.8	22.2	14.1	29.1	20.0
	Equal participation	79.3	70.4	82.8	65.0	74.3
Weeding	Mainly men	6.9	8.6	10.1	5.8	7.8
	Mainly women	12.6	17.3	11.1	29.1	17.8
	Equal participation	80.5	74.1	78.8	65.0	74.3
Fertilising	Mainly men	8.0	6.2	13.0	5.9	8.0
	Mainly women	11.5	17.3	10.1	28.4	17.7
	Equal participation	80.5	76.5	76.8	65.7	74.3
Watching crops	Mainly men	19.7	26.4	29.1	30.1	29.6
	Mainly women	15.5	16.0	16.3	34.9	29.1
	Equal participation	64.8	56.9	26.1	34.9	49.4
Harvesting	Mainly men	8.0	6.2	9.1	5.8	7.3
	Mainly women	13.8	16.0	13.1	30.1	18.6
	Equal participation	78.2	77.8	77.8	64.1	74.1
Transporting crops	Mainly men	14.9	17.5	22.9	12.6	16.9
	Mainly women	11.5	16.3	10.4	27.2	16.7
	Equal participation	73.6	66.3	66.7	60.2	66.4
Feeding livestock	Mainly men	12.7	28.2	34.9	21.6	23.8
	Mainly women	16.5	23.1	15.9	29.7	21.4
	Equal participation	70.9	48.7	49.2	48.6	54.8
Shelling and bagging	Mainly men	7.0	8.8	9.7	4.1	7.3
	Mainly women	19.8	23.8	23.7	29.9	24.4
	Equal participation	73.3	67.5	66.7	66.0	68.3
Pruning	Mainly men	58.2	48.5	65.0	58.9	58.0
	Mainly women	10.9	19.1	12.5	19.2	15.6
	Equal participation	30.9	32.4	22.5	21.9	26.4
Spraying of crops	Mainly men	51.7	44.3	51.9	36.4	46.2
	Mainly women	10.3	19.2	7.4	27.3	16.2
	Equal participation	37.9	36.5	40.7	36.4	37.7

Table 8a: Division of labour between males and females for selected farming activities disaggregated by RDP (Male-Headed Households)

Activity	Labour division	RDP				Total (N=257)
		Ntchisi (n= 71)	Thiwi-Lifidzi (n=51)	Bwanje Valley (n=75)	Shire Highlands (n=60)	
Land preparation	Mainly men	11.3	21.6	17.3	15.0	16.0
	Mainly women	7.0	2.0	2.7	11.7	5.8
	Equal participation	81.7	76.5	80.0	73.3	78.8
Planting	Mainly men	7.0	7.8	4.0	8.3	6.6
	Mainly women	5.6	9.8	5.3	11.7	7.8
	Equal participation	87.3	82.4	90.7	80.7	85.6
Weeding	Mainly men	7.0	7.8	12.0	8.3	8.9
	Mainly women	5.6	2.0	1.3	10.0	4.7
	Equal participation	87.3	90.2	86.7	81.7	86.4
Fertilising	Mainly men	8.5	5.9	17.0	8.3	9.8
	Mainly women	4.2	3.9	1.9	10.0	5.1
	Equal participation	87.3	90.2	81.1	81.7	85.1
Watching crops	Mainly men	22.4	30.4	47.1	43.8	36.5
	Mainly women	6.9	2.2	5.7	14.6	7.2
	Equal participation	70.7	67.4	47.1	41.7	56.3
Harvesting	Mainly men	8.5	5.9	12.0	8.3	8.9
	Mainly women	5.6	3.9	2.7	15.0	6.6
	Equal participation	85.9	90.2	85.3	76.7	84.4
Transporting crops	Mainly men	16.9	19.6	26.4	16.7	20.1
	Mainly women	4.2	5.9	0.0	11.7	5.1
	Equal participation	78.9	74.5	73.6	71.7	74.8
Feeding livestock	Mainly men	12.3	30.6	38.8	26.7	26.0
	Mainly women	10.8	14.3	8.2	15.6	12.0
	Equal participation	76.9	55.1	53.1	57.8	62.0
Shelling and bagging	Mainly men	8.5	9.8	13.0	7.0	9.7
	Mainly women	12.7	17.6	15.9	12.3	14.5
	Equal participation	78.9	72.5	71.0	80.7	75.8
Pruning	Mainly men	67.4	61.9	81.0	75.6	72.3
	Mainly women	2.3	2.4	1.7	4.4	2.7
	Equal participation	30.2	35.7	17.2	20.0	25.0
Spraying of crops	Mainly men	56.5	54.8	60.0	63.6	57.6
	Mainly women	4.3	3.2	0.0	9.1	3.5
	Equal participation	39.1	41.9	40.0	27.3	38.8

Table 8b: Division of labour between males and females for selected farming activities disaggregated by RDP (Female-Headed Households)

Activity	Labour division	RDP				Total (N=104)
		Ntchisi (n=16)	Thiwi-Lifidzi (n=30)	Bwanje Valley (n=16)	Shire Highlands (n=42)	
Land preparation	Mainly men	12.5	13.3	0.0	4.7	7.1
	Mainly women	50.0	43.3	50.0	51.2	48.7
	Equal participation	37.5	43.3	50.0	44.2	44.2
Planting	Mainly men	6.3	6.7	0.0	2.3	3.5
	Mainly women	50.0	43.3	41.7	53.5	47.8
	Equal participation	43.8	50.0	58.3	44.2	48.7
Weeding	Mainly men	6.3	10.0	4.2	2.3	5.3
	Mainly women	43.8	43.3	41.7	55.8	47.8
	Equal participation	50.0	46.7	54.2	41.9	46.9
Fertilising	Mainly men	6.3	6.7	0.0	2.4	3.8
	Mainly women	43.8	40.0	37.5	54.8	46.2
	Equal participation	50.0	53.3	62.5	42.9	50.0
Watching crops	Mainly men	7.7	19.2	13.6	11.4	13.5
	Mainly women	53.8	42.3	50.0	62.9	53.1
	Equal participation	38.5	38.5	36.4	25.7	33.3
Harvesting	Mainly men	6.3	6.7	0.0	2.3	3.5
	Mainly women	50.0	36.7	45.8	51.2	46.0
	Equal participation	43.8	56.7	54.2	46.5	50.4
Transporting crops	Mainly men	6.3	13.8	12.5	7.0	9.8
	Mainly women	43.8	34.5	41.7	48.8	42.9
	Equal participation	50.0	51.7	45.8	44.2	47.3
Feeding livestock	Mainly men	14.3	24.1	21.4	13.8	18.6
	Mainly women	42.9	37.9	42.9	51.7	44.2
	Equal participation	42.9	37.9	35.7	34.5	37.2
Shelling and bagging	Mainly men	0.0	6.9	0.0	0.0	1.9
	Mainly women	53.3	34.5	45.8	55.0	47.2
	Equal participation	46.7	58.6	54.2	45.0	50.9
Pruning	Mainly men	25.0	26.9	22.7	32.1	27.3
	Mainly women	41.7	46.2	40.9	42.9	43.2
	Equal participation	33.3	26.9	36.4	25.0	29.5
Spraying of crops	Mainly men	33.3	28.6	28.6	9.1	24.4
	Mainly women	33.3	42.9	28.6	45.5	40.0
	Equal participation	33.3	28.6	42.9	45.5	35.6

3.2.2 Hiring/exchanging labour

A third of the households (Figure 3) regularly hired some labour and Bwanje Valley had the lowest proportion of households that hired labour (12.2%). Looking at the male/female headship divide, more male-headed households (33.3%) than female-headed households regularly employed labour (Table 9). In Bwanje Valley only 4.2 per cent female-headed households regularly hired labour compared to 14.9 per cent among male headed households from the same RDP. These findings are corroborated by findings from the qualitative survey which show a similar trend. From the in-depth interviews only 6 out of 15 male-headed households (40%) and 2 out of 9 (22%) female-headed households in Dedza hired labour. The corresponding proportions in Ntchisi were 7 out of 20 (35%) and 5 out of 19 (26%) for male-

headed and female-headed, respectively. Female-headed households were thus severely labour constrained and yet fewer of them hired labour. This would clearly have implications for their ability to produce enough for the sustenance of the household's livelihood.

Figure 3: Incidence of regularly hiring farm labour by RDP

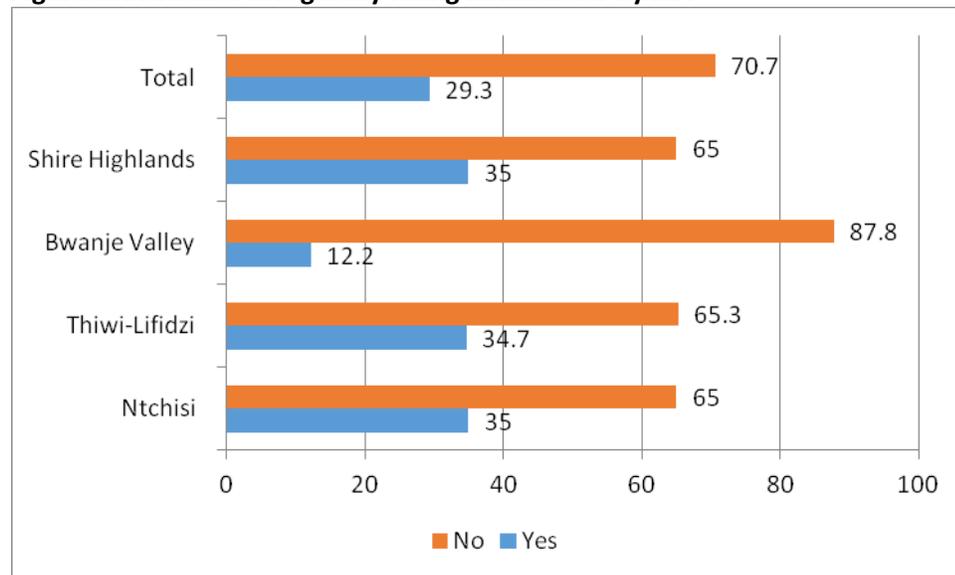


Table 9: Incidence of regularly hiring farm labour by Gender of household head by RDP²

Gender of household Head	RDP	Yes	No
Male	Ntchisi (n=82)	36.6	63.4
	Thiwi-Lifidzi (n=61)	41.0	59.0
	Bwanje Valley (n=74)	14.9	85.1
	Shire Highlands (n=60)	43.3	56.7
	Total (n = 277)	33.2	66.8
Female	Ntchisi (n = 18)	27.8	72.2
	Thiwi-Lifidzi (n = 34)	23.5	76.5
	Bwanje Valley (n = 24)	4.2	95.8
	Shire Highlands (n=43)	23.3	76.7
	Total (n = 119)	20.2	79.8

In-depth interviews also revealed that among male-headed households in both Dedza and Ntchisi RDP, the main reasons why some people did not hire labour were either that labour was too expensive, or they did not have the money for hiring labour or that they felt that they had adequate labour for the activities that they were involved in. Views of male-headed households are shared by female-headed households as well who also could not hire labour because they could not afford it. The words of one widow in Dedza sum it up all: *“I am poor, my land is small, I have children to support, what is the point of hiring labour that will take money from me?”*

² The 'n' in this table varies a lot and does not add to the total of 400 because some people did not answer this particular question

Those that did hire labour among male-headed households in the two RDPs, did so either because their land was too big and they could not manage with family labour, or they had lost some family labour due to illness or household members moving out of the household at peak labour periods. At term time for instance, most children that help in the fields are busy at school. One farmer in Dedza indicated that he hires labour out of sympathy for the needy and another in Ntchisi indicated that he hires labour at peak farming activities so as to get through different phases of farming at proper times.

A large proportion of households that hired labour, hired both men and women (51.7%) and less than a third (27.6%) hired mainly men (Table 10). Close to 21 per cent hired mainly women. RDP variations show that Ntchisi and Bwanje Valley had the largest proportions of households (62.9% and 54.5%, respectively) hiring both men and women. Bwanje Valley and Shire Highlands on the other hand, had the highest proportions (41.7% and 36.1%, respectively) that hired mainly women. In terms of gender, more male-headed households (55.4%) than female-headed households (37.0%) hired both men and women (Table 10a). On the other hand, more female-headed households (37.5%) than male-headed households (16.5%) hired women mainly. The issue of Bwanje Valley RDP where the lowest share of FHH hire labour, could suggest that women are hired as labour, but they themselves cannot hire labour since they lack resources. What is also transpiring from qualitative data is that in Bwanje there is little crop diversification (rice, maize, vegetables), whilst in the other RDPs, there were many more crops grown (tobacco, irish potatoes, sweet potatoes, groundnuts, soya and vegetables). This had two implications: those with a narrow band of crops did not have enough resources to hire labour and there was probably no need for that since they could manage to do all the tasks by family labour. On the other hand, in RDPs where people grew more crops, they needed more labour and they could afford to pay from the proceeds from the different crops.

