VALUE CHAINS ANALYSIS FOR PIGEON PEAS IN SOUTHERN MALAWI

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SUMMARY

A recent study from the University of Edinburgh (UoE) produced a global value chain analysis for pigeon peas (toor dhal/yellow split lentils). The study, commissioned by the University's Department for Social Responsibility and Sustainability, consulted with key stakeholders in southern Malawi to look at the contribution of pigeon peas to smallholder farmers in terms of income generation, soil fertility and climate change adaptation.

Pigeon peas being grown in southern Malawi

The research was comprised of 106 semi-structured interviews: 3 with the National Smallholder Farmers' Association of Malawi (NASFAM's Headquarters and Zomba Office), 93 with smallholder farmers (NASFAM and non-NASFAM members), 6 with local vendors, and 4 with local exporting processors. Smallholder farmer and local vendor interviews were conducted in the four areas of Zomba where NASFAM operates: Dzaone, Namadzi, Ngwelero, and Thondwe. Local processors, however, were all located in the industrial area of Blantyre (Limbe).

Findings are divided into two, the contributions of pigeon peas (quantitative) and the global value chain analysis from Zomba to Scotland (qualitative):

The contributions of pigeon peas to smallholder famers have suggested some associations among the variables considered, aggregated into three main areas: income generation, soil fertility and climate change adaptation. First, income generation is increased for those who are NASFAM members and have spent a longer time with NASFAM, since they place higher value on pigeon peas as a cash crop. On the other hand, education and cultivated land area have no

positive association with higher income. Second, soil fertility (as kg/acre) is significantly associated with implementation of Conservation Agriculture (CA) practices (e.g. mulching), but not with the use of fertilizer or pigeon pea intercropping since these were widely applied among the farmers interviewed. Third, climate change adaptation (as CA implementation), has been shown to be equally present in both NASFAM and non-NASFAM farmers' fields, although the first has benefited from occasional field training.

An exploratory study of pigeon peas global value chain analysis has shown opportunities and constraints amongst the actors and activities involved. NASFAM's improved pigeon pea seeds have failed to grow in Zomba due to low yielding issues. Together with a resource constrained organization, this gives NASFAM a low market share in comparison to local vendors, who offer higher prices during the whole season. Farmers, therefore, are exposed to unreliable vendor's scale, which in turn means that farmers are not concerned about pigeon pea quality, as they do not see a benefit from investing their time in it.

This factor is central to subsequent actors in the chain, such as processors and exporters, whose activities are affected by poor quality peas, together with low yielding, price fluctuation and huge transportations costs. These raise the price of this legume imported by Just Trading Scotland to the UK. It is suggested here that education of smallholder farmers remains essential to overcome poor quality peas in order to improve the whole chain of activities. In this context, NASFAM is making an invaluable contribution by assessing farmers through on-site learning modules regarding a wide range of topics.

The current NASFAM partnership with Just Trading Scotland is placing further value on pigeon peas by evaluating the potential for direct pigeon peas business relationships. JTS have identified interest in the product from the catering department at the University of Edinburgh if they can offer the right amount of quality product. In this way, the UoE wants to expand its Fair Trade scope by moving into fairly traded lentils as they have already done with Malawian rice from JTS-NASFAM.

Just Trading Scotland, Toor Dahl/Yellow Split Lentils

NASFAM farm supply shop

BACKGROUND

Malawi´s economy

Malawi remains highly dependent on agriculture, which makes the country extremely vulnerable to variable weather conditions and commodity price fluctuations. Smallholder farming accounts for 85% of the population. It remains rudimentary, using basic tools and relying heavily on family labour. It is mainly oriented towards production of food staples such as maize and rice, together with some cash crops such as tobacco, sugar, tea and coffee. While food staples are essential for household diet, cash crops provide income that can raise the living standards by allowing for other needs. However, the situational context of smallholder agriculture in Malawi is not usefully conducive to this owing to its lack of profitability. This is caused in varying degrees by low quality farm inputs, absence of quality control, high transport costs, weak market access, and lack of organisation and information. Stagnating factors like this, combined with increasingly variable weather conditions that heavily affect the country, have proved to be dramatic for food security.

Pigeon peas in Malawi

Pigeon peas are extremely important for smallholder farmers in Malawi. They can be easily intercropped with maize, sorghum or groundnuts without significantly reducing their yields. Moreover, pigeon peas are one of most drought resistant crops and an excellent source of nitrogen fixation through their long roots, thus benefiting other crops. This is extremely important in south Malawi, where intense and long dry periods are frequent. Its nutritional value is also very important given its high protein content, making it appropriate for improving food security and nutrition for many poor maize-dependant families.

During the period 1990-2005, Malawi's share of global pigeon pea exports rose to 78%. The country remains as one of the largest producers of the continent, producing around 80,000 metric tonnes per year and exporting about 25%. However, these figures have stagnated since productivity remains very low due to poor quality considerations, which shows the importance of developing better seed systems and farmer training for seed selection and production. In this context, farmer associations such as NASFAM are playing an important role.

