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**Constraints to Smallholder Participation in Cassava Value
Chain Development in Zambia**

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1 Introduction and overview

Cassava is a staple food in Zambia second only in importance to maize. An estimated thirty percent of Zambians - about 4 million people - consume cassava as part of their staple diet. The majority of these cassava consumers live in the northern part of the country covering Northern, Luapula, Northwestern and Western Provinces and parts of the Copperbelt which are also the main growing and consuming areas of the crop, and have been so since the introduction of cassava to Africa by the early Portuguese travellers and colonists. Production is almost entirely by smallholder farmers whose average cultivated area is less than one hectare. Increasingly, however, production and consumption of cassava is taking place in the southern half of the country where the Zambian Government and NGOs have promoted cassava in response to recurrent cycles of drought which have led to failure of maize, the main staple crop in the region. Demand for cassava for both human and industrial consumption has also grown in the urban and industrial centres of Lusaka and Copperbelt provinces. Cassava production has steadily increased from 139,000 Mt in 1965 to 1,160,853 in 2007/8.

The Government of Zambia (GoZ) have been involved with research on varietal improvement, and NGOs have been instrumental in seed multiplication and distribution: PAM, World Vision, Care, Plan International, FAO, WFP, and DFID. Dissemination of improved varieties (IVs) has been undertaken in traditional areas where there has been varietal switching, and to the non-cassava drought-prone southern and eastern areas. Other interventions to promote cassava production that have taken place are capacity building in small-scale processing of cassava into flour and chips and for sale to the milling industry and some food and livestock feed firms.

Some farmers have adopted the IVs and some have not, whilst still others have reverted from IVs to traditional varieties (TVs). IVs are better adapted to respond to value chain opportunities as they are early maturing and high yielding. TVs on the other hand are low yielding and late maturing but offer the advantage of longer underground storability. There is currently limited knowledge of who is growing the improved varieties and little understanding of the reasoning behind farmers' choices.

This report concerns research in Chongwe District, Lusaka Province to explore these issues and create new knowledge about the propensity of Zambian smallholder farmers to engage in the development of the cassava sector. While household responses to production interventions and incentives will vary with household circumstances, public sector interventions and private sector initiatives have to take into account the marked regional differentiation of both production and utilisation/consumption. The levels of human and natural assets for cassava production are favourable in the north and west, but remoteness from major markets imposes information and infrastructure requirements. Elsewhere, while available data are limited, the development of new production capacity to meet potential demand will require investment in human capacity building: multiplication and distribution of planting materials, agricultural extension and capacity building.

The results of this exploratory work suggest that non-growers of cassava resembled growers in the socio-economic fundamentals of household structure, gender, and assets such as provision of electricity, potable water, irrigation and access to credit. It is likely that unobservable characteristics such as personal attitudes and aptitudes of rural people, rather than more measurable socio-

economic asset thresholds, will influence household propensity to adopt cassava production for commercial purposes. An hypothesis that emerged is that non-growers were integrated to a greater degree – either by choice or compulsion – in the cash economy, for example a lower level of maize self-sufficiency, having greater reliance on employment and having more outstanding credit – and participate to a lesser degree in community and agricultural marketing organisations. A potential predisposition against farming among some rural households is possible, therefore, and emphasises that the expected supply response to interventions and initiatives is likely to be heterogeneous. It is the targeting of interventions that is likely to influence the outcomes of development initiatives in the cassava sector.

Inferences that can be reliably drawn are that significant investment is needed in capacity building among producers in order to respond to favourable market signals. Basic extension services are needed to address the lack of planting materials of the appropriate varieties, and the limited skills in new production processing practices. Supporting investments through innovative financial mechanisms are needed for new technologies and services for a large expansion of farm scale to meet projected demand. Concentration of supply through local bulking is essential to reduce transaction and transport costs faced by buyers and external logistics players. Local producer group organisation is one effective means which will also require development and extension of appropriate organisational models, as well as investment in group organisation and management skills. Local group organisation is a common phenomenon, but once again there are real challenges in creating an efficient and sustainable collective enterprise sector. However, strengthening existing community groups is considered preferable to forming new groups with external or even public sector support. Fundamental supply chain management practices are almost entirely absent and new business models will be necessary for efficient and effective large scale cassava production and distribution. Private sector leadership in respect of sector development is probably necessary, and the involvement of smaller private sector players such as rural traders and transporters may prove to be vital supply chain links.

1.1 A brief literature review

Among the arable possibilities, cassava has considerable potential in Zambia as a crop for diversifying farm production, increasing rural food security at the producer household level, as an input into the processed food markets for human consumption, and as an input for domestic industrial development and export markets. Cassava sector development is consistent with the report of a recent study by the World Bank on the prospects for commercial agriculture in certain regions of Africa:

'Zambia ... has considerable agricultural potential, but this potential remains largely unexploited... Of the land considered arable, nearly 420,000 square kilometers are classified as having medium-to-high potential for agriculture, but only about 15 percent of the medium-to-high-potential arable land is currently being utilized... The population density in most of the productive regions is still very low, ranging from 1 to 11 people per square kilometer. Rainfall ranges between 800 and 1,400 millimeters annually, increasing from south to north. The northern regions receive ample rainfall and are quite sparsely populated. The southern regions are much dryer and suffer from frequent drought... On the plateaus around Lusaka, Livingstone, Kabwe, and Chipata, soils are generally fertile, and rainfall is sufficient to support production of a wide range of crops. Further north, the soils are

naturally less productive, but their lack of fertility could be overcome with small investments in fertilizer and lime.’

Source: World Bank (World Bank 2009: 51-2).

Cassava has been growing in importance in Zambia since the era of market liberalisation in the 1990s when support for maize was reduced, as part of a trend towards agricultural diversification (Govere, J., Chapoto, A. and Jayne, T.S. 2010). The evidence from the literature (Chitundu, M., Droppelmann, K. and Haggblade, S. 2009) and recent small scale research such as the study conducted by Cadoni (2010) has shown that cassava production using traditional, and increasingly improved varieties, currently contributes significantly to food security in the northern and western cassava belt (Luapula, Northern and Western Provinces). Following sustained interest by GoZ, donors and NGOs in the development and dissemination of IVs, there is evidence that cassava is increasingly appreciated within the non-traditional cassava-growing southern and eastern maize belt for its drought tolerance and contribution to food security (Poole, N.D., Chitundu, M., Msoni, R. and Tembo, I. 2010).

1.2 Cassava sector strategy

In the recent past various studies have been undertaken on the cassava value chain. The main studies were commissioned by the Zambian National Task Force on Acceleration of Cassava Utilization (ACU) and the Food and Agriculture Organization. These studies identified five alternative supply channels in Zambia’s Cassava Value Chain as follows:

1. Subsistence production - accounts for 85% of all cassava production in the country;
2. Fresh cassava for human consumption - involves farm households selling fresh surplus in nearby markets. It accounts for no more than 5% of total production, due to the speed of deterioration of cassava roots;
3. Processed cassava for human consumption - nshima, the Zambian staple, composite flour, bread and biscuits, composite fritters, gari;
4. Livestock feed - in trials during 2006, results suggested that cassava-based rations produced weight gains equivalent to maize-based feeds and would prove commercially viable so long as cassava chips could be procured at the mill gate at 60% of the price of maize;
5. Industrial uses - paper and wood industry in Lusaka and Copperbelt Provinces – and in export markets - which exploit the binding properties of cassava flour and starch.

These studies also identified the inherent constraints of the cassava value chain that limited the full realization of its immense potential. These included disaggregated and fragmented producers, poor transport and market infrastructure, an unsupportive policy framework, irregular supply, inconsistent quality, high cyanide levels in poorly processed cassava, discoloration, high transaction costs and uncompetitive pricing.

With the support of external organisations such as ITC and FAO, the local cassava sector stakeholders formed a sector strategy group under the auspices of the ACU comprising producers, processors and manufacturers, finance agents and a range of public sector bodies, donors and NGOs. This approximates to the partnership type of a ‘deliberative forum’ for linking stakeholders (Poulton, C. 2009). The process of consultation bears some similarity also to participatory market chain assessment method pioneered by the International Potato Center CIP (Centro Internacional de la Papa, Lima, Peru) in the Andes and Uganda (Bernet, T., Thiele, G. and Zschocke, T. 2006; Devaux, A., Horton, D., Velasco, C., Thiele, G., López, G., Bernet, T., Reinoso, I. and Ordinola, M. 2009). GoZ,

especially the Ministry of Agriculture and Cooperatives (MACO), have demonstrated significant political commitment, and realisation of the objectives will be enhanced by private sector leadership. Moving towards implementation of the strategy, there are challenges for both continuity and adequate participation and subsector representation: grassroots involvement from producers and small-scale traders is critical to enhance knowledge of and communication within supply systems; and the creation of awareness of business opportunities within the banking and legal sectors, with the formulation of innovative financial and organisational arrangements will increase the rate and scale of sector growth.

As the process of strategy formulation continues, stakeholders need to incorporate into their thinking the diverse challenges and uncertainties concerning the realisation of the potential of the sector, among which are the following questions:

- What is the smallholder farmers' propensity to grow cassava to enhance food security and to supply agroindustrial demand?
- What are the mechanisms for articulating effective demand from consumers and industrial users through the supply chain to producers?
- How can enhanced supply chain linkages be financed and leveraged by policy makers?
- What incentive and governance structures can be put in place to facilitate new commercial initiatives and public interventions?
- What are the additional data requirements for accurate policy formulation to boost the sector?