Table 10: Type of labour hired by RDP

RDP	Mainly men	Mainly women	Both men and women
Ntchisi (n = 35)	17.1	20.0	62.9
Thiwi-Lifidzi (n = 33)	24.2	21.2	54.5
Bwanje Valley (n = 12)	41.7	16.7	41.7
Shire Highlands (n = 36)	36.1	22.2	41.7
Total(n = 116)	27.6	20.7	51.7

Table 10a: Type of labour hired by gender of household head by RDP

Gender of household Head	RDP	Mainly men	Mainly women	Both men and women
Male	Ntchisi (n = 30)	16.7	13.3	70.0
	Thiwi-Lifidzi (n = 25)	24.0	16.0	60.0
	Bwanje Valley (n = 11)	45.5	18.2	36.4
	Shire Highlands (n = 26)	38.5	19.2	42.3
	Total(n = 92)	28.3	16.3	55.4
Female	Ntchisi (n = 5)	20.0	60.0	20.0
	Thiwi-Lifidzi (n = 8)	25.0	37.5	37.5
	Bwanje Valley (n = 1)	0.0	0.0	100.0
	Shire Highlands (n = 10)	30.0	30.0	40.0
	Total (n = 24)	25.0	37.5	37.0

Activities for which households hired labour were mostly those that were labour demanding and as Table 11 shows, these included land preparation (72.4%), weeding (71.65), harvesting (48.3%), transporting crops (38.8%) and shelling and bagging produce (29.8%). In general, most households that had hired labour in that year (93.2%) indicated that the price of labour had increased since 2008 (Table 12). In-depth interviews also pointed to an increase in the price of labour over the years. Most interviewees indicated that the price had moved from about MK200 (\$1.25) per a given task in 2008 to about MK400 (\$1.60) for the same task in 2012. In Ntchisi, the price was said to have moved from about MK1500 (\$9.37) to MK3000 (\$12) over the same period. In general therefore, the price of labour had gone up and for some people; the incidence of hiring labour had over the years gone down because of this very reason. The high price rates in Ntchisi could be due to the influence of NGOs that have introduced a number of projects that promote high income crops like soya, groundnuts, tobacco and potatoes.

As much as people hired labour, very few (10.9%) indicated using exchange labour and this was predominantly in Ntchisi and Thiwi-Lifidzi RDPs (Figure 4). The same finding came out from the in-depth interviews. Most people indicated that this practice existed sometime back but that it is no longer practised. The only things happening now were either communal activities by church groups or villages done on people's farms for charity or generating resources for the village that would be used when they have festivities or funerals.

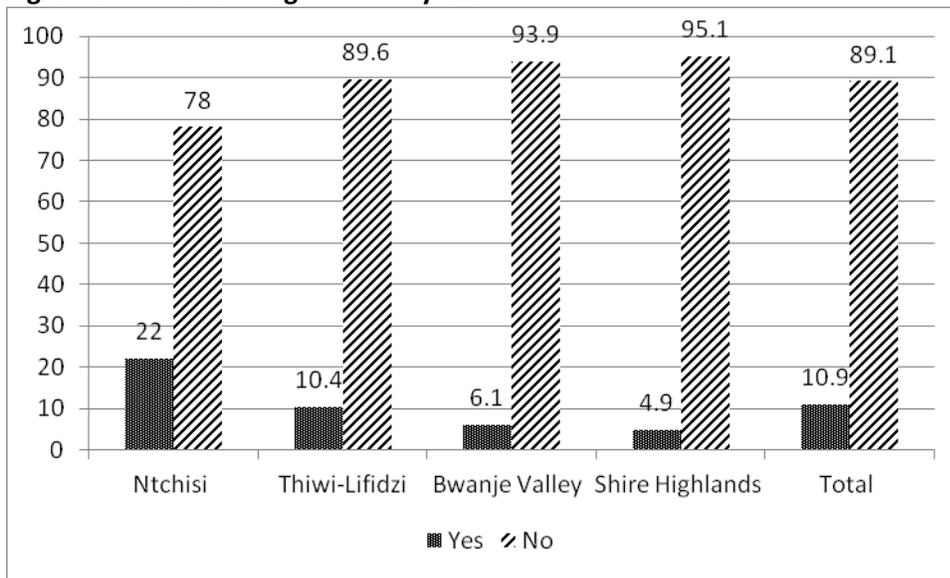
Table 11: Activities for which households hire labour by RDP

Activity	RDP				Total (N=116)
	Ntchisi (n=35)	Thiwi-Lifidzi (n=33)	Bwanje Valley (n=12)	Shire Highlands (n=36)	
Land preparation	74.3	75.8	66.7	69.4	72.4
Planting	22.9	27.3	25.0	22.2	24.1
Weeding	74.3	69.7	50.0	77.8	71.6
Fertilising	25.7	39.4	16.7	22.2	27.7
Watching crops	5.9	6.3	8.3	0.0	4.5
Harvesting	42.9	54.5	25.0	55.6	48.3
Transporting crops	37.1	36.4	16.7	50.0	38.8
Feeding livestock	8.6	12.1	33.3	2.9	10.5
Shelling and bagging	26.5	27.3	0.0	44.4	29.8
Pruning	16.1	9.1	16.7	2.8	9.8
Spraying of crops	3.1	0.0	0.0	9.4	3.8

Table 12: Changes in the price of labour by RDP

Change in price of Labour	RDP				Total (N=117)
	Ntchisi (n=35)	Thiwi-Lifidzi (n=33)	Bwanje Valley (n=12)	Shire Highlands (n=37)	
Did not hire labour in 2008	0	0.0	16.7	0.0	1.7
Price has decreased	5.7	3.0	8.3	2.7	4.3
Price unchanged	0.0	3.0	0.0	0.0	0.9
Price has increased	94.3	93.9	75.0	97.3	93.2

Figure 4: Use of exchange labour by RDP



A good proportion of households (45.2%) reported experiencing some labour shortage the preceding cropping season (Figure 5) and the largest proportion of households reporting labour shortages were in Ntchisi RDP (61.6%) and Thiwi-Lifidzi RDP (54.2%). In terms of gender of the head of the households, slightly more male-headed households (46.8%) than female-headed households (41.5%) experienced labour shortages (Table 13). Among female-headed households though, a lot more households (70.6%) in Ntchisi and 58.8 per cent in Thiwi-Lifidzi experienced labour shortages, compared to 29.2 per cent in Bwanje Valley and 23.3 per cent in Shire Highlands. In both Ntchisi and Thiwi Lifidzi, many respondents had complained about male over indulgence in beer drinking which leaves much of the farming tasks to the women. Labour shortages could be a result of the nature of crops (tobacco, Irish potatoes and Soya) that were grown in these areas which were labour-intensive.

Figure 5: Experience of labour shortage

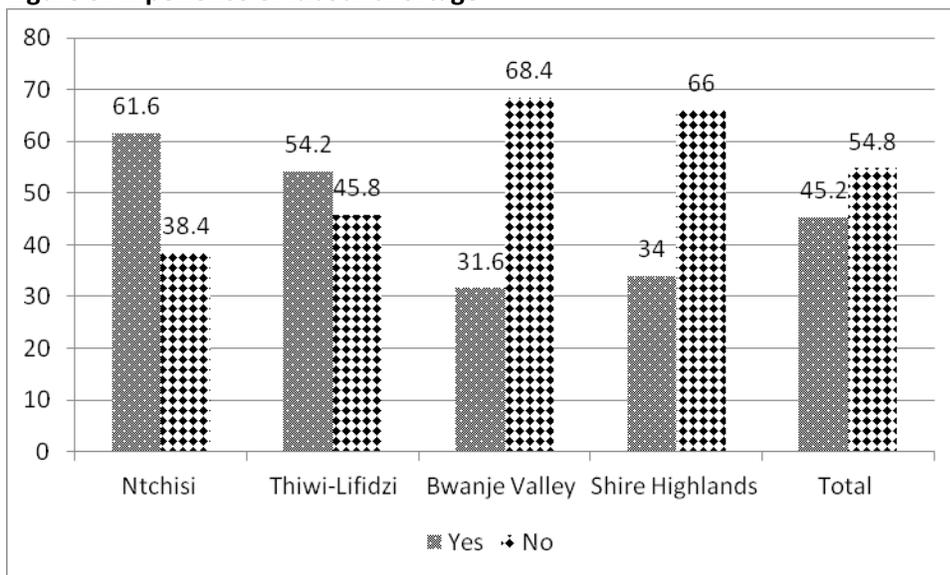


Table 13: Experiencing labour shortage by gender of household head by RDP

Gender of household Head	RDP	Yes	No
Male	Ntchisi (n = 82)	59.8	40.2
	Thiwi-Lifidzi (n = 62)	51.6	48.4
	Bwanje Valley (n = 74)	32.4	67.6
	Shire Highlands (n = 60)	41.7	58.3
	Total(n = 278)	46.8	53.2
Female	Ntchisi (n = 17)	70.6	29.4
	Thiwi-Lifidzi (n = 34)	58.8	41.2
	Bwanje Valley (n = 24)	29.2	70.8
	Shire Highlands (n = 43)	23.3	76.7
	Total (n = 118)	41.5	58.5

3.3 Housing conditions

Housing conditions are not very different between male-headed and female-headed households since 65.3 per cent (male-headed) and 64.7 per cent (female-headed) households had walls constructed using mud and had thatched roofs and only 2.6 per cent (male-headed) and 2.5 per cent (female-headed) households had corrugated iron roofs with cement floors (Table 14). However, more male-headed households (23.7%) than female-headed households (14.3%) had more permanent structures of block/brick with corrugated iron roofs. On the other hand, there were more female-headed households (18.5%) than male-headed households (8.4%) that had mud houses with corrugated iron sheets. This shows that slightly more male-headed households had permanent structures with corrugated iron sheets.

Table 14: Housing standard by sex of household head by RDP

	RDP				
	Ntchisi (n=82)	Thiwi-Lifidzi (n=63)	Bwanje Valley (n=69)	Shire Highlands (n=60)	Total (N=274)
<i>Male</i>					
Mud with thatched roof	81.7	66.7	71.0	35.0	65.3
Mud with corrugated iron sheets	2.4	3.2	10.1	20.0	8.4
Block/brick with corrugated iron roof	15.9	30.2	17.4	35.0	23.7
Corrugated walls with cement floor	0.0	0.0	1.4	10.0	2.6
<i>Female</i>	N = 18	N = 34	N= 24	N= 43	N = 119
Mud with thatched roof	88.9	70.6	91.5	34.9	64.7
Mud with corrugated iron sheets	5.6	5.9	0.0	44.2	18.5
Block/brick house with corrugated iron roof	5.6	23.5	4.2	16.3	14.3
Corrugated walls with cement floor	0.0	0.0	4.2	4.7	2.5

3.4 Land resources

On average, male-headed households owned 1.7 hectares of land (Table 15). The variation across RDPs shows that Ntchisi (2.5 hectares) and Bwanje Valley (1.7 hectares) had the largest mean hectares, with Shire Valley having the lowest (1.0 hectare). Female-headed households had a much lower mean (1.0

hectare) with Thiwi-Lifidzi having the highest mean (1.3 hectares) and Shire Highlands, the lowest (0.7 hectares). The average land under cultivation was 1.4 hectares among male-headed households and 0.9 hectares among female-headed households. Thus, female-headed households have much smaller pieces of land and most of it is under use; such is not the case with their male counterparts. Incidence of having land under fallow, was reported only in Ntchisi in both male-headed households (0.2 hectare) and female-headed households (0.1 hectare).

The majority of the respondents (96.0% among male-headed households) and 98.3 per cent amongst female-headed households indicated that they were in full control of the land that they owned. In Ntchisi and Thiwi-Lifidzi RDPs all female-headed households reported having full control, while as among male-headed households, it was only in Thiwi-Lifidzi that everybody indicated having full control. Despite this, very few households (7.8% among male-headed and 5.1% among female-headed) had title to the land. Among the few that had title, the greatest proportion among male-headed households was in Bwanje Valley (15.8%) and Shire Highlands (10.0%), while among female-headed households, the highest proportion was recorded in Bwanje Valley (16.7%). The high proportion of people having titles in Bwanje Valley could be due to the presence of rice schemes in this area which necessitated that people have title to the land.

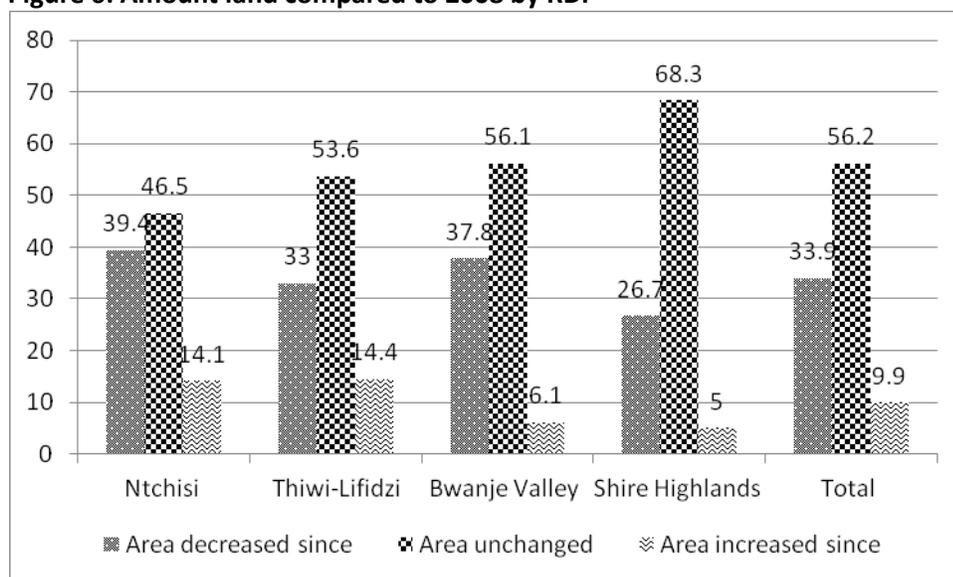
The research also sought to find out if, in the event that market conditions improved, people would be able to put more land under cultivation, and 87.5 percent male-headed household indicated that they would do so and only 66.4 per cent female-headed households said they would. This is probably because as seen above, female-headed households owned less land than their male counterparts.