FINDINGS

A. THE CONTRIBUTIONS OF PIGEON PEAS TO SMALLHOLDER FARMERS

Income generation

Independent variables taken into account as affecting income are membership, years of membership, education level, cultivated land and pigeon pea value. NASFAM membership has resulted to be associated with higher income from pigeon pea farming, in this case higher than 10,000 MKW per acre. Among NASFAM members, those who have spent more years have been revealed to be up to 21 times more likely to have higher income than newer members. At the same time, those who have placed high importance on pigeon peas as a cash crop

generator are 2 times more likely to generate higher income. On the other hand, education level and cultivated land have shown no significance regarding income generation among the farmers interviewed.

Soil fertility

Soil fertility has been studied towards the only outcome shared by all smallholder farmers, maize. Three independent variables have been taken into account, the use of fertilizer, pigeon pea intercropping with maize and CA implementation. The utilization of fertilizer and pigeon pea intercropping has no statistical relation with the outcome since all farmers applied them. However, CA implementation has shown an important association with higher maize produce per acre and thus better soil fertility, which is intimately correlated with better food security and income generation as well.

Climate change adaptation

In order to determine whether NASFAM members are better prepared for climate change than non-members, quantitative and qualitative means have been applied. Statistically speaking, there has been tested NASFAM membership and CA implementation as means of climate change adaptation. Members have the opportunity of implementing the agricultural practices taught by NASFAM; however CA implementation and hence climate change adaptation levels have shown no significant differences between members and non-members.

An exploratory study has followed to understand the NASFAM approach. Techniques can be assigned to dry and rainy seasons. When farmers experience a dry period, NASFAM focuses its learning modules on techniques to retain maximum moisture and protect the soil structure through minimum tillage, pigeon peas and maize compost mulching, box ridges, shorter ridge spacing, pit planting and one seed per planting station. They contribute to an increase in soil surface water infiltration, soil organic matter and microbiological content, and reduce soil erosion. On the other hand, when there are periods of heavy rains, farmers are taught not to cover the soil with maize stocks or pigeon pea pods. Instead, drainage systems are implemented for quicker field drying together with stone blocks to minimise field cracking and clearing of nutrients.

B. PIGEON PEA GLOBAL VALUE CHAIN ANALYSIS

Zomba rural: NASFAM and smallholder farmers

Seed sourcing is the first step in the value chain, where NASFAM has tried to distribute improved pigeon pea seed among its members. However, they have not been successful in Zomba due to low yielding issues; hence recycled local varieties are still predominant. This factor introduces initial quality inefficiency within the value chain. Before planting, land is cleared and cultivated, activities that require hired labour in many cases. After planting, weeding, manure application and harvesting, pigeon peas are usually sundried and taken to the household, where they are unshelled and winnowed. Most of them are usually packed with some sand and small stones at the bottom in order to increase their weight, which represents another inefficacy for the value chain.

Zomba markets: local vendors and NASFAM

Market prices for pigeon peas fluctuate throughout the season. Interviewed farmers have sold their produce to local vendors from 50 MKW/kg to 450 MKW/kg. The pigeon pea season starts immediately after first harvesting in June-July. Initial prices given by local vendors are high to attract that initial harvest. Prices gradually decrease until exporting companies reach their buying targets in September-October and hence local vendors stop buying from farmers. At this point, markets are empty and prices will gradually increase again until January-March when they decrease dramatically. This occurs during the period of time when farmers suffer more from hunger since the lack of maize and would sell pigeon peas in exchange; thus local vendors take advantage of it. Once maize is harvested around April, pigeon pea prices gradually increase again until next season starts in June-July. The totality of farmers interviewed reported to sell pigeon peas only in local markets, since the NASFAM one is ready very late compared to them. Main cost for local vendors is transportation to Limbe, which can reach a total of 800,000 MKW. Other challenges are related to price fluctuation from processing companies and poor quality peas from farmers, which requires quality checking and hiring extra labour.

NASFAM warehouse

Limbe: Processors and exporters

Four different companies were interviewed, two were small-medium size, and two were large companies. The first suffers more challenges from pigeon pea cleaning and warehousing since they have no machinery and can buy up to 500 metric tonnes per season. Main destinations are India, Pakistan and Malaysia. Their buying price fluctuates from 80MKW to 200MKW per kg. They sell usually for 50 to 70 MKW more per kg. The latter benefit from a much higher scale of production capacity with modern machinery and hence can buy around 5,000 to 7,000 metric tonnes per season. Their main activities are cleaning, fumigating, sorting, splitting, polishing and packing to produce *Toor Dhal* (split peas). Main exporting destinations are India,

United States and Saudi Arabia. They usually buy from 150 to 250 MKW/kg and sell for around 300 MKW/kg. Main challenges reported are unfair competition, low yields and lack of education among farmers which is directly related to poor quality peas.

A role for Scotland: Just Trading Scotland and the University of Edinburgh

One of the destinations for *Toor Dhal* is Scotland. Here, Just Trading Scotland has been importing them since 2010. They bear the cost of transportation from Malawi to Mozambique, given Malawi is an inland country, and from Mozambique to South Africa and U.K. Split peas are further cleaned and fumigated again for additional quality controls and are sent to Scotland under their label. Costs are high for JTS but they are importing pigeon peas as a means of benefiting Malawian smallholder farmers and educating consumers in U.K. The University of Edinburgh Catering plans to further develop its relationship with JTS to potentially introduce Malawian *Toor Dhal* into their menus, something that has already occurred with JTS rice from Malawi under the premises of broadening their Fair Trade scope into fairly trading initiatives.

Further reading:

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