1.3 Smallholder capacity and participation

In general, it can be asserted that, *ceteris paribus*, farmers are likely to adapt patterns of production in accordance with new opportunities. Govereh *et al.* (2010) have argued that the adoption of cassava as a food crop by smallholders outside the traditional areas was favoured or promoted by policy changes affecting the maize market: a reduction in support reduced the attractiveness of maize vis-à-vis alternative production systems, resulting in a process of agricultural diversification that included increased cassava production. The concurrent promotion of the sector through research, development and dissemination of IVs was timely and the effects of these sector programmes are being felt in regions beyond the cassava belt. Further growth in cassava production can be expected. The strategy envisages a massive supply response from a host of small scale producers who grow small quantities primarily for on-farm consumption, with demand signals and product marketing transmitted through a traditional market system which manifests almost no characteristics of modern supply chain management.

Nevertheless, smallholder participation in the cassava value chain will depend not only on the market and policy incentives which they face but also the specific constraints internal and external to the individual household or productive unit. The attractiveness of the incentives is a function both of policy and organisations, and of the institutional and donor environments. The entrepreneurial predisposition of Zambian smallholders is not in question, but the effective capacity to respond to opportunities and initiatives depends, *inter alia*, on human assets and attitudes.

While growing conditions for expanding cassava output in the northern and western regions to meet industrial demand are satisfied, high transport costs to sites of industrial transformation must be addressed. This requires upgrading of roads and competitive transport systems. Moreover, in production areas, concentration of supplies, efficient contracting and quality control through group

marketing is necessary for reducing transaction costs of buyers and increasing the competitiveness of cassava. Similarly, investment in local processing units and the necessary power and water supplies, which could be small scale community or group-based enterprises, will create employment.

1.4 This research

In January 2010 FAO commissioned from SOAS, University of London a short field study of Zambian smallholder farmers' involvement in cassava production: (i) to contribute to an FAO programme seeking to develop an improved understanding of constraints to smallholder market participation and of the institutional innovations and policy interventions in support of greater participation; and (ii) to gain insights that might help to inform the cassava sector development strategy being supported through the EU-funded All ACP Agricultural Commodities Programme (AAACP). Specifically, the TOR were to undertake a case study assessment of the extent to, and mechanisms through which, smallholder participation in the development of the cassava value chain in Zambia can be assured. Using livelihoods concepts, *inter alia*, the smallholder production patterns and recent interventions by the state and by NGOs and initiatives by the private sector were assessed.

The Zambian NGO Programme Against Malnutrition (PAM) was contracted to collect primary data according to a methodology agreed between SOAS, FAO and PAM. FAO contributed \$8000, and a further \$2000 was set apart from SOAS funds received under the Letter of Agreement between FAO and SOAS to support the AAACP. Fieldwork was undertaken between February and April 2010. Initial data analysis was conducted by PAM in Lusaka, and then by SOAS in London. Results were discussed at meetings between SOAS and PAM in Lusaka in mid-May 2010. A presentation was made at the FAO-sponsored workshop on institutional innovations and policy interventions in support of smallholder market participation in early June 2010. This report synthesises key lessons from the interim reports by PAM, analysis by SOAS, discussions in Lusaka and the presentation and discussions in Rome (Poole, N.D. *et al.* 2010).

2 Methodology

2.1 Framework

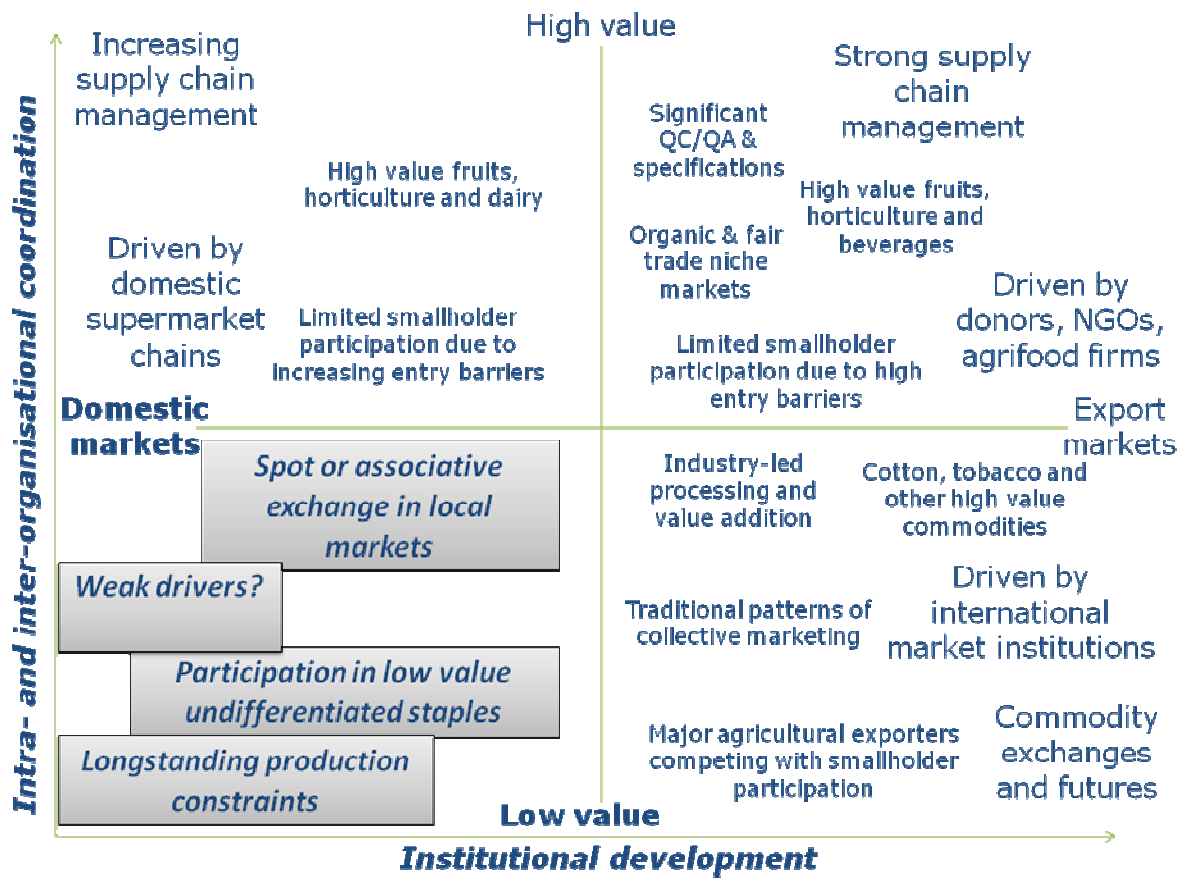
Underlying this research is a threshold approach to livelihoods assets, and the value chain relationships between smallholder farmers and the product, market and institutional environments. Poole and de Frece (2010) suggested a simple typology of two types of internal initiatives and/or external interventions, and institutional and organisational innovations in commercial agricultural markets in sub-Saharan Africa. Broadly speaking, these innovations are aimed at redressing the management and organisational weaknesses that impair commercial performance and reducing the transaction costs that cause weak or missing markets. This framework may be employed to diagnose or predict smallholder participation in different types of markets – such as cassava in Zambia. Apart from the smallholder growers and their market organisation itself, important dimensions in developing an agricultural economy are the external market and institutional environment, the product and market types in respect of technoeconomic characteristics and the potential for poverty reduction. These characteristics can be mapped, onto the dimensions of institutions and organisations presented in Figure 1. As Poole and de Frece (2010: 96) state:

‘There is a relationship between the product and market type, and the form of market organisation and contractual relationships... Markets in the bottom left quadrant, arguably most important for wider poverty reduction, have enjoyed little attention: these are staple

foods... with little value addition entering traditional rural market systems. These sectors have the potential to boost the availability of local food supplies... [with] a multiplying effect within the local economy as increased production leads to demands for labour, and marketable surpluses require transport, storage and processing services.'

Cassava in Zambia falls neatly into the bottom left quadrant. Together with the external development interventions and initiatives, the assets of smallholders will influence the extent to which farmers individually and collectively can overcome the weaknesses and barriers characterising production and commercialisation.

Figure 1 *Interventions, institutions, products and market types*



Source: adapted from Poole *et al.* (2010).

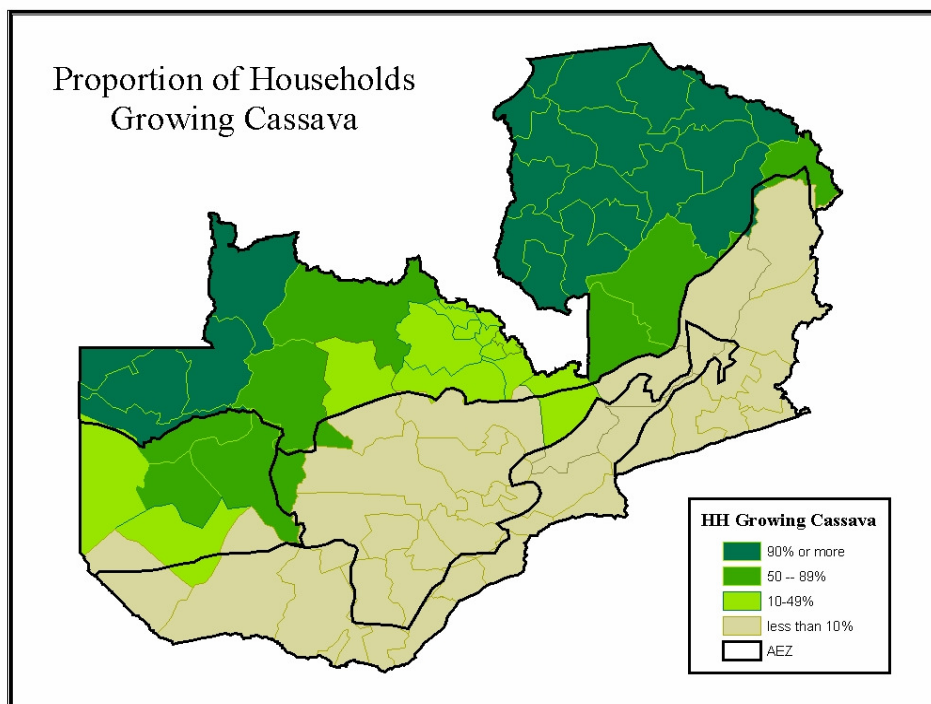
2.2 Data collection

Data collection included administration of questionnaires to farmers, three focus groups among producers and processors, and seven key informant interviews. Questionnaire data were entered into Excel and subsequently converted to SPSS, and analysis was conducted using both Excel and SPSS. Interview notes were taken during the focus groups and key informant interviews and recorded and summarised on paper.