Table 15: Average amount of land owned by gender of household head by RDP

Household headship	RDP	Mean land	Under Cultivation	Fallow	Control	Lost land	Title	More under cultivation
Male	Ntchisi (n=82)	2.5	2.1	0.2	98.8	15.9	2.4	93.9
	Thiwi-Lifidzi (n=64)	1.4	1.2	0.0	100	15.9	3.1	89.1
	Bwanje Valley (n=76)	1.7	1.3	0.4	96.1	32.9	15.8	84.0
	Shire Highlands (n=60)	1.0	0.9	0.0	91.5	11.7	10.0	31.7
	Total		1.7	1.4	0.2	96.0	19.6	7.8
Female	Ntchisi (n=17)	1.2	1.1	0.1	100	11.8	5.9	88.2
	Thiwi-Lifidzi (n=35)	1.3	1.2	0.0	100	17.1	2.9	71.4
	Bwanje Valley (n =24)	1.1	0.9	0.0	100	25.0	16.7	54.2
	Shire Highlands (n=41)	0.7	0.6	0.0	95.3	16.3	0.0	60.5
	Total		1.0	0.9	0.0	98.3	17.6	5.1

Investigations into the amount of land that households had owned since 2008 showed that just over a third (33.9%) indicated that their land had decreased and only 9.9 per cent indicated that their land had increased (Figure 6). Otherwise the majority (56.2%) indicated that their land had remained unchanged. Increases were mostly in Ntchisi (14.1%) and Thiwi-Lifidzi (14.4%).

Figure 6: Amount land compared to 2008 by RDP



In case households in the sample villages wanted more land, there were various strategies that they would use to gain access but the most predominant ones were: renting or borrowing (87.2%), clearing virgin land (65.4%), buying (43.2%), turning fallow land into cultivation (23.1%), turning grazing land into cultivation (21.9%) and cultivating marginal land (21.1%) (Table16). There are, of course, variations across RDPs with Ntchisi and Thiwi-Lifidzi showing signs of having more virgin land than the other RDPs, and Bwanje Valley and Shire Highlands having more land to be rented or borrowed. In part, the mountainous nature of the villages in Ntchisi and Thiwi Lifidzi and their remoteness from major centres of economic activities may account for the high presence of virgin there. The percentage though is highly inflated, in part, due to translation problems of the term ‘virgin land’ which sometimes meant land that had after being cultivated, been abandoned for years and then used again when some vegetation had grown on it. This statistic thus should be interpreted with caution.

Table 16: Alternatives for gaining access to more land in the village by RDP

	RDP				Total (N=261)
	Ntchisi (n=99)	Thiwi-Lifidzi (n=98)	Bwanje Valley (n=99)	Shire Highlands (n=103)	
Clearing virgin land	71.7	82.7	49.5	58.3	65.4
Turning grazing land into cultivation	17.3	27.6	26.3	16.5	21.9
Turning fallow land into cultivation	15.3	8.2	38.4	30.1	23.1
Renting/borrowing	80.8	85.7	87.9	94.2	87.2
Buying	40.4	51.5	35.4	45.6	43.2
Cultivating marginal land	20.4	15.3	17.2	31.1	21.1

In terms of expanding their farm sizes though, the most predominant measure that the majority of households (52.5%) would employ was renting or borrowing land (Table 17). This was highest in Ntchisi (58.2%) and lowest in Bwanje Valley (46.8%). Borrowing or renting was followed by buying (23.2%), clearing virgin land (13.6%), turning fallow land into cultivation (5.2%), putting into use land that had been rented out (2.3%) and turning grazing land into cultivation (1.6%). Buying was highest in Thiwi-Lifidzi (30.2%) and lowest in Bwanje Valley (19.1%). Clearing virgin land though was highest in Bwanje Valley (24.5%) and lowest in Thiwi-Lifidzi (7.3%).

Table 17: Means to expand land in the village by RDP

	RDP					Total (N=383)
	Ntchisi (n=98)	Thiwi-Lifidzi (n=96)	Bwanje Valley (n=94)	Shire Highlands (n=95)		
Clearing virgin land	11.2	7.3	24.5	11.6	13.6	
Turning grazing land into cultivation	2.0	4.2	0.0	0.0	1.6	
Turning fallow land into cultivation	8.2	0.0	8.5	4.2	5.2	
Renting/borrowing	58.2	49.0	46.8	55.8	52.5	
Buying	19.4	30.2	19.1	24.2	23.2	
Put into use rented land	0.0	8.3	0.0	1.1	2.3	

Regarding how female children would obtain land in the village, the majority (78.9%) indicated that they would inherit land already under cultivation (Table 18). This was highest in Thiwi-Lifidzi (95.9%) and lowest in Bwanje Valley (72%). The story is different for male children though where only 46.1 per cent of the households indicated that they would inherit land already under cultivation (Table 19). A good proportion (41.3%) indicated that male children would obtain land through marriage. This was highest in Shire Highlands (66.0%) and lowest in Ntchisi (2%). In Ntchisi most male children (83.0%) would inherit land already under cultivation. From the in-depth interviews we learnt that this is the case because in the Shire Highlands the matrilineal system (where the husband settles in the wife's village) is more strongly observed and land belongs to women whilst in Ntchisi, the matrilineal system allows for men to settle in their own villages (*chitengwa*) and use the land belonging to their parents.

Table 18: Means for female children to obtain land in the village by RDP

	RDP					Total (N=399)
	Ntchisi (n=99)	Thiwi-Lifidzi (n=97)	Bwanje Valley (n=100)	Shire Highlands (n=103)		
Allocated virgin land	3.0	0.0	1.0	0.0	1.0	
Allocated family land now under fallow	3.0	1.0	7.0	0.0	2.8	
Inherit land already under cultivation	73.7	95.9	72.0	74.8	78.9	
Rent/borrow land	1.0	1.0	8.0	13.6	6.0	
Purchase	5.1	0.0	5.0	6.8	4.3	
Get land through marriage	11.1	0.0	5.0	2.9	4.8	
Won't be enough land for them	3.0	2.1	2.0	1.9	2.3	

Table 19: Means for male children to obtain land in the village by RDP

	RDP				Total (N=397)
	Ntchisi (n=100)	Thiwi-Lifidzi (n=95)	Bwanje Valley (n=99)	Shire Highlands (n=103)	
Allocated virgin land	3.0	0.0	0.0	0.0	0.8
Allocated family land now under fallow	4.0	1.1	4.0	0.0	2.3
Inherit land already under cultivation	83.0	45.3	40.4	16.5	46.1
Rent/borrow land	1.0	0.0	4.0	10.7	4.0
Purchase	5.0	2.1	3.0	5.8	4.0
Get land through marriage	2.0	50.5	46.5	66.0	41.3
Won't be enough land for them	2.0	1.1	2.0	1.0	1.5

3.5 Asset ownership

Asset ownership can sometimes be used to measure a household's ability to make a livelihood. Apart from productive assets such as land, this research also investigated assets that different households possessed. Overall, the assets that were owned by most households, as Table 20 shows, were a bicycle (46%) and a mobile or stationary telephone (31%). There were huge gender disparities though in the possession in that whereas 58.7 per cent of male-headed households owned a bicycle, only 16 per cent amongst female-headed households did (Table 21). In terms of phones, more (37.4%) male-headed households indicated owning them than did female-headed households (18%). Almost all assets considered, still more male-headed households than female-headed households indicated possessing them. For example, almost no single female-headed household owned a motor bike or some kind of modern stove. Possession of assets thus shows that female-headed households are less endowed than their male counterparts. Regional disparities on assets may be explained as follows: there are more phones in Ntchisi and Shire Highlands probably because of network availability and reliability. For bicycles, there are more in Bwanje probably due to the terrain and access to alternative modes of transport. As for the other assets, there is not much variation across the RDPs.

Table 20: Asset ownership by RDP

	RDP				Total (N=400)
	Ntchisi (n=100)	Thiwi-Lifidzi (n=99)	Bwanje Valley (n=98)	Shire Highlands (n=103)	
Mobile or stationary telephone	30.0	21.2	19.4	52.4	31.0
Motor bike	2.0	1.0	1.0	1.9	1.5
TV-set	3.0	2.0	2.0	8.7	4.0
Car	3.0	3.0	2.0	1.0	2.3
Bicycle	46.0	47.5	63.3	28.2	46.0
Sewing machine	1.0	4.0	3.1	7.8	4.0
Kerosene stove or other modern stove	1.0	0.0	1.0	1.9	1.0
Gas cooker	0.0	0.0	0.0	2.9	0.8
Sofa set	3.0	1.0	3.1	15.5	5.8

Table 21: Asset ownership by RDP by sex of head of household

	Ntchisi	Thiwi-Lifidzi	RDP		Total
			Bwanje Valley	Shire Highlands	
Male (N)	82	64	75	60	281
Mobile or stationary telephone	35.4	26.6	24.0	68.3	37.4
Motor bike	2.4	1.6	1.3	3.3	2.1
TV-set	3.7	3.1	2.7	13.3	5.3
Car	3.7	3.1	1.3	1.7	2.5
Bicycle	54.9	57.8	76.0	43.3	58.7
Sewing machine	1.2	3.1	4.0	11.7	4.6
Kerosene stove or other modern stove	1.2	0.0	1.3	3.3	1.4
Gas cooker	0.0	0.0	0.0	1.7	0.4
Sofa set	3.7	0.0	4.0	20.0	6.4
Female (N)	18	35	23	43	119
Mobile or stationary telephone	5.6	11.4	4.3	30.2	16.0
Motor bike	0.0	0.0	0.0	0.0	0.0
TV-set	0.0	0.0	0.0	2.3	0.8
Car	0.0	2.9	4.3	0.0	1.7
Bicycle	5.6	28.6	21.7	7.0	16.0
Sewing machine	0.0	5.7	0.0	2.3	2.5
Kerosene stove or other modern stove	0.0	0.0	0.0	0.0	0.0
Gas cooker	0.0	0.0	0.0	4.7	1.7
Sofa set	0.0	2.9	0.0	9.3	4.2

3.6 Ownership of livestock

Apart from household assets, the type of livestock that households owned were also investigated and Table 22 presents the findings. Among male-headed households, 64.2 per cent owned poultry, 47.9 per cent owned goats or sheep, 24.5 per cent owned pigs, 8.5 per cent owned cattle, 6 per cent owned oxen, and 5 per cent owned bulls. The corresponding proportions among female-headed households were 48.8 per cent, 27.9 per cent, 9.4 per cent, 2.3 per cent, 0.0 per cent and 0.0 per cent, respectively. In general, few female-headed households owned livestock of some kind and just about half of them owned poultry. Thus, the ownership of livestock and, as seen in the preceding section, of assets reveals a situation of deprivation amongst female-headed households compared to that of their male counterparts.

Table 22: Ownership of livestock by gender of household head by RDP

Household headship	RDP	Type of livestock									
		Cows	Oxen	Heifers	Calves	Bulls	Goats/ Sheep	Camels/ donkeys	Pigs	Poultry	Rabbits
Male	Ntchisi (n=82)	12.2	4.9	0.0	2.4	3.7	57.3	1.2	24.4	72.0	1.2
	Thiwi-Lifidzi (n=64)	6.3	6.3	0.0	3.1	4.7	50.0	0.0	42.2	68.8	12.5
	Bwanje Valley (n=76)	11.8	10.5	6.1	3.9	7.9	47.4	0.0	7.9	55.3	1.3
	Shire Highlands (n=60)	1.7	1.7	3.3	1.7	3.3	33.3	0.0	26.7	60.0	1.7
	Total (n = 282)	8.5	6.0	2.5	2.8	5.0	47.9	0.4	24.5	64.2	3.9
Female	Ntchisi (n=18)	0.0	0.0	0.0	0.0	0.0	44.4	0.0	5.6	77.8	5.6
	Thiwi-Lifidzi (n=35)	5.7	5.7	0.0	0.0	0.0	51.4	0.0	17.1	68.6	14.3
	Bwanje Valley (n =24)	4.2	4.2	1.2	4.2	0.0	16.7	0.0	0.0	37.5	0.0
	Shire Highlands (n=43)	2.3	0.0	2.3	2.3	0.0	27.9	0.0	9.3	48.8	0.0
	Total (n=120)	3.3	2.5	1.7	1.7	0.0	35.0	0.0	9.2	56.7	5.0

3.7 Crop production

3.7.1 Range of staple, non-food and cash crops

Households interviewed in this study grew a number of crops but the most predominant ones were maize and other food crops and vegetables (Table 23). Sorghum was grown by only 2.7 male-headed households from Bwanje Valley and no female-headed household from any of the four RDPs grew the crop. The small proportion of households growing sorghum could be due to the fact that this is a low yielding crop and when people make economic choices, it is the least crop they think of. Rice on the other hand was grown by a lot more households in the same Bwanje Valley RDP (89.5% among male-headed households and 87.5% among female-headed households). Non-food cash crops (cotton, cocoa, tobacco, sisal, pyrethrum and flowers) were grown by 33.3 per cent of male-headed households and only 11.7 per cent of female-headed households.