Chongwe District, which is located 50 - 60 km east of Lusaka, the capital and main commercial city of Zambia, was selected as the main area for the study. Although the area lies within the non-traditional cassava-growing belt (less than 10% of farmers growing cassava) it has experienced an upsurge in the growing, processing and marketing of cassava. It has been targeted with cassava

value chain development interventions by Government, NGOs and other donors which have included distribution of IV planting materials,, installation of cassava processing plants, training of growers and processors and establishment of market linkages for both producers and processors. Four sites within Chongwe were strategically selected to capture data from diverse categories of farmers.

Figure 2 *Cassava production in Zambia*



A stratified random sampling procedure was used to identify a total of 116 smallholder farmers as shown in Table 1. Four enumerators from among local MACO Area Agricultural Officers who were knowledgeable of the region and the farmers applied questionnaires to randomly selected growers from their four Areas to meet the stratification requirements. Qualitative data were collected through focus group discussions conducted by PAM staff, and further background information was obtained through formal meetings with members of the strategy group and local FAO staff. The key informant interviews were conducted with the owner of a food processing firm (Authentic Foods), five public sector officials and two 'key' growers.

Table 1 *Smallholder sample*

Type of respondent	N
Growing and commercialising improved cassava varieties	40
Growing but not commercialising improved cassava varieties	26
Growing only traditional cassava varieties	22
Non-growers (including ex-growers) of cassava	28

2.3 Data collection tools

The questionnaires to each respondent type were similar (Annex 1), covering six themes:

- household data
- cassava production
- utilisation
- form of interventions received
- livelihood benefits in terms of assets
- attribution of effects

Focus group discussions and key informant interviews covered the following questions:

- What kinds of households in the region grow cassava?
- How do external intervening organisations operate?
- What impacts do they have?

3 Results

3.1 Respondents

Table 2 summarises key household information.

Table 2 *Summary household characteristics*

	N	Min	Mean	Max	SD
Children < 15 yr	111	0	3.4	8	1.8
Total dependants	115	0	5.7	15	2.9
Farm size (limas) ¹	113	0.5	7.0	25	4.6
Maize area (limas)	116	0	4.5	16	3.3
Cassava area (limas)	11	0	1.4	22	2.6

No significant relationships were found between growers/non-growers concerning fundamental social structures and services (household structure and the number of dependants, gender, electricity, running potable water, irrigation, access to credit). It was noted that in Chongwe District there is little provision of physical and financial services to any smallholder households.

¹ 1 lima = 0.25 ha

It was noted that although farm sizes were small, access to land is not a constraint and farmers wishing to expand landholdings could apply to local authorities. Farm size was inversely related to proximity to the road.

3.2 Agricultural system

Regarding agricultural production, *manyokola* was the dominant cassava variety, the first choice of over 50% of growers. Among cassava growers, the attributes of improved varieties were more highly appreciated than those of the traditional varieties. In addition to maize and cassava, most growers cultivated groundnuts (78%) and sweet potato (57%), with soya, sorghum, sunflower, vegetables and beans as other crops in a mixed system. 69% of respondents claimed to have income sources in addition to that derived from livestock sales and labouring. Most commonly, this was the sale of agricultural produce (24% of the total), and the rest was a variety of salaried and occasional/casual employments, local self-employment, and remittances (4% only).

3.3 Cassava production

Uptake of cassava production by respondents was low through most of the 1990s and then received a boost in 1997. The acceleration of production received another large boost in 2007 and 2008. Of the 88 cassava growers, 65% of the sample, said that over a period of the last three years they had increased the area of cassava grown (from an increase of 0.3 limas to a maximum increase of 14 limas, with 9% unsure) and 21% said that they had decreased the area grown, by a range of 0.1 to 2.75 limas). For 18% of growers there had been no change in area. One respondent, whose farm size was 25 limas, had expanded the cassava area by 14 limas. The socioeconomic data for this grower were unremarkable except that he owned a hammer mill and had been growing cassava since 1998.

3.4 Household heterogeneity

Differences between household groups were identified by cross-tabulation and chi² tests in respect of farm scale, commercial orientation and level of organisation:

Compared with other growers, grower/sellers of IVs:

- cultivated larger areas of cassava (p<0.01)
- lived further from the road (but NS)
- received less income from labour (p<0.05)

Growers and grower/sellers of IVs were more likely than growers of TVs to be members of

- community organisations (p<0.01)
- marketing organisations (p<0.001)

There was evidence that non-growers (including ex-growers) of cassava were different from growers.

Compared to all cassava growers, non-growers were characterised by:

- smaller houses (p<0.01) and poorer roofing (p<0.05)
- smaller farms (p<0.001) and smaller area of maize (p<0.05)

- lower maize self-sufficiency ($p < 0.05$)
- more income from labour ($p < 0.01$)
- lower likelihood of belonging to community ($p < 0.05$) and marketing organisations ($p < 0.01$)
- higher levels of indebtedness ($p < 0.05$)
- living closer to road (but NS)

3.5 Benefits, constraints and risks of cassava production and marketing

There was consensus regarding the benefits and constraints of adoption of IVs. There was a high rating of the following 'consumption' benefits of IVs:

- fast growing
- good flavour
- high market demand
- good prices
- food security
- income supplement

Cultivating IVs made very limited contribution to longer term benefits or investments in assets. From the questionnaires, it was evident that some small increased expenditure was made in respect of investment in 'goats', and purchase of school uniforms, but more evidence was derived from the focus groups about persistent economic benefits.

Regarding constraints to IV cultivation (on a scale of 0-3 where 0=no problem to 3=severe problem):

- Availability of planting materials was most serious but only a slight to moderate problem (1.74)
- The following were only a slight problem: processing, marketing, infrastructure, information (0.99-1.52)

There was conflicting evidence (from men v. women) that labour is a constraint to production. There was also evidence from focus groups of competition between cassava production and keeping of livestock. Indeed, losses of crops to livestock were a reason cited by ex-growers for ceasing production, as was disease: evidently cassava mosaic virus, to which the prevailing variety, *manyokola*, is not resistant. Overall, the principal benefit of cassava was enhanced food security rather than improved commercialisation, and consumption rather than investment. According to the focus group of members of the Kanakantapa Women Cassava Processors (KWCP): '*... benefits will be sustained as cassava is multipurpose, drought tolerant and has low input requirements*'.

Risks faced by growers were considered to be small and are summarised as follows in Table 3:

Table 3 Overall benefits and risks from growing cassava

0=not at all important, 3=very important	Mean	SD
Increased food security	2.60	0.778
Increased income	1.23	1.216
More stable income	1.01	1.125
Increased exposure to weather and production risks	0.62	1.005
Increased exposure to crop damage	0.59	0.856
Increased exposure to market risks	0.40	0.701

3.6 Interventions and support

The level of outside support in Chongwe District reported by growers was limited. MACO was considered to be the principal player (but account must be taken of the fact that enumerators were MACO staff), followed by NGOs PAM and FoDiS (JICA), and a handful of other NGOs. Means of support were:

- farm visits, group training, nucleus farmers, wider media, technical demonstrations and visits, distribution of planting materials (20-38%)
- commercial outgrower schemes (9%)

For all respondents, the percentage who had received training in cassava production and related activities was low, particularly in respect of processing and quality control (Table 4):

Table 4 Training

Respondents who received training in:	%
producing cassava	30.2
processing cassava	19.8
marketing and business	31.0
group organisation	31.0
quality control	12.1

Various interventions were cited by farmers (Table 5). Visits by private sector agents were almost negligible with only 1 mention of the processor *Authentic Foods*. A total of 26% of growers said that they were aware of cassava initiatives in which they had not participated. Only 4 respondents commented that non-participation was due to lack of interest, and only one to lack of time. Where interventions were targeted at women, some men commented that they had been excluded.

Table 5 *Types of intervention received*

Intervention type	#	%
Individual on-farm visits by MACO extension agents	64	55
Group training	44	38
Contacts through nucleus farmers	29	25
Dissemination of information by radio	23	20
Dissemination of information by printed leaflets and posters	22	19
Distribution of new planting materials	21	18
Visits to demonstration plots	19	16
Grants/credit	18	15
Commercial outgrower schemes	10	9
Visits by private sector agents	4	3
Planting materials from community nurseries	3	3

3.7 Attribution

A form of ‘weak’ attribution was tested by asking respondents the extent to which they considered that livelihood changes were attributable to engagement in the cassava sector. Positive effects were exploitation of new income sources, and higher product prices from IVs. Negative effects were exposure to weather extremes (although less acute than for maize), higher costs and other shocks, such as livestock damage. Apart from weather effects, these adverse effects were at most only *slightly important*.

Other sources of positive changes in livelihoods were considered to be unimportant overall, although there was higher variation among respondents about the part played by new income sources and market conditions for inputs and products. In addition to those causes listed below, good health and food security were cited by 7 respondents (6%) as the only other change factor affecting livelihoods. In ranking these sources of positive change, ‘new income sources’ were important for 70% and higher market prices were important for 78% of grower/suppliers (Table 6).

Table 6 *Causes of positive changes in livelihoods over the past three years*
(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

	N	Mean	Std. Deviation
New income sources	116	1.32	1.206
Low cost of purchased goods and inputs	110	0.94	1.127
Higher market prices	110	1.21	1.197
Government support	116	0.70	0.857
NGO support	116	0.51	0.928
Fewer dependants	115	0.68	0.978

Sources of negative changes in livelihoods were considered to be unimportant overall, with the weather effects and purchase prices being of only slight importance. However, there was considerable variation among respondents about the scale of the negative impact of weather effects and market conditions which, unlike household-related factors, are of a generic character.

Table 7 *Causes of negative changes in livelihoods over the past three years*
(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

	N	Mean	Std. Deviation
Bad weather effects on agricultural production	115	1.32	1.181
Incidence of family ill-health/disease/accidents/deaths	113	0.65	0.853
Increased number of children or other dependants	113	0.65	0.972
Higher costs of purchased goods and inputs	115	1.16	1.322
Lower market prices	112	0.81	1.167

NGO support was an unimportant change factor for a large percentage of all farmer types:

- grower/suppliers of IVs – 67%
- growers of IVs – 65%
- growers of TVs – 73%

4 Conclusions

In the first instance, it is worth reiterating that generalisable and statistically significant conclusions cannot be derived from such 'short and sweet' research exercises. No claim is made for national

representativeness. More data are needed to understand the farming reality in Lusaka Province and other regions of Zambia. However, the results do give valid insights into how some people at least behave at the moment, and they also suggest what wider challenges - such as seed distribution, scaling up production, local organisation - need to be addressed.

One of the findings which is consistent with other research and the general state of awareness of smallholder farming in Zambia, is that production of cassava is small scale and mostly orientated towards home consumption. While there are small economic benefits within the sample of growers from entry into commercial markets, the principal benefits are improved food security. This is especially associated with the adoption of IVs. In the case of Chongwe, NGO support and proximity to commercial outlets in Lusaka have not yet created a significant scale of commercial enterprise.

The importance of this finding is the inference to be drawn, that a shift towards a stronger market orientation among producers will involve a major change of attitude and practice. Changing production patterns would not be a new phenomenon, but stimulating surplus production for the market probably will require major incentives and the provision of complementary services: technical skills and inputs, managerial training, business and marketing skills, finance, plus logistics and communications technologies. With the current state of knowledge, it cannot be predicted with certainty what will be the most effective intervention mechanisms nor what outcomes will emerge from changing the set of opportunities and constraints.

Furthermore, predicting grower behaviour requires caution for two reasons: firstly the sample used here is small, and is unlikely to be representative; and secondly, even within this small sample, there is a distinctive heterogeneity among farmers. It is surprising to note that – perhaps counter-intuitively - this heterogeneity is not primarily associated with socioeconomic and demographic characteristics and the level and thresholds of livelihood assets such as physical, natural, social, human and financial capitals. Results suggest that the growers of improved varieties are like classical ‘early adopters’: more innovative and more dedicated to farming as an occupation. Non-growers, however, are not necessarily ‘laggards’ but demonstrate characteristics of rural people who are not necessarily committed to agriculture. For whatever reasons – and lack of labour is a contributory factor – they are more integrated into an urban type of economy of paid employment, more credit and loans, lower food (maize) self-sufficiency, lower level of involvement in community and marketing organisations. It is possible to infer that structural characteristics and barriers to entry seem to be relatively unimportant: assets and thresholds play a minor role compared to questions of individual attitudes and personal or family orientation. Further research is necessary to understand the phenomenon of rural heterogeneity before appropriate intervention targeting is possible.

Manyokola is susceptible to cassava mosaic virus. It is not one of the major IVs from the Zambian Root and Tuber Improvement Programme but originated in Malawi and has been disseminated from farmer to farmer and through food security and diversification projects by JICA. However it is popular because of its early maturity, low cyanide content and ease of consumption in fresh form. Access to planting materials of the right variety is a critical factor, and production and distribution of planting materials is a serious weakness in the existing system. This is accompanied, according to respondents, by a lack of know-how and technical capacity to grow and process cassava – something not generalisable, but which may be typical of the ‘maize belt’ in Zambia; and also by a lack of organisational skills.

One of the most significant weaknesses is the lack of linkages between farmers and markets. The study found no pattern of institutional linkages between the private processing industry and cassava promoting organisations and cassava growers. Varietal choice by growers is not based on a specific buyer's requirements. Firms are not only unwilling to invest in processing capacity, but also unwilling to invest in supply chain management practices that involve direct engagement with producers: the private processors are unwilling to provide planting materials and organise and train producers. One firm was the exception, Authentic Foods, which had business arrangements with the producer-processing group, the Kanakantapa Women Cassava Processors (see below). This finding is consistent with comments by key informants and also Cadoni's interviews among industry players in the north which showed a complete absence of contractual arrangements between suppliers and buyers (2010: 17). According to one respondent there are 'no institutional linkages between cassava promoting organisations and the processing industry' (Community Development Assistant, Rufunsa).

Key informants commented that firms want a clear commitment from producers to supply and deliver cassava to processing plants. Because of unfavourable prices (*vis-à-vis* maize which is supported by a minimum price and state procurement), the complexities of sourcing and the supply chain weaknesses, firms such as Tiger Animal Feeds and National Milling are as yet unwilling to adopt cassava in animal feedstuffs. Uptake by flour miller/manufacturers such as Chico Biscuits for human consumption is also limited by substitutability constraints and the current extent of the market for cassava-based manufactured food products. In short, there is no effective demand or price incentive to drive production increases.

A workable model for smallholder collective involvement in processing and marketing is the Kanakantapa Women Cassava Processors (KWCP).. KWCP is an interesting case that has evolved over time from a combination of grassroots initiatives and donor support (PAM and the Embassy of Japan). In its origins and innovative structure, internal organisation and constructive partnerships with donor organisations, KWCP exhibits the characteristics of a viable smallholder organisation. At the same time it faces the challenges of growth and development into maturity and sustainability. The group originated from the need to address poverty among women in Kanakantapa. Many clubs were operating independently but with time, the clubs thought of forming an Association so as to address poverty and food insecurity. This led to the formation of the Kanakantapa Area Women's Association which was used as an entry point by PAM to construct the cassava processing centre.

At the time of writing (June 2010) it has been one year since the women started operating. The group have over a hundred members and have now separated into two different entities: the Association, and Kanakantapa Women Cassava Processors which is a Cooperative Registered under the MACO. The Cooperative is managed by a group of trained and paid up members. Each member is required to pay K200000 to the Cooperative as shares and thus far 40 members have paid and the money has been used to procure and process cassava. They are a very committed group and have employed a watchman and hammer mill operators who are paid on a monthly basis. The constitution for the Cooperative is yet to be formalised and they have yet to open a bank account for the Cooperative. At the moment they are still using the Association Account. Capacity building is required for the group in terms of practical processing and financial management. The group needs to be assisted in record keeping, procurement and production procedures, planning, financial management and investment. They have used their own resources to invest in 3 additional portable dryers and at the time of writing they sell at least 200kg of cassava flour per week. Processing in the

rainy season is difficult due to cloudy weather but in the dry season they can sell as much as 400kg per week. Principal products are cassava flour, fermented cassava chips and flour, sometimes starch and livestock feed from cassava by-products (peel). Processing, packaging and marketing need to be strengthened. They have operated below capacity due to lack of start-up capital. In a small way they have managed to pay their bills and employees but they need further support for growth. Through increasing volumes and meeting the demands of the many traders who have thus far made enquiries, cassava processing may in time become a viable and sustainable collective venture.

5 Recommendations

The following recommendations are derived in part from the empirical research reported here, and also draw on other research and publications arising during the implementation of the EU-funded All ACP Agricultural Commodities Programme.

5.1 Intersectoral coordination

The French ‘interprofessional’ model can be adapted to assist in the formation of an industry ‘umbrella association’ to boost the efficiency of functions such as sharing of information, participatory problem diagnosis, making joint investments, ensuring contractual clarity between buyers and sellers and emplacing informal remedial mechanisms (Poole, N.D. and de Frece, A. 2010). The existing multistakeholder approach with strong support from the public sector is a sound platform on which to build sustainable policies and sector development activities. Effective smallholder representation in strategy development and implementation are necessary. Similarly, the role of small scale rural traders and transporters – excluded from this study – is likely to be a critical factor in linking farmers to both urban food and industrial/feed markets. Attention must be given also to the development and management of linkages from the major cassava sector stakeholders to policy makers and donors and other related and supporting sectors, for example transport, knowledge management and communications.