Table 23: Crops grown by gender of household head by RDP

Household headship	RDP	Type of crops				
		Maize	Sorghum	Rice	Other Food Crops & vegetables	Non-food cash crops
Male	Ntchisi (n=82)	100	0.0	0.0	92.7	42.7
	Thiwi-Lifidzi (n=64)	100	0.0	0.0	93.8	28.1
	Bwanje Valley (n=76)	98.7	2.7	89.5	57.9	36.8
	Shire Highlands (n=60)	100	0.0	0.0	95.0	21.7
	Total (n=282)	99.9	0.0	24.5	84.0	33.3
Female	Ntchisi (n=18)	94.4	0.0	0.0	83.3	16.7
	Thiwi-Lifidzi (n=35)	100	0.0	2.9	91.4	14.3
	Bwanje Valley (n=24)	100	0.0	87.5	66.7	16.7
	Shire Highlands (n=43)	100	0.0	0.0	97.7	4.7
	Total (n=120)	99.2	0.0	18.3	87.5	11.7

Table 24 shows that prominent among other food crops grown included vegetables (80.7%), beans (66.7%), sweet potatoes (64.7%), groundnuts (56.4%), peas (43.6%), plantains/bananas (43.0%), cassava (33.3%), fruits (30.4%), Irish potatoes (22.5%) and millet (19.0%). Some of these crops were sold and the proportions of households selling these crops were as follows: beans (41.6%), groundnuts (40.1%), vegetables (31.2%), Irish potatoes (30.1%), plantains/bananas (22.0%), peas (16.0%), cassava (12.3%), fruits (9.6%) and sweet potatoes (9.3%). There were huge variations across RDPs. For instance, more households (70.7%) in Thiwi-Lifidzi than those represented by 2 per cent in Shire Highlands grew Irish Potatoes. At the same time, more households (71.7%) grew cassava in Shire Highlands than in Ntchisi (11.0%). This was probably due to the types and nature of soils that are found in these particular places which support the growth of particular crops.

Table 24: Proportion of households growing and selling other food crops and vegetables by RDP

	Ntchisi (n=91)		Thiwi-Lifidzi (n=92)		Bwanje Valley (n=60)		Shire Highlands (n=99)		Total (N=342)	
	% Grew	% Sold	% Grew	% Sold	% Grew	% Sold	% Grew	% Sold	% Grew	% Sold
Plantains/bananas	50.5	34.1	40.2	25.0	25.0	12.0	49.5	13.1	43.0	22.0
Cassava	11.0	7.7	27.2	15.2	13.3	8.0	71.7	16.2	33.3	12.3
Beans	52.7	29.7	90.2	73.9	13.3	8.0	89.9	39.4	66.7	41.6
Peas	35.2	12.1	32.6	14.1	31.7	20.0	68.7	19.2	43.6	16.0
Irish potatoes	8.8	5.5	70.7	58.7	3.3	2.0	2.0	0.0	22.5	18.1
Sweet potatoes	64.8	27.5	72.8	38.0	28.3	20.0	79.8	30.3	64.9	30.1
Millet	2.2	1.1	60.9	32.6	1.7	0.0	6.1	0.0	19.0	9.3
Groundnuts	96.7	81.3	64.1	51.1	16.7	8.0	36.4	8.1	56.4	40.1
Yams	3.3	0.0	4.3	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Cocoyam	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0
Arrow root	1.1	0.0	1.1	0.0	1.7	0.0	3.0	0.0	1.8	0.0
Vegetables	61.5	28.6	78.3	50.0	90.0	12.0	94.9	26.3	80.7	31.3
Fruits	23.1	9.9	29.3	14.1	20.0	6.0	44.4	7.1	30.4	9.6
Other	50.5	40.7	31.9	28.0	5.0	4.0	1.0	0.0	23.2	18.6
Mean land area (other crops)	0.96		0.64		0.42		0.45		0.65	

Examination of other food crops including vegetables by the gender of the household head (Table 25) reveals an interesting pattern that more female-headed households, than male-headed households grew crops that were either used as relish or condiments in the relish or were a secondary food crop. In contrast, slightly more male-headed households grew other food crops that could be sold to bring in cash.

Table 25: Other food crops including vegetables by gender of household head by RDP

Household headship	RDP	Vegetables	Beans	Sweet potatoes	Groundnuts	peas	Plantains/bananas	Cassava	Irish Potatoes	Millet	Fruits
Male	Ntchisi (n=82)	60.5	53.9	65.8	3.9	35.5	52.6	11.8	10.5	1.3	22.4
	Thiwi-Lifidzi (n=64)	88.3	93.3	76.7	40.0	36.7	40.0	21.7	76.7	58.3	30.0
	Bwanje Valley (n=76)	90.9	11.4	36.4	86.4	34.1	29.5	15.9	4.5	0.0	25.0
	Shire Highlands (n=60)	94.7	91.2	86.0	56.1	66.7	52.6	80.7	1.8	3.5	50.9
	Total (n = 282)	81.4	65.0	67.9	40.9	43.0	45.1	31.6	24.1	16.0	31.6
Female	Ntchisi (n=18)	66.7	47.6	60.0	100	33.3	40.0	6.7	0.0	6.7	26.7
	Thiwi-Lifidzi (n=35)	59.4	84.4	65.6	71.9	25.0	40.6	37.5	59.4	65.6	28.1
	Bwanje Valley (n =24)	87.5	18.8	6.3	25.0	25.0	12.5	6.3	0.0	6.3	6.3
	Shire Highlands (n=43)	95.2	88.1	71.4	26.2	71.4	45.2	59.5	2.4	9.5	35.7
	Total (n=120)	79.0	70.5	58.1	50.5	44.8	38.1	37.1	19.0	25.7	27.6

Further investigations into crops that people grew showed that very few households grew non-food cash crops and these were mainly cotton, sugar cane and tobacco which were dominated by male-headed households (Table 26). Thus, when it comes to growing high income crops, female-headed households are in a minority.

Table 26: Proportion of households growing non-food cash crops by RDP

	Ntchisi		Thiwi-Lifidzi		Bwanje Valley		Shire Highlands		Total	
	Male (n=82)	Female (n=18)	Male (n=64)	Female (n=35)	Male (n=76)	Female (n=24)	Male (n=60)	Female (n=43)	Male (n=282)	Female (n=120)
Cotton	0.0	0.0	0.0	0.0	34.2	16.7	0.0	0.0	9.2	3.3
Sugar cane	13.4	0.0	20.3	14.3	6.6	0.0	20.0	4.7	14.5	5.8
Nuts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cocoa	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Tobacco	37.8	16.7	10.9	0.0	1.3	0.0	0.0	0.0	13.8	2.5
Coffee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tea	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Sisal	2.4	5.6	4.7	2.9	1.3	0.0	0.0	0.0	2.1	1.7
Pyrethrum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil palm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flowers	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.4	0.0
Spices	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.4	0.0

3.7.2 Cropping Seasons

With to regard to maize, the majority of male-headed households (92.5%) grew it once in a year during the rainy season and only 7.5 percent grew it twice in a year (during the rainy season and during the dry season (winter or irrigation farming). The corresponding proportions among female-headed households were 96.6 per cent and 3.4 percent, respectively (Table 27). Most female-headed households (81.5%) intercropped. The same was the case among male-headed households where 68.7 percent practised

intercropping. More female-headed households than male-headed ones intercropped probably because, as seen earlier on, they have less land and they had to maximise usage.

Table 27: Cropping seasons and cropping pattern by RDP by sex of head of household (maize)

Household headship	RDP	Seasons		Pattern	
		One season	Two seasons	Pure Stand	Intercropped
Male	Ntchisi (n=82)	100	0	58.5	41.5
	Thiwi-Lifidzi (n=64)	95.3	4.7	25.0	75.0
	Bwanje Valley (n=76)	80.0	20.0	29.3	70.7
	Shire Highlands (n=60)	95.0	5.0	3.3	96.7
	Total (n=282)	92.5	7.5	31.3	68.7
Female	Ntchisi (n=18)	100	0	58.8	41.2
	Thiwi-Lifidzi (n=35)	97.1	2.9	14.3	81.7
	Bwanje Valley (n=24)	87.5	12.5	29.2	70.8
	Shire Highlands (n=43)	100	0.0	0.0	100
	Total (n=120)	96.6	3.4	18.5	81.5

3.7.3 Maize Production

The study had three main crops (maize, sorghum and rice) that it investigated in detail. However, as seen above, it was only maize that was grown across the four RDPs. Sorghum was hardly grown in any of the four RDPs and rice was only grown in Bwanje Valley. Thus, we are only able to compare maize production across the four RDPS for the years 2010, 2011 and 2012. Table 28 shows that production over the years has been rising steadily even if it is by small quantities. In terms of RDPs, Bwanje Valley consistently had lowest maize yields of them all. The table also shows that female-headed households, regardless of the RDP, produced just about half (570 Kg) of what their male counterparts produced and there has not been much of an increase. Just as with the male-headed households, female-headed households in Bwanje Valley also produced much less than female-headed households in the other three RDPs, possibly for the same reason as stated above.

Analysis of the rice production over the three years in Bwanje Valley shows that just like in maize there was an increase in rice output among male-headed households, going from an average of 952.38 Kg in 2010, 967.97 Kg in 2011 to 1061.19 in 2012. Just like maize, female-headed households produced less than half of what their male counterparts produced (443.75 Kg in 2010, 434.75 Kg in 2011 and 445.24 Kg in 2012).

Table 28: Mean production of maize over a three year period (2012, 2011, 2010) by RDP and gender of household head

Household headship	RDP	Maize (Kg)		
		2012	2011	2010
Male	Ntchisi (n=82)	1,281.7	1,203.9	1,166.1
	Thiwi-Lifidzi (n=64)	1,171.9	976.6	911.3
	Bwanje Valley (n=76)	444.8	441.3	602.7
	Shire Highlands (n=60)	1,056.3	1,320.0	1,116.1
	Total (n=282)	985.2	977.2	948.1
Female	Ntchisi (n=18)	811.1	675.0	694.1
	Thiwi-Lifidzi (n=35)	877.7	777.9	796.3
	Bwanje Valley (n=24)	322.3	465.9	300.5
	Shire Highlands (n=43)	647.2	729.3	480.4
	Total (n=120)	678.9	685.7	570.2

3.8 Technology and inputs used

This section discusses the technologies and inputs that households in the four RDPs used. The analysis revolves around maize since this is the crop that was grown by most people in the sample. First, the mean number of hectares on which maize was planted in the 2012, 2011 and 2010 growing seasons are considered. As Table 29 below shows, it was only male-headed households from Ntchisi that planted slightly more than one hectare in all the three growing seasons. Otherwise, they all had less than a hectare. In general, female-headed households had less mean hectares planted with maize across the three seasons but there was little difference within each group across the years.

In Bwanje Valley, the area on which rice was planted was slightly smaller than that used for maize in male-headed households (0.46 ha in 2010, 0.46 ha in 2011 and 0.52 ha in 2012). There was very little difference across the years in the amount of land allocated to rice among female-headed households in Bwanje Valley RDP though (0.55 ha in 2010, 0.57 ha in 2011 and 0.56 ha in 2012).

Table 29: Mean areas under maize over a three-year period (2012, 2011, 2010) by RDP and gender of household head

Household headship	RDP	Maize		
		2012	2011	2010
Male	Ntchisi (n=82)	1.11	1.19	1.12
	Thiwi-Lifidzi (n=64)	0.84	0.83	0.83
	Bwanje Valley (n=76)	0.61	0.65	0.68
	Shire Highlands (n=60)	0.84	0.83	0.83
	Total (n=282)	0.86	0.89	0.88
Female	Ntchisi (n=18)	0.74	0.78	0.75
	Thiwi-Lifidzi (n=35)	0.82	0.79	0.79
	Bwanje Valley (n=24)	0.51	0.49	0.50
	Shire Highlands (n=43)	0.60	0.60	0.61
	Total (n=120)	0.67	0.66	0.66

The dominant maize variety that was planted was hybrid (60.4% - male-headed and 52.1% - female-headed) as Table 30 shows. This was followed by the traditional variety which was used by 38.2 per cent

of male-headed households and 47.9 per cent of female-headed households. There was no single household among female-headed households in the four RDPs that used improved varieties. In-depth interviews among both male-headed and female-headed households in Dedza revealed that some people do not use hybrid or improved varieties because they are too expensive to buy, and others indicated that they are difficult to care for and maintain whilst in the field. In Ntchisi, in-depth interviews pointed to the problem of storage as the major reason for non-use of these varieties. They indicated that these varieties easily get attacked by weevils. The users though pointed to the fact that these varieties are high yielding and they are also used as backup should the local varieties which they also plant fail.

Table 30: Variety of maize planted by RDP by sex of household head

	RDP				Total
	Ntchisi	Thiwi-Lifidzi	Bwanje Valley	Shire Highlands	
Male	82	63	75	70	280
Traditional	47.6	47.6	34.7	20.0	38.2
Improved variety	1.2	0.0	2.7	1.7	1.4
Hybrid	51.2	52.4	62.7	78.3	60.4
Female	17	35	24	43	119
Traditional	41.2	54.3	50.0	44.2	47.9
Improved variety	0.0	0.0	0.0	0.0	0.0
Hybrid	58.8	45.7	50.0	55.8	52.1

Among male-headed households, as Table 31 shows, 46.6 per cent of them bought seeds from the market, followed by 24.0 per cent that used seeds that they had kept from the previous harvest, then those that got from some extension agent or NGO (16.1%) and then those that got the seeds from neighbours (13.3%). The corresponding proportions among female-headed households were 42.5%, 30.5%, 14.4% and 13.6%, respectively. There are variations across RDPs. This is only in terms of the magnitude of the proportions but not the trends with regard to where households get their seeds. In all RDPs, the majority of households get seeds from either the market or those kept from previous harvest. The presence of NGOs is also reflected in Bwanje (24 male, 16.7 female) and Shire Highlands (33.3 male, 26.2 female) where they supplied seeds to households.

Table 31: Means of acquiring maize seed by RDP by sex of head of household

	RDP				Total
	Ntchisi	Thiwi-Lifidzi	Bwanje Valley	Shire Highlands	
Male (N)	82	62	75	60	279
Own stock	31.7	37.1	18.7	6.7	24.0
Other farmers/neighbours	15.9	9.7	18.7	6.7	13.3
Purchased on market	46.3	50.0	38.7	53.3	46.6
Received/purchased from extension agent/Ngo/other formal organisation	6.1	3.2	24.0	33.3	16.1
Female (N)	17	35	24	42	118
Own stock	41.2	37.1	25.0	23.8	30.5
Other farmers/neighbours	5.9	20.0	35.0	4.8	13.6
Purchased on market	47.1	40.0	33.3	45.2	41.5
Received/purchased from extension agent/Ngo/other formal organisation	5.9	2.9	16.7	26.2	14.4

3.9 Marketing conditions

Overall, 38.6 per cent of the male-headed households that grew maize sold some of their production (Table 32). Ntchisi (57.3%) had the highest proportion of male-headed households selling maize whilst Bwanje Valley (6.7%) had the lowest proportion. Among female-headed households, 26.9 per cent did sell some of the maize that they harvested and the highest proportion was in Thiwi-Lifidzi (40.0%), with Bwanje Valley recording the lowest (4.2%). On average, male-headed households sold 355.4 Kg while female-headed households sold 292.8 Kg. Variations across RDPs are as prominent as the proportions selling.

Table 32: Maize marketing by RDP by sex of household head

Household Headship	RDP	% Selling	Total sold
Male	Ntchisi (n=82)	57.3	291.8
	Thiwi-Lifidzi (n=64)	53.1	411.0
	Bwanje Valley (n=75)	6.7	90.8
	Shire Highlands (n=59)	37.3	455.7
	Total (n=280)	38.6	355.4
Female	Ntchisi (n=17)	35.3	141.67
	Thiwi-Lifidzi (n=35)	40.0	445.7
	Bwanje Valley (n=24)	4.2	38.0
	Shire Highlands (n=43)	25.5	203.6
	Total (n=119)	26.9	292.8

Among those male-headed households who sold maize, the majority (82.4%) sold it in the village, followed by those that sold outside the village (14.0%) and then those that sold both in and outside the village (2.8%) (Table 33). Amongst female-headed households the corresponding proportions were 71.9%, 15.6% and 12.5%, respectively. In terms of proportion, there were more female-headed households than male-headed households that sold both within and outside the village. Selling within the same village was more prominent in Ntchisi and Bwanje Valley RDPs, among both household types.

Table 33: Location of maize sales by RDP

	RDP				Total (N=108)
	Ntchisi (n=47)	Thiwi-Lifidzi (n=34)	Bwanje Valley (n=5)	Shire Highlands (n=22)	
Male					
In the village	95.7	67.6	100	72.7	82.4
Outside the village	4.3	26.5	0	22.7	14.0
Both	0.0	5.9	0	4.5	2.8
Female	6	14	1	11	32
In the village	83.3	71.4	100	63.6	71.9
Outside the village	16.7	21.4	0	9.1	15.6
Both	0.0	7.1	0	27.3	12.5

Although the majority of those that sold maize did it within the village, they also did sell to different market outlets as Table 34 shows. The majority of the people sold to either traders within the village

(44.3%) or briefcase traders (a kind of individual often-on-the move trader) (40.7%). Very few (2.1%) sold to a state marketing board and even fewer households (1.4%) sold to brokers. On the other hand, 11.4 per cent sold to other sources that included individuals from within and outside the village.

Table 34: Main market outlet by RDP

	RDP				Total (N=140)
	Ntchisi (n=53)	Thiwi-Lifidzi (n=48)	Bwanje Valley (n=6)	Shire Highlands (n=33)	
Traders from within village	35.8	50.0	50.0	48.5	44.3
Briefcase traders	58.5	37.5	16.7	21.2	40.7
Brokers	1.9	0.0	0.0	3.0	1.4
State marketing board	0.0	6.3	0.0	0.0	2.1
Other	3.8	6.3	33.3	27.3	11.4

Comparing the volume that was sold in the year of the study with what they had sold the year before, 42.9 per cent of the households indicated that the amount sold had increased, while 38.6 per cent stated that the amount had decreased (Table 35). Only 5 per cent indicated that the amount had not changed and 13.6 per cent indicated that they did not sell any maize the year before the study. The proportion not selling maize was highest in Bwanje Valley. This is consistent with the same RDP dedicating less land to maize production and producing less of the commodity.

Table 35: Volume sold compared to year before by RDP

	RDP				Total (N=140)
	Ntchisi (n=53)	Thiwi-Lifidzi (n=48)	Bwanje Valley (n=6)	Shire Highlands (n=33)	
No maize sold the year before last	5.7	8.3	66.7	24.2	13.6
Amount decreased since	45.3	29.2	0.0	48.5	38.6
Amount unchanged	0.0	10.4	16.7	3.0	5.0
Amount increased since	49.1	52.1	16.7	24.2	42.9

Regarding prices that were offered, Table 36 shows that 78.6 per cent of the households that sold maize in the year of the study indicated that the price then was better (increased) than that in the year before while 14.3 per cent indicated that price had gone down (decreased) and only 0.7 per cent indicated that the price had not changed.

Table 36: Price of maize compared to 2008 by RDP

	Ntchisi (n=53)	Thiwi-Lifidzi (n=48)	RDP		Total (N=140)
			Bwanje Valley (n=6)	Shire Highlands (n=33)	
No maize sold at that time	3.8	2.1	50.0	9.1	6.4
Worse price today (price has decreased)	17.0	14.6	0.0	12.1	14.3
Price unchanged	0.0	2.1	0.0	0.0	0.7
Better price today (price has increased)	79.2	81.3	50.0	78.8	78.6

3.10 Food consumption

Having looked at production and sales, it would be necessary to turn attention to consumption. Table 37 shows that from the maize that households grew, a large proportion, an average of 668.4 Kg among male-headed households and 483.7 Kg among female-headed households was used for home consumption. The next large category is sales, and transfer to relations. A small proportion, 62.4 Kg among male-headed households and 60.3 Kg among female-headed households put the maize to other unspecified uses.

Table 37: Average amount of maize consumed by consumption category by RDP

Gender of head Consumption category	RDP									
	Ntchisi		Thiwi/Lifidzi		Bwanje Valley		Shire Highlands		Total	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Male										
Home consumption	82	867.2	64	701.2	75	369.1	59	737.1	280	668.4
Payment for hired labour	20	272.5	21	177.4	8	96.9	5	330.0	54	214.8
Sale	51	363.0	33	418.9	6	84.0	22	455.7	112	382.74
Transfers to relatives	55	131.2	38	254.1	38	97.5	40	171.3	171	160.4
Others uses	38	57.3	28	58.3	18	68.2	19	73.5	103	62.4
Female										
Home consumption	17	632.2	35	474.6	21	307.2	43	530.0	116	483.7
Payment for hired labour	4	193.8	4	172.5	0	0.00	4	87.5	12	151.3
Sale	6	141.7	10	404.1	1	38.0	11	203.6	34	282.2
Transfers to relatives	10	91.3	10	512.5	5	140.0	17	114.0	42	206.6
Others uses	9	45.2	6	96.7	3	33.3	9	60.0	27	60.3

With the consumption categories known, this section looks at the number of meals that households had comparing lean season and the rest of the year when the situation is supposed to be normal, and Table 38 displays the results. In the lean period, fewer households (17.8%) amongst male-headed households had breakfast compared to 68 per cent the rest of the year. For the female-headed households the corresponding proportions were 20 per cent and 59.2 per cent, respectively. Inter RDP analysis reveals that in Ntchisi, a lot fewer female-households (5.6%) had breakfast during the lean period, and the lowest proportion among male-headed households was in Bwanje Valley (9.3%). In terms of lunch, 78.3 per cent male-headed households had lunch during the lean period compared to 98.9 per cent in normal times. The corresponding proportions among female-headed households were 73.2 per cent and 100 per cent, respectively. Dinner is high in all seasons (above 85%) for both male-headed and female-headed households. During the rest of the year when things are supposed to be normal, all female-headed households had lunch and dinner, unlike the case in male-headed households.

Table 38: Number of meals per day

Household headship	RDP	Lean season			Rest of year		
		breakfast	lunch	dinner	Breakfast	lunch	Dinner
Male	Ntchisi (n = 82)	17.1	70.7	97.6	72.0	100	98.8
	Thiwi-Lifidzi (n = 64)	26.6	85.9	98.4	59.4	96.9	98.4
	Bwanje Valley (n = 75)	9.3	77.3	93.3	72.0	100	98.7
	Shire Highlands (n = 60)	20.0	78.3	95.0	66.7	98.3	96.7
	Total(n = 281)	17.8	77.6	96.1	68.0	98.9	98.1
Female	Ntchisi (n = 18)	5.6	66.7	100	61.1	100	100
	Thiwi-Lifidzi (n = 35)	25.7	74.3	97.1	62.9	100	100
	Bwanje Valley (n = 24)	25.0	83.3	91.7	62.5	100	100
	Shire Highlands (n = 43)	18.6	69.8	81.4	53.5	100	100
	Total (n = 120)	20.0	73.3	90.8	59.2	100	100

Closely associated with food consumption is the household's ability to save for the future and actions taken when food is in short supply i.e. the lean season. Among male-headed households (Table 39), 44.5 per cent of them reported that they were able to save some money every year for future needs and the proportion was highest in Ntchisi (51.2%) and lowest in Bwanje Valley (38.7%). Among female-headed households though, only 28.3 per cent indicated that they were able to save money every year for future needs with Ntchisi again giving the highest proportion (61.1%) and Bwanje Valley lowest with 16.7 per cent.

Regarding reduction in number of meals eaten during lean periods, 71.5 per cent male-headed households indicated that they did so compared to about the same proportion (71.7%) among female-headed households. Among male-headed households, 82.2 per cent reduced the quality of food during lean periods compared to 84.2 per cent among female-headed households. In the Bwanje Valley, though, fewer households reduced the number of meals (54.2%) and quality of meals (58.3%) compared to the sample average.

Table 39: Ability to save some money in year, reduction in number and quality of meals by RDP by gender

Household headship	RDP	Saving for future	Reduction in meal numbers	Reduction in quality of food
Male	Ntchisi (n = 82)	51.2	80.5	86.6
	Thiwi-Lifidzi (n = 64)	45.3	57.8	71.9
	Bwanje Valley (n = 75)	38.7	77.3	84.0
	Shire Highlands (n = 60)	41.7	66.7	85.0
	Total(n = 281)	44.5	71.5	82.2
Female	Ntchisi (n = 18)	61.1	66.7	77.8
	Thiwi-Lifidzi (n = 35)	20.0	71.4	97.1
	Bwanje Valley (n = 24)	16.7	54.2	58.3
	Shire Highlands (n = 43)	27.9	83.7	90.7
	Total (n = 120)	28.3	71.7	84.2

3.11 Rural-urban-rural linkages

This section looks at the rural-urban-rural linkages by analysing whether the maize or rice that households grew found its way to relatives that were not part of the sampled households. The study did not cover all aspects of rural-urban linkages but only transfers of food. Table 40 shows that among male-headed households (40.4%) had relatives that were not part of the household coming and collecting maize from them, while the corresponding figure for female-headed households was just 23.1 per cent. Across RDPs the highest proportion of male-headed households that had relations coming to collect maize from them was in the Shire Highlands (46.7%) and the lowest was in Ntchisi (36.3%). Among female-headed households too, the highest proportion was in Shire Highlands (27.9%) and lowest in Thiwi-Lifidzi (17.1%).