It is preferable to have leadership in sector development from within the private sector. Commitment by lead firms, hitherto reluctant promote, source and utilise cassava, will be necessary to convert potential demand into effective demand. Public sector action, of limited scope but of critical importance, is also needed. Among other inputs, two key issues are:

- the technical and financial case for increased utilisation needs to be made clearly and transparently to industrial and business leaders, and this can be effected through public sector-led research as a public good
- agricultural sector support policy innovation is also needed:
 - the support for support for maize should be scrutinised and possibly rebalanced to permit cassava to compete more effectively; and
 - the substitution of cassava in maize flour to a level of 10% would immediately increase demand, improve national food security, and in ‘good’ maize years allow a contribution to regional supplies.

5.2 Producer organisation

Zambia has a tradition of cooperative organisation that, like many Sub-Saharan African countries, the success of which is at best mixed. In general failures, in collective enterprise outnumber the

cases of viable and sustainable business organisations. Experience shows that there is no single success factor, model or process to create sustainable producer organisations: there is no 'one-size-fits-all'. Successful organisations may be new initiatives or be based on pre-existing organisations. They may be external or grassroots initiatives. To grow in scale and organisational complexity, external resources are usually required. The development path is often uneven, sometimes with failure and rebirth from the ashes of incompetence, corruption and bad luck: 'phoenix' organisations (Kachule, R., Poole, N.D. and Dorward, A. 2005; Donovan, J., Stoian, D. and Poole, N.D. 2008; Poole, N.D. and de Frece, A. 2010). External donors and support organisations need to recognise that growth to maturity is slow, and that accompaniment is necessary for years rather than months.

KWCP is at an early stage of development but is a model that PAM is willing to try to replicate, but one which is likely to need an external input sustained over some years. Donor funding can pass through an NGO working in a specific area for infrastructure development, technical training and organisational capacity building. KWCP shows that it is advantageous to work with a pre-existing organisation and make such organisations effective.

The alternative is to set up new community organisations. While this can be effective, there are also various consequences that might be negative. Setting up new organisations is likely to lead to duplication and confusion, wasted efforts, disempowerment of existing local initiatives, lack of community ownership of new initiatives, disillusionment, and conflict. New organisations also face problems of (self-)selection of new members that will tend to exclude certain groups. The question of targeting and (self-)selection (of members) introduces ethical questions that development policies do not usually tackle. For example, it was evident from interviews conducted in Chongwe that men felt excluded from the KWCP initiative. The ethical nature of such 'positive discrimination' needs to be examined, just as much as biases towards the 'not-so-poor'.

5.3 Enterprise development and monitoring

It is clear that the development of sustainable community or collective business organisations needs substantial support in terms of management skills and a range of business development services, of coordination among the agencies which provide complementary services and a commitment to a long-term process of learning by doing.

Two specific problems with producer organisations which give rise to inefficiency and collapse are weak management skills and corruption (Kachule, R. *et al.* 2005; Poole, N.D. and de Frece, A. 2010). On management skills, the literature notes that supporting services for collective enterprises generally are provided through diverse suppliers (NGOs, government, private sector) and recommends that the type and level of provision needs to be considered in relation to the stage of development of each organisation (Donovan, J. *et al.* 2008). On performance and corruption, an additional mechanism needs to be emplaced in order for organisations to be accountable to the membership and other stakeholders. In short, there needs to be an external auditing system. In theory the public sector could provide some oversight, but a solution other than through a government ministry such as MACO will be preferable. The audit function to prevent fraud and corruption in registered collective organisations could be contracted out to an 'ombudsman' or office independent of the ministry, probably in the private sector: maybe a body of accountants and business specialists, or an NGO. The advantage of a sectoral approach is learning by doing can be

shared that auditors can also be tasked to provide formative management input to improve efficiency.

An example in the UK of such an umbrella NGO to which very many major UK-based charities belong is the Charity Directors' Finance Group (CFDG):

'The Charity Finance Directors' Group is a membership organisation set up in 1987 with the aim to advance public education in and promote improved standards of management in charities. Our vision is a transparent and efficiently managed charity sector that engenders public confidence and trust. With this aim in sight, CFDG delivers services to its charity members and the sector at large which enable those with financial responsibility in the charity sector to develop and adopt best practice. Started initially by a group of finance directors of large charities who felt they would benefit from sharing information and cooperating in some areas, the organisation has grown to currently over 1,500 members and as of February 2009, CFDG's membership manages a total of over £14 billion of charity income... CFDG is active in the policy arena as well as in education and training and provides information and support for members and the wider charity sector on different levels.'

(<http://www.cfdg.org.uk/cfdg/cfdg.asp>)

An umbrella organisation to audit and improve the performance of organisations in the rural development arena could be publicly funded, and/or funded by major donors or international NGOs who are working towards viable producer organisations.

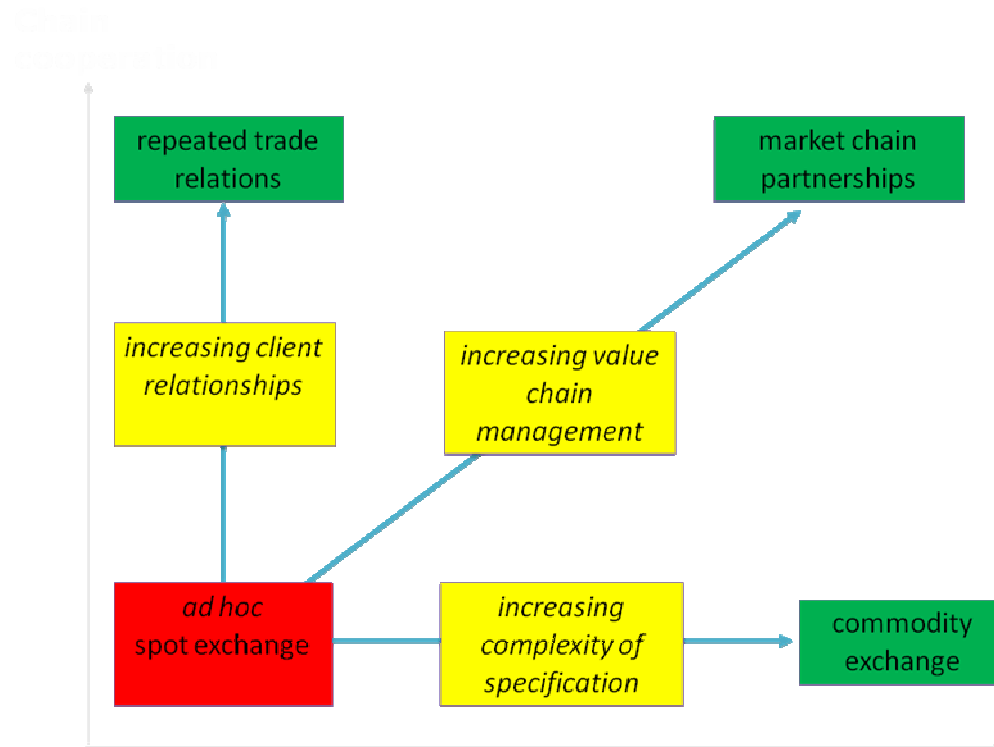
5.4 Producer-trader contractual linkages

Viable producer organisations alone are not sufficient: development of the value chain requires not only increased intra-firm performance but *inter alia*, supply chain linkages with downstream enterprises. That is to say, given increased cassava output, there also needs to be an increase in marketing capacity: bulking currently depends on small scale entrepreneurship, and transport facilities in respect of roads and carrying capacity are again limited; pricing and other quality information signals are rudimentary.

An important issue not tackled to date is the role of local traders and their potential to link producers and markets both economically and physically. The exchange function in linking markets and the transport and information functions are as yet poorly understood. Investment is needed along at least two dimensions (Figure 3) in order to create genuine business partnerships:

- improved client relationships between cassava sellers and buyers (who may be individuals, collective organisations and private 'corporate' enterprises) are necessary to build trust and reduce the significant transaction costs associated with spot trading
- improved specification of transactions to cope with more complex demand characteristics can be achieved by using standards for cassava varieties, protocols for cassava production and product processing, grading, standardisation and packaging of cassava products, quality control, price transparency, payment and delivery terms. The advantages in African markets of using standard form contracts to reduce transaction costs are as yet untested, but have potential to increase value addition (Poole, N.D., Seini, A.W. and Heh, V. 2003).

Figure 3 *Moving value chain management towards partnerships*



5.5 Planting materials

For the production of planting materials, two complementary approaches can be taken, building on previous policies for the extension of cassava production into new growing regions:

- MACO and local NGOs can work with local communities to identify sites and growers responsible for production; these would be local community nurseries. Limited human and financial resources are necessary for this modality
- In addition, planting materials can also be disseminated over a large scale by collection and/or by purchase (possibly using public funds) of planting materials from major growing areas by MACO and local NGOs. Delivery of materials requires private contractors funded out of public and/or donor funds, managed by NGOs.

Timing of collection and distribution of planting materials is critical, but previous experience of distribution projects in recent years can be drawn upon. Geographical coverage of distribution needs to be coordinated and managed, by participating NGOs in association with MACO.

5.6 Finance

Access to finance for investment in anything like processing, small or large scale, is minimal. Appropriate lending mechanisms to large private sector firms and to smaller-scale processors are a challenge when lenders consider the enterprise to be high risk and low potential reward. Innovative systems of financing need to be employed to channel development funds to lending organisations through competitive tendering. Firms and organisations within the sector can engage in competitive tendering for grants and loans for enterprise development maybe in partnership with supply chain stakeholders, as has been practised in recent years by UK DFID (Poulton, C. 2009). IFAD have

experience of competitive tendering for finance (Poole, N.D. and Penrose Buckley, C. 2006; Poole, N.D. and de Frece, A. 2010).