On average, male-headed households gave out 160.4 Kgs and female-headed households gave out 206.6 Kg. Among male-headed households Thiwi-Lifidzi gave out the most (254.1 Kgs) and Bwanje Valley gave out the least (97.5 Kg). Among female-headed households, Thiwi-Lifidzi again gave out the most (512.5 Kg) and Ntchisi the lowest at 91.3 Kg.

As far as rice was concerned, 67.4 per cent of male-headed households interviewed in Bwanje Valley grew the crop and indicated that they sent part of the rice produced to relations that were not part of the households. The proportion among female-headed households was just about half of their male counterparts (32.6%).

Table 40: Proportion of households interviewed in Afrint II and new households sending part of maize production to relations not part of household

Household headship	RDP	Maize		
		Yes	No	Average transfer
Male	Ntchisi (n=82)	36.6	63.4	131.2
	Thiwi-Lifidzi (n=64)	40.6	57.8	254.1
	Bwanje Valley (n=74)	39.2	60.8	97.5
	Shire Highlands (n=60)	46.7	53.3	171.3
	Total (n=280)	40.4	59.3	160.4
Female	Ntchisi (n=17)	17.6	82.4	91.3
	Thiwi-Lifidzi (n=35)	17.1	82.9	512.5
	Bwanje Valley (n=22)	27.3	72.7	140.0
	Shire Highlands (n=43)	27.9	72.1	114.0
	Total (n=117)	23.1	76.9	206.6

Beneficiaries of the maize transfers (Table 41) were largely from neighbouring villages (35.6%), same village (33.8%), other rural areas (14.8%), town outside the district or country (14.8%), capital city (14.8%), major urban areas (14.4%) and town in the same district or country (6.9%). There are a lot of variations among RDPs. For instance, far more households (31.3%) in Thiwi-Lifidzi gave to relatives in the capital city than did households in Ntchisi (3.0%). Furthermore, there were far more households in Ntchisi (51.5%) than in Bwanje Valley (22.25) giving to people from neighbouring villages. This may be explained by the relative accessibility of Thiwi-Lifidzi to the capital city or urban areas. On the other hand, Ntchisi has poor road infrastructure and hence most of the maize is transferred locally.

From the data, beneficiaries of the rice were from the same village (40.4%), major urban areas (23.1%), capital city (19.2%), towns outside the district or country (19.2%), neighbouring villages (17.3%), other

rural areas (15.4%) and towns in the same district or country (5.8%). The average amount of rice that was given out was 49.72 Kg.

Table 41: Beneficiaries of maize transfers by RDP

	RDP				Total (N=216)
	Ntchisi (n=66)	Thiwi-Lifidzi (n=48)	Bwanje Valley (n=45)	Shire Highlands (n=57)	
Same village	25.8	25.0	57.8	31.6	33.8
Neighbouring villages	51.5	41.7	22.2	22.8	35.6
Other rural areas	22.7	6.3	13.3	14.0	14.8
Town in same district/country	7.6	8.3	4.4	7.0	6.9
Towns outside district/country	16.7	12.5	13.3	15.8	14.8
Major urban areas	6.1	16.7	11.1	24.6	14.4
Capital city	3.0	31.3	11.1	17.5	14.8

3.11.1 Transfers of other crops

Transfer of other crops, excluding maize and rice, was also practised (Table 42). Among male-headed households, 31.3 per cent sent out various types of produce to relations, and 39.4 per cent had relations coming to collect food other than staples. Among female-headed households the proportions were 20.5 per cent sending out and 33.3 per cent collecting. There were thus more people sending and collecting other crops excluding maize and rice amongst male-headed households. There were variations across the RDPs as well.

Table 42: Incidence of sending produce from other crops to relatives or relatives collecting by RDP by sex of household head

Household Headship	RDP	% sending	% collecting
Male	Ntchisi (n=76)	19.7	29.3
	Thiwi-Lifidzi (n=60)	41.7	48.3
	Bwanje Valley (n=27)	29.6	25.9
	Shire Highlands (n=54)	37.0	50.0
	Total (n=217)	31.3	39.4
Female	Ntchisi (n=14)	14.3	46.2
	Thiwi-Lifidzi (n=31)	32.3	40.0
	Bwanje Valley (n=8)	25.0	25.0
	Shire Highlands (n=30)	10.0	23.3
	Total (n=83)	20.5	33.3

As was the case with maize, beneficiaries of these transfers as Table 43 shows were largely from neighbouring villages (44.6%), capital city (14.1%), major urban areas (12.8%), other rural areas (11.3%), town outside the district (9.7%) and town in the same district (8.1%). Just as with the maize transfers, Thiwi-Lifidzi RDP had the highest proportion sending to the capital city (32.3%) and Ntchisi RDP had the lowest (2.3%).

Table 43: Beneficiaries of most important crop transfers by RDP

	RDP				Total (N=186)
	Ntchisi (n=43)	Thiwi-Lifidzi (n=62)	Bwanje Valley (n=18)	Shire Highlands (n=83)	
Neighbouring villages	41.9	53.2	50.0	36.5	44.6
Other rural areas	11.6	6.5	22.2	12.7	11.3
Towns in same district	11.6	8.1	0.0	7.9	8.1
Towns outside district	16.3	8.1	11.1	6.3	9.7
Major urban areas	4.7	6.5	16.7	23.4	12.8
Capital city	2.3	32.3	5.6	6.5	14.1

3.12 Agricultural techniques/practices

This section looks at the agricultural techniques and practices that people from the four RDPs used or practised. Almost eighty per cent of the sampled households used chemical fertiliser. The proportion of households using chemical fertiliser was highest in the Shire Highlands RDP (96.1%), followed by Ntchisi (89%), then Thiwi-Lifidzi (87.9%) and the lowest was in Bwanje Valley where only 44.4 per cent of the households reported using chemical fertiliser (Table 44). Other practices included: intercropping (77.1%), watering crops by lifting water from sources (65.7%), crop rotation (54.3%), using dam/canal/river/lake water (65.7%), techniques to help avoid soil erosion (52.0%), cultivating on low-lying, swamp/marsh land (48%), using other types of manure (47.8%), planting on river beds 45.3%), using agroforestry (41%), using animal manure (40.9%), watering by gravity (25%), watering from own borehole or well (20.1%), using pesticides (19.5%), water harvesting (17.9%) and using fallow (11.9%). In all these practices and techniques, there are variations between RDPs.

Table 44: Agricultural techniques used by RDP

	Ntchisi (n=100)	Thiwi-Lifidzi (n=99)	RDP		Total (N=401)
			Bwanje Valley (n=99)	Shire Highlands (n=103)	
Crop rotation	93.0	82.8	26.3	16.5	54.4
Intercropping	54.0	87.9	68.7	97.1	77.1
Use chemical fertiliser	89.0	87.9	44.4	96.1	79.6
Use pesticides	4.0	36.4	20.2	17.5	19.5
Use herbicides	0.0	3.0	1.0	1.0	1.2
Use animal manure	52.0	49.5	26.3	35.9	40.9
Use composite	30.0	46.5	13.0	29.1	29.6
Use other types of manure	52.0	58.6	24.0	56.3	47.8
Use fallow	15.0	6.1	18.0	8.7	11.9
Non-soil disturbing (no till)	3.0	3.0	2.0	0.0	2.0
Use agroforestry	59.0	49.5	34.0	22.3	41.0
Techniques to avoid soil erosion	65.0	71.7	31.0	40.8	52.0
Water harvesting	29.0	33.3	4.0	5.8	17.9
Cultivating on low-lying, swamp/marsh land	36.0	76.8	55.0	25.2	48.0
Planting on river beds	55.0	41.4	44.0	40.8	45.3
Access to dam, canal, river or lake water	55.0	51.5	60.0	35.9	50.5
Watering by gravity	3.6	7.8	68.9	8.1	25.0
Water crops by lifting water from sources	81.8	92.2	26.2	70.3	65.7
Access to water pump	7.3	7.8	6.6	8.1	7.4
Ownership of borehole or well for watering	24.0	40.4	8.0	8.7	20.1
Use drip irrigation	0.0	1.0	2.0	1.9	1.2
Use sprinkler irrigation	1.0	1.0	0.0	0.0	0.5
Water crops any other way	16.0	15.2	4.0	0.0	8.7

Use of chemical fertiliser on maize was widespread across the four RDPs. As Table 45 shows, 67 per cent of male-headed households indicated that they used fertiliser on their maize with the highest proportion being in Thiwi-Lifidzi (82.5%) and the lowest in Bwanje Valley (44%). Another 20.3 per cent indicated that they did not use artificial fertiliser because their soil was fertile and the highest proportion of households reporting this was in Shire Highlands (33.3%) and the lowest in Thiwi-Lifidzi (11.1%). Only 12.7 per cent indicated that they did not apply artificial fertiliser because they could not afford it, and the highest proportion reporting this was in Bwanje Valley (32%) and lowest was Shire Highlands where no single household gave this as a reason for not applying artificial fertiliser.

Among female-headed households, only 59.7 per cent indicated that they applied chemical fertiliser with the highest proportion in Ntchisi (82.4%) and lowest in Bwanje Valley (29.2%). Bwanje Valley also reported the highest proportion of those indicating that they did not apply artificial fertiliser because they could not afford it (41.7%). The amount of fertilizer applied also differed by the type of household with female-headed households applying less and spending less on fertiliser than their male counterparts (Table 46). The only exception was in Bwanje Valley where there was no difference between male-headed and female-headed households.

Table 45: Use of artificial fertilizer on maize by RDP by sex of household head

	RDP				Total
	Ntchisi	Thiwi-Lifidzi	Bwanje Valley	Shire Highlands	
<i>Male (N)</i>	78	63	75	60	276
No, my soil is fertile	14.1	11.1	24.0	33.3	20.3
No, I cannot afford	9.0	6.3	32.0	0.0	12.7
Yes	76.9	82.5	44.0	66.7	67.0
<i>Female (N)</i>	17	35	24	43	119
No, my soil is fertile	0.0	17.1	29.2	25.6	20.2
No, I cannot afford	17.6	28.6	41.7	2.3	20.2
Yes	82.4	54.3	29.2	72.1	59.7

Table 46: Average amount spent on fertilizer and average amount on fertilizer used by RDP by sex of household head (MKW)

	RDP				Total
	Ntchisi	Thiwi-Lifidzi	Bwanje Valley	Shire Highlands	
<i>Male (N)</i>	63	52	32	39	186
Average spent on fertiliser	16,276.37	24,815.58	4,403.13	19,070.51	17,206.83
Average fertiliser used	139.5	144.2	95.1	188.1	143.6
Female	14	19	7	31	71
Average spent on fertiliser	6,000.00	25,955.89	928.57	4,579.35	10,220.03
Average fertiliser used	85.7	178.2	87.5	88.7	110.4

Comparing the amount of fertiliser that people used in the growing season during which the study was carried out and the year 2008, 47.4 per cent of male-headed households indicated that the amount of fertiliser that they used had decreased and the largest proportion reporting this was in Ntchisi (61.9%) (Table 47). Only 27.9 per cent indicated that the amount had increased and 17.9 per cent indicated that the amount was unchanged, while 6.8 per cent indicated that they did not apply fertiliser in 2008 and so there was no basis for comparison. A larger proportion (54.1%) of female-headed households indicated that the amount had decreased since 2008, and only 17.6 per cent reported that the amount had increased; an 18.9 per cent reported that the amount remained the same. Only 9.5 indicated that they did not apply fertiliser in 2008. In general, the prices of fertilisers have increased in the last few years. Some respondents reported that there has been a reduction in the amounts of fertiliser they had used as result of the increase in prices. It was also reported that the number of recipients of fertiliser as part of the input subsidies in recent years has also gone down and this could be attributed to the fact of the area being an opposition stronghold where those in the ruling could deem not supportive enough to benefit from subsidies.

Table 47: Comparison with amount of fertiliser used in 2008 by category by RDP

	RDP				
	Ntchisi (n=63)	Thiwi-Lifidzi (n=53)	Bwanje Valley (n=33)	Shire Highlands (n=41)	Total (N=190)
Male					
No, fertiliser applied in 2008	1.6	3.8	27.3	24.4	6.8
Amount decreased since then	61.9	43.4	30.3	43.9	47.4
Amount unchanged	11.1	22.6	24.2	17.1	17.9
Amount increased since then	25.4	30.2	18.2	36.6	27.9
Female	14	19	7	34	24
No, fertiliser applied in 2008	14.3	0.0	71.4	0.0	9.5
Amount decreased since then	71.4	57.9	28.6	50.0	54.1
Amount unchanged	7.1	21.1	0.0	26.5	18.9
Amount increased since then	7.1	21.1	0.0	23.5	17.6

When it comes to the methods of production that people used, all female-headed households used a hoe (Table 48). The same applied to male-headed households with the exception of Bwanje Valley where 2.7 per cent of the households used oxen ploughing.

Table 48: Cultivation methods by category by RDP

	RDP				
	Ntchisi (n=81)	Thiwi-Lifidzi (n=64)	Bwanje Valley (n=75)	Shire Highlands (n=59)	Total (N=279)
Male					
Hoe cultivation	100	100	97.3	100	99.3
Oxen ploughing	0	0	2.7	0	0.7
Tractor ploughing	0	0	0	0	0
No till agriculture	0	0	0	0	0
Other	0	0	0	0	0
Female	17	35	24	43	119
Hoe cultivation	100	100	100	100	100
Oxen ploughing	0	0	0	0	0
Tractor ploughing	0	0	0	0	0
No till agriculture	0	0	0	0	0
Other	0	0	0	0	0

Nobody in the sample used any herbicides on maize (Table 49) while only 2.9 per cent of the male-headed households used pesticides and these were mainly in Bwanje Valley (5.3%), Thiwi-Lifidzi (4.7%) and Shire Highlands (1.7%). Among female-headed households, only 0.8 per cent of the households used pesticides and these were all in Thiwi-Lifidzi (2.9%).

Table 49: Use of pesticides/herbicides on maize by RDP by sex of household head

Household Headship	RDP	Pesticides		Herbicides	
		Yes	No	Yes	No
Male	Ntchisi	0.0	100	0	100
	Thiwi-Lifidzi	4.7	95.3	0	100
	Bwanje Valley	5.3	94.7	0	100
	Shire Highlands	1.7	98.3	0	100
	Total	2.9	97.1	0	100
Female	Ntchisi	0.0	100	0	100
	Thiwi-Lifidzi	2.9	97.1	0	100
	Bwanje Valley	0.0	100	0	100
	Shire Highlands	0.0	100	0	100
	Total	0.8	99.2	0	100

3.13 Institutional support

3.13.1 Extension services

In investigating the institutional support that is available to farming households in the four RDPs, a household was asked if it had received extension advice from any government agent or from non-governmental extension agents and the results are reported in Table 50 below. Among male-headed households, only 8.5 per cent of the households regularly received advice from Government extension agents, 23 per cent received it rarely and 68.5 per cent never received any advice. Advice from NGO extension agents is almost non-existent as only 3.3 per cent indicated that they received it regularly while another 6.3 per cent rarely received. Among female-headed households, more households (79.8%) never received advice from Government extension agents and 94.6 per cent from NGO extension agents.

Table 50: Receipt of extension advice by gender of household head by RDP

Household headship	RDP	From government extension agents			From NGO extension agents		
		Never	Rarely	Regularly	Never	Rarely	Regularly
Male	Ntchisi (n=78)	80.8	16.7	2.6	96.2	3.8	0.0
	Thiwi-Lifidzi (n=59)	74.6	20.3	5.1	98.3	1.7	0.0
	Bwanje Valley (n=74)	54.1	32.4	13.5	78.4	13.5	8.1
	Shire Highlands (n=59)	64.4	22.0	13.6	89.8	5.1	5.1
	Total (n=270)	68.5	23.0	8.5	90.4	6.3	3.3
Female	Ntchisi (n=17)	100.0	0.0	0.0	100.0	0.0	0.0
	Thiwi-Lifidzi (n=31)	90.3	9.7	0.0	100.0	0.0	0.0
	Bwanje Valley (n=23)	69.6	13.0	17.4	91.3	8.7	0.0
	Shire Highlands (n=43)	69.8	16.3	14.0	90.2	7.3	2.4
	Total (114)	79.8	11.4	8.8	94.6	4.5	0.9

Those that had indicated that they had had some sort of advice were asked to indicate whether they were required to pay for the advice and a very small proportion (1.3%- male-headed and 1%-female-headed) indicated that they paid for the advice (Table 51). On the type of advice that households got, among male-headed households, 26.7 per cent received extension services on crops and 12.2 per cent

on livestock. The corresponding proportions among female-headed households were 18.5 per cent and 5.6 per cent, on crops and livestock, respectively. Only 0.4 per cent of male-headed households indicated that they got the advice through a mobile phone and these were all from Shire Highlands (1.8%). No household among female-headed households received advice through a phone.

Respondents were also asked if they were members of any local farmer grouping/organisation/association that dealt with agricultural and related matters. Only 22.4 per cent of the male-headed households reported to belong to some grouping dealing with agriculture, and the highest proportion was in Ntchisi (37.2%) and lowest in Shire Highlands (5.2%). Among female-headed households, an even smaller proportion (8.8%) of households belonged to any grouping, and the highest was in Thiwi-Lifidzi (12.9%) and lowest in Shire Highlands (4.8%). Just as the case with extension advice, membership in local farm groups for women in the four RDPs was a far-fetched dream.

Table 51: Type of extension advice

Household headship	RDP	Payment	For crops	For livestock	Mobile extension	Member of local farm group
Male	Ntchisi (n=78)	0.0	17.3	10.7	0.0	37.2
	Thiwi-Lifidzi (n=59)	1.8	22.8	12.3	0.0	11.9
	Bwanje Valley (n=74)	1.5	35.1	8.1	0.0	28.8
	Shire Highlands(n=59)	2.2	32.1	19.6	1.8	5.2
	Total (n=270)	1.3	26.7	12.2	0.4	22.4
Female	Ntchisi (n=17)	0.0	0.0	0.0	0.0	11.8
	Thiwi-Lifidzi (n=31)	0.0	11.1	0.0	0.0	12.9
	Bwanje Valley (n=23)	0.0	21.7	0.0	0.0	8.7
	Shire Highlands (n=41)	2.9	29.3	14.6	0.0	4.8
	Total (112)	1.0	18.5	5.6	0.0	8.8

3.14 Farm credit

This section investigates households' access to credit facilities. First, a question was asked if at all in the year that had passed, they had borrowed money to be able to pay for some sort of expenditure. Among male-headed households, 32.4 per cent had borrowed, and among female-headed households, 21.7 per cent had done so. Only 5.2 per cent male-headed and 2.5 per cent female-headed households were at the time of the study obtaining some form of agricultural input credit, while 11.1 per cent male-headed households and 7.5 per cent female-headed were obtaining some other forms of credit (Table 52) . Respondents were also asked if they had access to any form of credit that was targeting women and 22.1 per cent male-headed households had access to such a form of credit while only 15.8 per cent female-headed households had access to such a facility. Just as with extension advice and membership in clubs, female-headed households are at a disadvantage when it comes to obtaining farm credit. In general, very few female households are well off. This may be due to the challenges of collateral requirements. Most female households would, on their own, have difficulties to qualify for credit except when they are in groups or clubs or indeed husband's surety.

Table 52: Access to credit by RDP by gender of the household head

Household headship	RDP	Borrowed money	Ag. Input credit	Other credit	Credit targeted at women
Male	Ntchisi (n = 82)	26.8	8.5	22.0	41.5
	Thiwi-Lifidzi (n = 64)	25.0	1.6	9.4	20.3
	Bwanje Valley (n = 75)	42.7	5.3	8.0	1.3
	Shire Highlands (n = 60)	35.0	6.7	5.0	23.3
	Total(n = 281)	32.4	5.7	11.7	22.1
Female	Ntchisi (n = 18)	16.7	0.0	11.1	50.0
	Thiwi-Lifidzi (n = 35)	37.1	2.9	14.3	22.9
	Bwanje Valley (n = 24)	12.5	8.3	8.3	0.0
	Shire Highlands (n = 43)	16.3	0.0	0.0	4.7
	Total (n = 120)	21.7	2.5	7.5	15.8

3.15 Income

For most households in our sample the sale of other food crops was the most predominant source of income as it was reported by 65.2 per cent (Table 53). This was followed by sale of food staples (51.6%), agricultural labour (34.3%), sale of non-food cash crops (28.6%), sale of animals or animal products (24.3%), micro-businesses (23.8%), non-farm employment (18.5%) and remittances (11.8%). There are, of course, huge variations among RDPs. For instance, income from sale of other food crops was highest in Ntchisi (94.0%) and lowest in Bwanje Valley (19.4%) whereas the sale of food staples was highest in Bwanje Valley (72.4%) and lowest in the Shire Highlands (31.1%). The high income from food staples in Bwanje Valley RDP could be explained by the fact that people from this RDP grew rice. In Ntchisi, it is soya, groundnuts and potatoes that account for the largest share of other food crops, and these, as we have seen earlier are being promoted heavily by NGOs and projects such as National Association of Smallholders Farmers (NASFAM), the Rural Economic Enhancement Project, Total Land Care and World Vision in the area.

Table 53: Income sources by RDP

	RDP				
	Ntchisi (n=99)	Thiwi-Lifidzi (n=99)	Bwanje Valley (n=98)	Shire Highlands (n=103)	Total (N=399)
Sale of food staples	54.5	49.5	72.4	31.1	51.6
Sale of other food crops	94.9	97.0	19.4	49.5	65.2
Sale of non-food cash crops	51.5	16.2	30.6	16.5	28.6
Sale of animals/animal produce	45.5	21.2	13.3	17.5	24.3
Leasing out machinery	6.1	4.0	4.1	1.0	3.8
Agricultural labour	28.3	35.4	39.8	34.0	34.3
Non-farm salaried employment	13.1	16.2	9.2	35.0	18.5
Micro-business	18.2	21.2	25.5	30.1	23.8
Rent, interest	8.1	10.1	2.0	1.0	5.3
Pensions	0.0	1.0	0.0	0.0	0.3
Remittances	14.1	11.1	6.1	15.5	11.8

Looking at the income source by the gender of the household head shows that more male-headed households are getting income from various sources than are female-headed households (Table 54). A lot more female-headed households (16%) though receive remittances than their male counterparts (10.0). Income levels from all sources mentioned were much lower among female-headed households than among male-headed households.

Table 54: Sources of income by sex of household head

	% of households			Average amount MK		
	Male	Female	Total	Male	Female	Total
Sale of food staples	57.5	38.7	51.6	18,665.29	8,211.34	15,547.45
Sale of other food crops	69.3	55.5	65.2	24,081.07	13,821.01	21,021.05
Sale of non-food cash crops	35.4	12.6	28.6	9,139.96	1,247.90	6,786.19
Sale of animals/animal produce	28.9	13.4	24.3	5,488.84	3,738.66	4,966.85
Leasing out machinery	4.6	1.7	3.8	2,193.92	277.31	1,622.31
Agricultural labour	31.1	42.0	34.3	3,320.54	3,929.41	3,502.13
Non-farm salaried employment	17.9	20.2	18.5	12,117.14	9,060.07	11,207.77
Micro-business	23.6	24.4	23.8	12,626.71	4,894.96	10,320.75
Rent, interest	5.4	5.0	5.3	533.93	537.82	535.09
Pensions	0.0	0.8	0.3	0.0	25.21	7.52
Remittances	10.0	16.0	11.0	2,085.00	2,247.90	2,282.71

Apart from cash income, the study established that a good number of households (32.5%, female-headed and 16.4%, male-headed) received food or other in-kind transfers (Table 55). It is clear that a lot more female-headed households receive in-kind transfers than male-headed households. In Ntchisi, as many as 55.6 per cent of female-headed households receive transfers compared to 17.9 per cent among male-headed households in the same RDP. It is often the case that husbands migrate to seek employment elsewhere and send/transfer in-kind incomes and not the other way round. The lowest proportion of households receiving in-kind income among female-headed households was in the Shire Highlands (25.6%) and yet the lowest proportion among male-headed households in the same RDP was 20.0 per cent.

Table 55: Receipt of foodstuffs or other in kind transfers

Gender of household Head	RDP	% receiving	Type of transfer			
			Foodstuffs	Farm inputs	livestock	Clothes
Male	Ntchisi (n = 78)	17.9	61.5	7.7	7.7	30.8
	Thiwi-Lifidzi (n = 62)	16.1	40.0	0.0	0.0	90.0
	Bwanje Valley (n = 75)	12.0	88.9	0.0	22.2	44.4
	Shire Highlands (n = 60)	20.0	66.7	25.0	16.7	16.7
	Total(n = 275)	16.4	63.6	9.1	11.4	43.2
Female	Ntchisi (n = 18)	55.6	80.0	10.0	0.0	50.0
	Thiwi-Lifidzi (n = 32)	28.1	77.8	11.1	0.0	55.6
	Bwanje Valley (n = 24)	33.3	75.0	25.0	0.0	50.0
	Shire Highlands (n = 43)	25.6	54.5	18.2	0.0	63.6
	Total (n = 117)	32.5	71.1	15.8	0.0	55.3

Apart from receiving in-kind transfers, 23.5 per cent male-headed households and 21.1 per cent female-headed households participated in food for work programmes (Table 56). Participation in this type of

programme was high in the Shire Highlands RDP where 48.3 per cent male-headed and 38.1 per cent female-headed households participated. Among male-headed households the lowest participation was in Thiwi-Lifidzi RDP (12.3%) and among female-headed households it was in Ntchisi RDP (5.6%).