New funding mechanisms are also contingent on two other elements: adoption by producer organisations – like KWCP – of a business structure that exploits the potential of new generation cooperative organisation; and innovative means of leveraging private sector investment into collective (probably community-based) organisations (Poole, N.D. and Penrose Buckley, C. 2006; Poole, N.D. and de Frece, A. 2010). Group lending offers particularly good prospects for generating rural enterprises. Such an approach is a means of capitalising forms of collective enterprise for rural processing based on rural organisations such as KWCP which are most likely to be community-based, or founded around some other collective entity or ideal like local faith organisations. The development of farmer organisations will continue to depend on external players for investment, equity, management and technological inputs. What is necessary is a realistic timeframe. Achieving sustainability is a very long term process: if ‘economic sustainability’, or organisational maturity means ‘independence of outside agencies’, then considering the common trajectory of farmer collectives, such initiatives may take years or decades to reach maturity (Poole, N.D. and de Frece, A. 2010: 100).

The need for new forms of financial delivery and the lack of interest from the private sector so far, notwithstanding the public sector support for cassava, suggests that the conditions of market failure are present to justify carefully designed intervention and financial innovation. International agencies have supported initiatives undertaken so far (eg JICA, Italian Development Cooperation, UN agencies). In the small enterprise funding arena, Regional Micro, Small and Medium Enterprises (MSME) Investment Fund for Sub-Saharan Africa (REGMIFA) has been envisaged as a specialised investment fund established in Mauritius, promoted by a donor consortium composed of leading Donors/DFIs and IFIs and led by German Financial Cooperation (KfW), in order to meet long and medium term financial needs of local financial intermediaries providing funding to Micro, Small and Medium Enterprises in Sub-Saharan Africa. This operation aims to meet the objectives of the Cotonou Agreement for the eradication of poverty by supporting the improvement in the quality, availability and accessibility of financial services and the development of modern financial institutions and sustainable microfinance operations.

5.7 Further research

Household production

Much more needs to be understood about the smallholder cassava farming sector. The limitations of this research have already been acknowledged. It is known that significant differences exist between the traditional growing regions of Luapula, Western, Northern Provinces and the non-traditional growing regions eg around Lusaka in respect of a range of important factors:

- cassava production
- agricultural productivity
- markets, marketing and marketers
- knowledge, information, communications and logistics
- consumption patterns

Consideration should be given to exploring secondary data: it is assumed that there are national farm household survey data within Zambia that will enable researchers and stakeholders address some of our basic questions about smallholder potential. Given such baseline resources, primary data collection can be directed to other areas of Zambia to enable the generalisations and policy formulation at which this report can only hint:

- participation in the process of strategy development and implementation
- propensity of smallholders to respond to sectoral initiatives
- smallholder-level organisation to meet the demands of commercialisation
- possible financial mechanisms

Attitudinal issues, and what has come to be referred to as ‘unobservables’, which are not normally captured in socioeconomic research need further investigation, probably through qualitative approaches. Besides household socioeconomic data such as resources or livelihood assets and the external opportunity and constraint set, more knowledge is needed concerning personal attitudes, aptitudes and attributes which may be important in determining farmers’ responses to new incentives (Poole, N.D. 2000). Fundamentally, do farmers want to grow cassava? At whom should interventions be targeted?

At the same time, consideration needs to be given to the ethical issues associated with the targeting of interventions, which is normally justified by economic criteria rather than other moral criteria. This topic is very much under-researched.

Rural traders

Much more needs to be learnt about the role of small scale traders who are much maligned but also act as such important players in traditional African market systems. Small scale traders are likely to have an important role in the bulking and delivery of cassava to intermediary processors and manufacturers. Traders can also be channels of inputs, market and technical information and finance to producers, and can be influential in propagating and upholding standards and grading systems and product quality control.

Finance

The second area of action and participative research is to identify and implement new model financial delivery mechanisms: new knowledge and evidence is needed to design appropriate financing mechanisms, particularly for delivery of small-scale funds to grassroots organisations: micro-funding maybe up to \$10000 for infrastructure for an individual processing plant. Private sector business service firms (such as accountants) can be invited by national banks and international financial organisations to design and implement models of competitive tendering and challenge fund approaches for micro-enterprise development.

Similarly, private investors or ‘philanthrocapitalists’ can be invited to participate in micro-equity funds willing to invest in such enterprises. Substantial experience in Asia suggests that group lending offers particularly good prospects for generating rural enterprises. Such an approach is a means of capitalising forms of collective enterprise for rural processing based on rural organisations such as KWCP which are most likely to be community-based, or founded around some other collective entity or ideal like local faith organisations.

References

- Bernet, T., Thiele, G. and Zschocke, T., Eds. (2006). *Participatory Market Chain Approach (PMCA): User Guide*. Lima, Peru, International Potato Center (CIP) - Papa Andina.
- Cadoni, P. (2010). *Value Chain Mapping and Cost Structure Analysis for Cassava in Zambia*. EU-AAACP Paper Series **No. 14**. Food and Agriculture Organization of the United Nations. Rome.
- Chitundu, M., Droppelmann, K. and Haggblade, S. (2009). Intervening in Value Chains: Lessons from Zambia's Task Force on Acceleration of Cassava Utilisation. *Journal of Development Studies* **45**(4): 593-620.
- Devaux, A., Horton, D., Velasco, C., Thiele, G., López, G., Bernet, T., Reinoso, I. and Ordinola, M. (2009). Collective action for market chain innovation in the Andes. *Food Policy* **34**(1): 31-38.
- Donovan, J., Stoian, D. and Poole, N.D. (2008). *A Global Review of Rural Community Enterprises: the long and winding road for creating viable businesses, and potential shortcuts. Technical Bulletin no 29. Rural Enterprise Collection no. 2*. Turrialba, Costa Rica, CATIE.
- Govere, J., Chapoto, A. and Jayne, T.S. (2010). Assessment of maize trade and market policy interventions in Zambia. Ch 13, pp. 354-389. *Food Security in Africa: Market and Trade Policy for Staple Foods in Eastern and Southern Africa*. Sarris, A. and Morrison, J. Rome, Food and Agriculture Organization of the United Nations and Edward Elgar, Cheltenham, UK.
- Kachule, R., Poole, N.D. and Dorward, A. (2005). *Farmer organisations in Malawi: the organisation study. Final report for 'Farmer Organisations for Market Access', DFID Crop Post Harvest Research Programme (R2875)*. Imperial College London.
- Poole, N.D. (2000). Production and marketing strategies of Spanish citrus farmers. *Journal of Agricultural Economics* **51**(2): 210-223.
- Poole, N.D., Chitundu, M., Msoni, R. and Tembo, I. (2010). *Constraints to participation in cassava value chain development in Zambia. Paper presented at a workshop on Institutional Innovations and Policy Interventions in Support of Smallholder Market Participation, 3-4 June*. Food and Agriculture Organization of the United Nations. Rome.
- Poole, N.D. and de Frece, A. (2010). *A Review of Existing Organisational Forms of Smallholder Farmers' Associations and their Contractual Relationships with other Market Participants in the East and Southern African ACP Region*. EU-AAACP Paper Series **No. 11**. Food and Agriculture Organization of the United Nations. Rome.
- Poole, N.D. and Penrose Buckley, C. (2006). *Innovation Challenges, Constraints and Opportunities for the Rural Poor. Background Paper for the International Fund for Agricultural Development (IFAD), Rome*. <http://www.ifad.org/events/gc/29/panel/e/poole.pdf>. IFAD. Rome. <http://www.ifad.org/events/gc/29/panel/e/poole.pdf>. Accessed 6 January 2009.
- Poole, N.D., Seini, A.W. and Heh, V. (2003). Improving agrifood marketing in developing economies: contracts in Ghanaian vegetable markets. *Development in Practice* **13**(5): 551-557.

Poulton, C. (2009). *An Assessment of Alternative Mechanisms for Leveraging Private Sector Involvement in Poorly Functioning Value Chains*. EU-AAACP Paper Series **No. 8**. Food and Agriculture Organization of the United Nations. Rome.

World Bank (2009). *Awakening Africa's Secret Giant: Prospects for Commercial Agriculture in the Guinea Savannah Zone and Beyond*. Washington DC, World Bank.

Annex: data collection tools

Smallholder asset survey

1 Improved variety suppliers to markets

Date - Interview number -

Interviewee name(s) –

Interviewer Location -

Section 1 – Household data (circle response or enter data)

Position in household - Male head of household Female head of household

Total number of household dependants (children <15 years) -

Total number of dependants (adults >15 years) -

Farm size (hectares) –

Access to irrigation water YES / NO

Area of principal crops for consumption (hectares) - maize cassava

Area of other crops - *specify* (hectares) –

For how many months of the year is your household self-sufficient in maize?

Other income source - livestock sales YES / NO

Other income source - labour YES / NO

Other income sources - *specify* YES / NO

Distance from farm to road -

Distance from farm to the nearest local market -

Number of rooms in house -

Electricity - YES / NO

Running water - YES / NO

Roofing - thatch timber corrugated iron

Did you receive any credit in 2008-2009? YES / NO

Do you have any outstanding loans? YES / NO

Do you belong to a community organisation? YES / NO (*Name*)

Do you belong to a marketing cooperative? YES / NO (Name)

Section 2 – Cassava production

When did you start growing cassava? Year

What varieties of cassava do you grow? List

Has the area of cassava you have grown changed over the past three years? YES / NO

Hectares increase

Hectares decrease

What is the importance of the benefits of the IMPROVED CASSAVA VARIETIES? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Fast growing	0	1	2	3
Good flavour	0	1	2	3
High market demand	0	1	2	3
Good prices	0	1	2	3
Other - <i>specify</i>	0	1	2	3

What is the importance of the benefits of the TRADITIONAL CASSAVA VARIETIES? (0-3)

High dry matter content	0	1	2	3
Sweetness/flavour	0	1	2	3
Long storage life	0	1	2	3
Sales can be made when you need cash	0	1	2	3
Other- <i>specify</i>				

Have you received any training in producing cassava? YES / NO

Have you received any training in processing cassava? YES / NO

Have you received any training in marketing and business? YES / NO

Have you received any training in group organisation? YES / NO

Have you received any training in quality control? YES / NO

What organisations are the sources of such supports? List

Section 3 – Cassava utilisation

How often do you eat TRADITIONAL VARIETIES of cassava?

Never 1-2 times/week 3-4 times/week Once or more/day

How often do you eat IMPROVED VARIETIES of cassava?

Never 1-2 times/week 3-4 times/week Once or more/day

Do you make cassava chips on farm? YES / NO

Do you make cassava flour on farm? YES / NO

Do you have any cassava processing equipment? YES / NO

Did you buy it with: cash? credit?

How many times in a year do you sell cassava?

How important are sales of TRADITIONAL VARIETIES of cassava to household income? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

How important are sales of IMPROVED VARIETIES of cassava to household income? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Problems in selling cassava

How important are the following in affecting your production and marketing of cassava? (0-3)

(0=not a problem - 1=slight problem - 2=medium problem - 3=severe problem)

Availability of planting materials

Availability of processing equipment and drying facilities

Availability of water for processing

Availability of electrical supply

Availability of packaging materials

Availability of traders and alternative market outlets

Availability of market information

Cost and availability of transport

Distance to market

Quality of roads

Section 4 Interventions

What types of organisations have you benefitted from in developing cassava production and utilisation? *Specify*

Public sector organisations

NGOs

Private sector firms

What types of initiatives have you benefitted from in developing cassava production and utilisation? *Specify*

Individual on-farm visits by public sector extension agents

Group training

Group technical demonstrations

Credit

Grants

Dissemination of information by radio

Dissemination of information by printed leaflets, posters, etc

Visits by private sector agents

Commercial outgrower schemes

Visits to demonstration plots

Contacts through nucleus farmers

Distribution of new planting materials

Planting materials from community nurseries

Section 5 – Livelihood benefits in terms of assets.

How important are any changes which are the results of cassava production and utilisation?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Increased income

More stable income

Increased food security – availability of food sources in the dry season

Increased exposure to weather and production risks – eg drought, hail

Increased exposure to market risks – eg non-payment by traders, fluctuating prices

Increased exposure to crop damage by people and livestock

How important has income from cassava been in enabling you to make new investments in:

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

new/better housing

household equipment

better water supplies

power supply

communications technologies eg cellphone

land and agricultural production technologies, machinery, tools

livestock – small and large

better diet

school fees and uniforms, school materials and attendance

medical costs

consumer goods eg radio, batteries

transport eg bicycle

support to family members and others

savings

expansion of agricultural land

new production and/or processing technologies for agriculture

Section 6 - Attribution

Besides benefits from the cassava value chain, can you identify any other causes of significant **positive** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg positive impacts of

New income sources

Lower costs of purchased goods and inputs

Higher market prices

Government support

NGO support

Fewer dependants

Other - *specify*

Can you identify any other causes of significant **negative** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg negative impacts of

Bad weather effects on agricultural production

Incidence of family ill-health/disease /accidents/deaths

Increased number of children or other dependants

Higher costs of purchased goods and inputs

Lower market prices

Other - *specify*

2 Farmers growing but not selling IVs to secondary processors

Date - Interview number -

Interviewee name(s) –

Interviewer Location -

Section 1 – Household data (circle response or enter data)

Position in household - Male head of household Female head of household

Total number of household dependants (children <15 years) -

Total number of dependants (adults >15 years) -

Farm size (hectares) –

Access to irrigation water YES / NO

Area of principal crops for consumption (hectares) - maize cassava

Area of other crops - *specify* (hectares) –

For how many months of the year is your household self-sufficient in maize?

Other income source - livestock sales YES / NO

Other income source - labour YES / NO

Other income sources - *specify* YES / NO

Distance from farm to road -

Distance from farm to the nearest local market -

Number of rooms in house -

Electricity - YES / NO

Running water - YES / NO

Roofing - thatch timber corrugated iron

Did you receive any credit in 2008-2009? YES / NO

Do you have any outstanding loans? YES / NO

Do you belong to a community organisation? YES / NO (*Name*)

Do you belong to a marketing cooperative? YES / NO (*Name*)

Section 2 – Cassava production

When did you start growing cassava? *Year*

What varieties of cassava do you grow? *List*

Has the area of cassava you have grown changed over the past three years? YES / NO

Hectares increase

Hectares decrease

What is the importance of the benefits of the IMPROVED CASSAVA VARIETIES? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Fast growing	0	1	2	3
Good flavour	0	1	2	3
High market demand	0	1	2	3
Good prices	0	1	2	3
Other - <i>specify</i>	0	1	2	3

What is the importance of the benefits of the TRADITIONAL CASSAVA VARIETIES? (0-3)

High dry matter content	0	1	2	3
Sweetness/flavour	0	1	2	3
Long storage life	0	1	2	3
Sales can be made when you need cash	0	1	2	3
Other- <i>specify</i>				

Have you received any training in producing cassava? YES / NO

Have you received any training in processing cassava? YES / NO

Have you received any training in marketing and business? YES / NO

Have you received any training in group organisation? YES / NO

Have you received any training in quality control? YES / NO

What organisations are the sources of such supports? *List*

Section 3 – Cassava utilisation

How often do you eat TRADITIONAL VARIETIES of cassava?

Never 1-2 times/week 3-4 times/week Once or more/day

How often do you eat IMPROVED VARIETIES of cassava?

Never 1-2 times/week 3-4 times/week Once or more/day

How important are sales of TRADITIONAL VARIETIES of cassava to household income? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

How important are the following in affecting your production and marketing of cassava? (0-3)

(0=not a problem - 1=slight problem - 2=medium problem - 3=severe problem)

Availability of planting materials

Availability of processing equipment and drying facilities

Availability of water for processing

Availability of electrical supply

Availability of packaging materials

Availability of traders and alternative market outlets

Availability of market information

Cost and availability of transport

Distance to market

Quality of roads

List any other reasons for not selling IMPROVED VARIETIES of cassava

Production volumes are too small

Low product quality

Lack of buyers

Low prices

We eat all we produce

We have other sources of cash income

Other- *specify*

Section 4 Interventions

What types of organisations have you benefitted from in developing cassava production and utilisation? *Specify*

Public sector organisations

NGOs

Private sector firms

What types of initiatives have you benefitted from in developing cassava production and utilisation? *Specify*

Individual on-farm visits by public sector extension agents

Group training

Group technical demonstrations

Credit

Grants

Dissemination of information by radio

Dissemination of information by printed leaflets, posters, etc

Visits by private sector agents

Commercial outgrower schemes

Visits to demonstration plots

Contacts through nucleus farmers

Distribution of new planting materials

Planting materials from community nurseries

Section 5 – Livelihood benefits in terms of assets

Have you experienced any changes in livelihoods which are the results of cassava production and utilisation?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Increased income

More stable income

Increased food security – availability of food sources in the dry season

Increased exposure to weather and production risks – eg drought, hail

Increased exposure to market risks – eg non-payment by traders, fluctuating prices

Increased exposure to crop damage by people and livestock

Section 6 - Attribution

Can you identify any other causes of significant **positive** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg positive impacts of

New income sources

Lower costs of purchased goods and inputs

Higher market prices

Government support

NGO support

Fewer dependants

Other - *specify*

Can you identify any other causes of significant **negative** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg negative impacts of

Bad weather effects on agricultural production

Incidence of family ill-health/disease /accidents/deaths

Increased number of children or other dependants

Higher costs of purchased goods and inputs

Lower market prices

Other - *specify*

3 Farmers growing only traditional cassava varieties

Date - Interview number -

Interviewee name(s) –

Interviewer Location -

Section 1 – Household data (circle response or enter data)

Position in household - Male head of household Female head of household

Total number of household dependants (children <15 years) -

Total number of dependants (adults >15 years) -

Farm size (hectares) –

Access to irrigation water YES / NO

Area of principal crops for consumption (hectares) - maize cassava

Area of other crops - *specify* (hectares) –

For how many months of the year is your household self-sufficient in maize?