Table 56: Food for work possibilities

Gender of household Head	RDP	% participating	Whether paid in cash	% received cash transfers from government
Male	Ntchisi (n = 76)	17.1	83.3	1.4
	Thiwi-Lifidzi (n = 57)	12.3	85.7	1.8
	Bwanje Valley (n = 75)	18.7	92.9	1.3
	Shire Highlands (n = 60)	48.3	79.3	11.7
	Total(n = 268)	23.5	83.9	3.8
Female	Ntchisi (n = 18)	5.6	100.0	0.0
	Thiwi-Lifidzi (n = 30)	16.7	100.0	0.0
	Bwanje Valley (n = 24)	8.3	100.00	0.0
	Shire Highlands (n = 42)	38.1	58.8	4.7
	Total (n = 114)	21.1	72.0	1.8

3.16 Expenditure

On expenditure, the study was mainly concerned with food expenditure and Table 57 shows that a good proportion of households spent their income on vegetables (68.1%). This was followed by expenditures on beans (63.3%), plantains/bananas (56.9%), sweet potatoes (56.9%), rice (57.6%), maize (54.6%), groundnuts (54.6%), cassava (54.1%), Irish potatoes (53.9%), peas (38.4%) and sorghum (8.5%). There are variations when one compares proportions of the different RDPs. Looking at the gender perspective of the household heads (Table 58), it is clear that with the exception of cassava there is very little to choose between the two groups.

Table 57: Expenditure on food

	RDP				Total (N=401)
	Ntchisi (n=100)	Thiwi-Lifidzi (n=99)	Bwanje Valley (n=99)	Shire Highlands (n=103)	
Maize	38.0	51.5	74.7	54.4	54.6
Cassava	61.0	55.5	62.6	38.8	54.1
Sorghum	1.0	2.0	16.2	14.6	8.5
Rice	59.0	67.7	18.2	84.5	57.6
Plantains/bananas	64.0	50.5	48.5	64.1	56.9
Beans	70.0	54.5	79.8	49.5	63.3
Peas	36.0	33.3	37.4	46.6	38.4
Irish potatoes	46.0	33.3	61.6	73.8	53.9
Sweet potatoes	57.0	39.4	70.7	60.2	56.9
Millet	3.0	16.2	45.5	65.0	32.7
Groundnuts	27.0	38.4	77.8	74.8	54.6
Vegetables	69.0	50.5	71.7	80.6	68.1
Yams	2.0	2.0	1.0	6.8	3.0
Cocoyams	1.0	0.0	0.0	0.0	0.2
Arrowroot	2.0	0.0	0.0	0.0	0.5

Table 58: Proportion of households reporting expenditure on specific food items

	Ntchisi		Thiwi-Lifidzi		Bwanje Valley		Shire Highlands		Total	
	Male (n = 82)	Female (n = 18)	Male (n=64)	Female (n=35)	Male (n= 75)	Female (n=24)	Male (n= 60)	Female (n = 43)	Male (n =281)	Female (n = 120)
Maize	40.2	27.8	50.0	54.3	74.4	75.0	51.7	58.1	54.1	55.0
Cassava	63.4	50.0	56.3	51.4	64.0	58.3	40.0	37.2	56.9	47.5
Sorghum	1.2	0.0	0.0	5.7	18.7	8.3	15.0	14.0	8.5	8.3
Rice	62.2	44.4	67.2	68.6	18.7	16.7	85.0	83.7	56.6	60.0
Plantains/bananas	65.9	55.6	51.6	48.6	52.0	37.5	63.3	65.1	58.4	53.3
Beans	73.2	55.6	53.1	57.1	80.0	79.2	43.3	58.1	64.1	61.7
Peas	36.6	33.3	35.9	28.6	40.0	29.2	48.3	44.2	39.9	35.0
Irish potatoes	47.6	38.9	29.7	40.0	65.3	50.0	76.7	69.8	54.4	52.5
Sweet potatoes	59.8	44.4	35.9	45.7	76.0	54.2	55.0	67.4	57.7	55.0
Millet	2.4	5.6	17.2	14.3	48.0	37.5	56.7	76.7	29.5	40.0
Groundnuts	29.3	16.7	42.2	31.4	81.3	66.7	70.0	81.4	54.8	54.2
vegetables	68.3	72.2	48.4	54.3	76.0	58.3	78.3	83.7	68.0	68.3
Yams	2.4	0.0	3.1	0.0	1.3	0.0	8.3	4.7	3.6	1.7
Coco yams	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Arrowroot	1.2	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8

Still on expenditure, the study investigated expenditures that people made on animal products and Table 59 shows that among male-headed households, 52.3 per cent of the households had bought milk in the year that had just passed, 87.9 per cent bought meat, 95.0 per cent bought fish and 74.0 per cent bought eggs. Female-headed households reported lower proportions. Only 34.2 per cent bought milk, 65.0 per cent bought meat, 93.3 per cent bought fish and 65.0 per cent bought eggs. It appears therefore, that fish was the most accessible source of protein for the majority of female-headed households.

Table 59: Animal products purchased

Gender of household Head	RDP	Milk	meat	Fish	Eggs
Male	Ntchisi (n = 82)	39.8	93.9	91.5	63.4
	Thiwi-Lifidzi (n = 64)	54.7	93.8	100	90.6
	Bwanje Valley (n = 75)	52.0	77.3	92.0	58.7
	Shire Highlands (n = 60)	68.3	86.7	98.3	90.0
	Total (n = 281)	52.3	87.9	95.0	74.0
Female	Ntchisi (n = 18)	27.8	66.7	83.3	33.3
	Thiwi-Lifidzi (n = 35)	40.0	74.3	97.1	74.3
	Bwanje Valley (n = 24)	29.7	37.5	83.3	45.8
	Shire Highlands (n = 43)	34.9	72.1	100	83.7
	Total (n = 120)	34.2	65.0	93.3	65.0

4.0 Discussion Summary of results

The results from this study show that household headship and farm management were often borne by the same individual in the household and these were mostly older individuals. Most household heads either had no education or did only up to lower primary (standard 1-5) and close to a third of female-headed households had no education at all. This has implications on the uptake of extension information and advice. Female-headed households had slightly fewer household members and members that could provide labour than their male counterparts. They also had a higher dependency ratio. This meant that they had more mouths to feed and less labour to provide the food.

In terms of labour distribution in most farming activities, the results show that in more than 50 per cent of the activities, men and women participated equally in male-headed households. Otherwise, with the exception of a few activities in female-headed households most activities were mainly done by women. Hiring labour was practised by only a third of the households and in-depth interviews point to the high cost of hiring labour as one of the reasons for a drop in the practice. Hence, only for those tasks that were labour-demanding did people who were able, hire the labour for and these were mostly male-headed households. Related to the issue of hiring labour was the incidence of exchange labour. This practice is more or less non-existent in all the 4 RDPs. Whiteside (2000) and Bryceson (2006) writing about causal labour in Malawi also note that the practice of exchanging labour of neighbours or relatives was no longer common in the country.

Land is a major asset for an agricultural community and our results show that female-headed households have much less land compared their male counterparts and this is regardless of which RDP one looks at. The majority of the households indicated that they had full control of the land that they owned but did not have title to the land. Over the years though and since 2008, a third of the sample indicated that their land size had decreased and this was mainly through subdivision to give to other members of the household. For people that wanted to put more land under cultivation, the most predominant avenue was to rent or borrow land. Clearing virgin land was an option but as most in-depth interviews showed, the sizes of such land were tiny and not viable. Ownership of other assets and livestock was a privilege of male-headed households as few female-headed households owned any of them. This seems to be a common occurrence in this part of Africa. Horrell and Krishnan (2007) studying the link between poverty and productivity in Zimbabwe also found that female-headed households were more likely to be asset poor than their male-headed households.

Much as almost all female-headed households owned land, there was no guarantee that they would produce as much as their male counterparts simply because they did not know other needed assets to enhance production. As Bhaumik et.al (2013) and Jackson (2003) assert, women that own assets in a form of inputs for production mainly land, need access to complementary resources such as labour, and capital to translate their ownership into income-generating output. Ownership of land in itself is not a magic bullet for production. But as Joireman (2008) puts it, women find it difficult to access some of these complementary resources as this study has just shown.

The study revealed that maize and vegetables are the most predominant crops that people grew. Earlier studies in Malawi (Andersson, 2011 quoting Dorward and Chirwa) show that the ratio of maize growers in the country's four regions varied between 93 per cent and 99 per cent. This is consistent with the findings of this study as 99.1 per cent of male-headed and 99.2 per cent female-headed households grew the crop. Rice, on the other hand, was only grown in one RDP and sorghum was hardly grown at all. As Djurfeldt (2013) shows, patterns of production and growth are really based on the geographical location

of the households. Rice could only be grown in one RDP because that is where conditions were right for the production of this crop. What is striking about other food crops though is that these are grown everywhere and in all the RDPs more female-headed households grew crops that were used as relish or used with relish as condiments while male-headed households grew crops that could be sold. This indicates that for female-headed households, consumption was given more priority than cash generation.

Most households grew maize over one season but intercropped with other crops basically to fully utilize the small land holdings and also to take advantage of some of the extension messages. The majority of the people grew either hybrid or local maize and very few grew the improved varieties. Data from in-depth interviews indicated that this was the case because improved varieties are labour and input demanding and difficult to store after harvest. Production has increased over the years but some households are still food insecure. This is in line with what is happening in the region as a whole. As Andersson (2011) shows, maize production had over the past four decades been growing in real terms but this growth has failed to keep pace with the population growth, a fact that has led to some commentators advocating for the idea of feeding the African population through increased imports of maize. Female-headed households in our sample are thus worse off and over the years they consistently produced about half of their male-headed counterparts. Holden and Lunduka (2013) in a study on who benefited from Malawi's targeted input subsidy programme also note that female-headed households were more likely to be net buyers and produced significantly smaller amounts of maize than male-headed households. This has serious implications for poverty alleviation since, as we have seen earlier, these are also households that have a high dependency ratio, have smaller land holdings and experience shortage of labour. At the same time they cannot hire labour. Whiteside (2000) points to the fact that a disproportionate number of female-headed households in Malawi can be described as poor or very poor. He also argues that micro-level studies have shown that female-headed households are particularly labour constrained, a fact that makes it difficult for them to take advantage of off-farm employment.

Some of the maize that is grown is sold, and most of it, to traders from the village and brief case traders (vendors) from outside the village being the main buyers. Results show that the price of maize has over the years gotten better but only 40 per cent of the sample indicated that the volume of maize that they sold had increased. This could probably be because the volume produced had also decreased as a result of the decrease in land sizes. Female-headed households across the four RDPs put in more of their produce into home consumption than male-headed households. Fewer female-headed than male-headed households though save money for future needs.

Use of artificial fertiliser was common but higher among male-headed households than among female-headed households. The explanation among female-headed households was that they could not afford it. Some indicated that their soil was fertile and did not need any fertiliser. Almost half of the respondents though indicated that the amount of fertiliser that they used had decreased since 2008 largely due to the rising cost. Doss (2005) studying the effects of intra-household property ownership on expenditure patterns in Ghana, concluded that technology adoption decisions depended primarily on access to resources, rather than on gender per se. Adoption of technology thus depends a lot on the resources available to the household and, as this study has revealed, female-headed households are resource constrained.

Andersson (2011) argues that many recent studies focus on livelihoods that operate along a rural-urban continuum. Much as this study points in this direction, it reveals that there is a lot of rural-rural transfers and these are mainly among relations in the same districts. This study has also revealed that there is very

little institutional support to farmers as most of them do not have access to extension services whether from government or non-governmental organisations. Access to credit was also problematic, and female-headed households are more at a disadvantage than their male counterparts.

5.0 Conclusion

In conclusion, it is clear that some significant changes have taken place in the study areas. Farm sizes have either shrunk or remained the same. In many cases, the farmers have been splitting the already small farms and this affects the productive resources available for earning income. But access to land alone by female headed households appears not to be a major determining factor for increasing their income levels. One would have to look at issues of education, institutional support, marketing, assets and opportunities for credit and gaining access to more land. As Djurfeldt et. al (2013) argue, equity as well as efficiency based considerations point to the fact that resource inequalities between men and women farmers need to be addressed as key components of pro-poor agricultural growth. The remoteness of the sampled villages from reliable road infrastructure and market centres also affects the opportunities available to the farmers. During harvest season, most villages are flooded with urban-based vendors who come to buy farm gate produce and sometimes do so through unscrupulous means.

Furthermore, a number of authors (Carr, 2008; Ross, 2001 and Ross and Morris (2001) argue that Malawian producers, regardless of gender, cannot be lumped together and hope to model their behaviours, land uses and crop choices in such a way as to get meaningful information. This is simply because men and women play different roles within particular systems of agricultural production and much is dependent on a whole set of other factors besides gender. Carr (ibid) further argues that by virtue of farming different crops or farming different crops for different reasons as we have seen in our case between male-headed and female-headed households, men and women experience different vulnerabilities to such things as climate change and shifts in global markets for crops under production, shifts that can filter down through households and other social units to impact the long-term well-being of affected communities and individuals.

6.0 References

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