Other income source - livestock sales YES / NO

Other income source - labour YES / NO

Other income sources - *specify* YES / NO

Distance from farm to road -

Distance from farm to the nearest local market -

Number of rooms in house -

Electricity - YES / NO

Running water - YES / NO

Roofing - thatch timber corrugated iron

Did you receive any credit in 2008-2009? YES / NO

Do you have any outstanding loans? YES / NO

Do you belong to a community organisation? YES / NO (*Name*)

Do you belong to a marketing cooperative? YES / NO (*Name*)

Section 2 – Cassava production

When did you start growing cassava? *Year*

What varieties of cassava do you grow? *List*

Has the area of cassava you have grown changed over the past three years? YES / NO

Hectares increase

Hectares decrease

What is the importance of the benefits of the TRADITIONAL CASSAVA VARIETIES? (0-3)

High dry matter content	0	1	2	3
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Sweetness/flavour	0	1	2	3
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Long storage life	0	1	2	3
-------------------	---	---	---	---

Sales can be made when you need cash	0	1	2	3
--------------------------------------	---	---	---	---

Other- *specify*

Have you received any training in producing cassava? YES / NO

Have you received any training in processing cassava? YES / NO

Have you received any training in marketing and business? YES / NO

Have you received any training in group organisation? YES / NO

Have you received any training in quality control? YES / NO

What organisations are the sources of such supports? *List*

Have you heard of any benefits of the IMPROVED CASSAVA VARIETIES? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important – 4=don't know)

Fast growing	0	1	2	3
--------------	---	---	---	---

Good flavour	0	1	2	3
--------------	---	---	---	---

High market demand	0	1	2	3
--------------------	---	---	---	---

Good prices	0	1	2	3
-------------	---	---	---	---

Other - <i>specify</i>	0	1	2	3
------------------------	---	---	---	---

Section 3 – Cassava utilisation

How often do you eat TRADITIONAL VARIETIES of cassava?

Never 1-2 times/week 3-4 times/week Once or more/day

How important are sales of TRADITIONAL VARIETIES of cassava to household income? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

How important are the following in affecting your production of cassava? (0-3)

(0=not a problem - 1=slight problem - 2=medium problem - 3=severe problem)

Availability of planting materials

Availability of processing equipment and drying facilities

Availability of water for processing

Availability of electrical supply

Availability of packaging materials

Availability of traders and alternative market outlets

Availability of market information

Cost and availability of transport

Distance to market

Quality of roads

How important are the following reasons for not growing improved varieties of cassava

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Lack of information about improved varieties

Lack of planting materials

Low yield/poor quality of improved varieties

High risk of losses of improved varieties during production

High risk of post-harvest losses of improved varieties

We prefer to grow other food crops

We have other sources of cash income

Other- *specify*

Section 4 Interventions

What types of organisations have you benefitted from in developing cassava production and utilisation? *Specify*

Public sector organisations

NGOs

Private sector firms

What types of initiatives have you benefitted from in developing cassava production and utilisation? *Specify*

Individual on-farm visits by public sector extension agents

Group training

Group technical demonstrations

Credit

Grants

Dissemination of information by radio

Dissemination of information by printed leaflets, posters, etc

Visits by private sector agents

Commercial outgrower schemes

Visits to demonstration plots

Contacts through nucleus farmers

Distribution of new planting materials

Planting materials from community nurseries

Have there been cassava production and development initiatives from outside organisations in which you have not participated? YES / NO

If yes, why?

No interest

No time

Other - *specify*

Section 5 – Livelihood benefits in terms of assets

Have you experienced any changes in livelihoods which are the results of cassava production and utilisation?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Increased income

More stable income

Increased food security – availability of food sources in the dry season

Increased exposure to weather and production risks – eg drought, hail

Increased exposure to market risks – eg non-payment by traders, fluctuating prices

Increased exposure to crop damage by people and livestock

Section 6 - Attribution

Can you identify any other causes of significant **positive** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg positive impacts of

New income sources

Lower costs of purchased goods and inputs

Higher market prices

Government support

NGO support

Fewer dependants

Other - *specify*

Can you identify any other causes of significant **negative** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg negative impacts of

Bad weather effects on agricultural production

Incidence of family ill-health/disease /accidents/deaths

Increased number of children or other dependants

Higher costs of purchased goods and inputs

Lower market prices

Other - *specify*

4 Non-growers of cassava

Date - Interview number -

Interviewee name(s) –

Interviewer Location -

Section 1 – Household data (circle response or enter data)

Position in household - Male head of household Female head of household

Total number of household dependants (children <15 years) -

Total number of dependants (adults >15 years) -

Farm size (hectares) –

Access to irrigation water YES / NO

Area of principal crops for consumption (hectares) - maize

Area of other crops - *specify* (hectares) –

For how many months of the year is your household self-sufficient in maize?

Other income source - livestock sales YES / NO

Other income source - labour YES / NO

Other income sources - *specify* YES / NO

Distance from farm to road -

Distance from farm to the nearest local market -

Number of rooms in house -

Electricity - YES / NO

Running water - YES / NO

Roofing - thatch timber corrugated iron

Did you receive any credit in 2008-2009? YES / NO

Do you have any outstanding loans? YES / NO

Do you belong to a community organisation? YES / NO (*Name*)

Do you belong to a marketing cooperative? YES / NO (*Name*)

Section 2 – Reasons for not growing cassava

Did you ever grow cassava in the past? YES / NO

Have you received any training in producing cassava? YES / NO

Have you received any training in processing cassava? YES / NO

What organisations are the sources of such supports? *List*

Have you heard of any benefits of the IMPROVED CASSAVA VARIETIES? (0-3)

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important – 4=don't know)

Fast growing	0	1	2	3
Good flavour	0	1	2	3
High market demand	0	1	2	3
Good prices	0	1	2	3
Other - <i>specify</i>	0	1	2	3

How important are the following reasons for not growing cassava?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important – 4=don't know)

No planting materials

Don't know how to grow it

Crop failure

Risk of losses

Don't like to eat it

Unable to sell it

Other- *specify*

Section 3 Interventions

Have you heard of organisations promoting the development of cassava production and utilisation?

Specify

Public sector organisations

NGOs

Private sector firms

If yes, what types of initiatives have you heard about for developing cassava production and utilisation? *Specify*

Individual on-farm visits by public sector extension agents

Group training

Group technical demonstrations

Credit

Grants

Dissemination of information by radio

Dissemination of information by printed leaflets, posters, etc

Visits by private sector agents

Commercial outgrower schemes

Visits to demonstration plots

Contacts through nucleus farmers

Distribution of new planting materials

Planting materials from community nurseries

Have there been cassava production and development initiatives from outside organisations in which you have not participated? YES / NO

If yes, why?

No interest

No time

Other - *specify*

Section 4 - Attribution

Can you identify any causes of significant **positive** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg positive impacts of

New income sources

Lower costs of purchased goods and inputs

Higher market prices

Government support

NGO support

Fewer dependants

Other - *specify*

Can you identify any causes of significant **negative** changes in your livelihoods over the past three years?

(0=not at all important - 1=slightly important - 2=somewhat important - 3=very important)

Eg negative impacts of

Bad weather effects on agricultural production

Incidence of family ill-health/disease /accidents/deaths

Increased number of children or other dependants

Higher costs of purchased goods and inputs

Lower market prices

Other - *specify*

Focus Group Discussions

1 Kanakantapa Women's Association

Date: 01/04/2010

Facilitators: Ronald Msoni, Ngosa Manda & Joel Mulenga Mungomba

Attendance		
(Anonymised)	Gender	Area Under Cassava (1/4ha or lima)
1.	Female	0.5
2.	Female	3
3.	Female	0.5
4.	Female	1
5.	Female	1
6.	Female	0.5
7.	Female	0.5
8.	Female	0.25
9.	Female	1
10.	Female	1
11.	Female	0.5
12.	Female	0.5
13.	Female	1
14.	Female	1
15.	Female	0.5
16.	Female	1
17.	Female	8
18.	Female	0
19.	Female	0
20.	Female	0

2 Chainda farmers

Date: 01/04/2010

Facilitators: Ronald Msoni & Ngosa Manda

Attendance		
(Anonymised)	Gender	Area Under Cassava (1/4Ha or lima)
1.	Male	1.5
2.	Male	1.5
3.	Male	0.5
4.	Male	0.5
5.	Male	0.5
6.	Male	3
7.	Male	1
8.	Male	1
9.	Male	1
10.	Male	1
11.	Male	0.5

3 Rufunsa Cassava Growers (mixed group)

Date: 07/04/2010

Facilitators: Maureen Chitundu, Ngosa Manda

Attendance		
(Anonymised)	Gender	Area Under Cassava (1/4ha or lima)
1.	Female	3
2.	Male	4
3.	Female	3
4.	Female	1
5.	Male	1
6.	Male	3
7.	Female	0.5
8.	Female	3
9.	Female	3
10.	Male	4
11.	Female	1
12.	Male	2
13.	Female	2
14.	Female	2
15.	Female	4
16.	Female	2
17.	Male	4
18.	Male	0.5
19.	Male	0.5
20.	Male	2
21.	Male	3

Key Informant Interviews

1 Authentic Foods

Date: 27/04/2010 Location: Lusaka

Facilitators: Ronald Msoni & Isabel Tembo - PAM

2 Community Development Assistant

Date: 07/04/2010 Location: Rufunsa, Chongwe

Facilitator: Ngosa Manda – Food and Nutrition Officer, Chongwe

3 Camp Extension Officer

Date: 07/04/2010 Location: Chimusanya, Chongwe

Facilitator: Maureen Chitundu – PAM

4 Block Extension Officer – Palabana Block

Date: 29/04/2010 Location: Kanakantapa, Chongwe

Facilitator: Maureen Chitundu – PAM

5 DACO

Date: 29/04/2010 Location: Chongwe

Facilitator: Maureen Chitundu

6 Senior Agricultural Officer (SAO)

Date: 30/04/2010 Location: Chongwe

Facilitator: Maureen Chitundu

7 Cassava grower since 2003

Date: 29/04/2010 Location: Kanakantapa, Chongwe

Facilitator: Maureen Chitundu

8 Cassava grower since 1998

Date: 07/04/2010 Location: Kanakantapa, Chongwe

Facilitator: Maureen Chitundu