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Competitive Analysis of the Paprika in Iringa and Ruvuma

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1 INTRODUCTION

The advent of Tanzania Spices Limited (TSL) to Tanzania in 2000 to procure and process paprika for export has resulted in substantial growth in this profitable subsector.

Currently 56 farmer groups, involving up to 8000 farmers, are producing 500 Mt of paprika against an installed demand for 2000 Mt. This offers opportunity for further expansion of the subsector both in terms of expanded land usage and improved yields. The farming communities' response to the demand has been strong due the crops' profitability and relative ease of production. Production of paprika brought an estimated 1.4 billion Tsh of new income into the study area in 2003.

Expansion of regional production in Zambia, Malawi and South Africa combined with an increasing demand in Spain bodes well for the continued sustainability of the subsector.

The study area

The study was based mainly in Iringa. Two villages were visited in Iringa Rural district - Magubike, where farmers have been growing paprika successfully for several years, and Kaning'ombe, a village further away from transport networks where farmers have just recently started cultivating the crop. Interviews were also conducted with district agricultural staff in Songea, where paprika cultivation has just begun.

1.1 OVERVIEW OF THE SUBSECTOR

Paprika accounts for 20% of the volume and 15% of the value of total spice imports into the European Union (EU). The EU accounts for 31% of world spice imports, followed by the USA at 21.5 % (2000). Spain has traditionally been a major importer and processor of Paprika and accounts for 20% of total Paprika imports into the EU. Paprika is principally used as a colouring agent in food preparations; or, as a flavour enhancement. Current global demand is estimated at 100 000 Mt for bulk paprika and 2500 Mt for Paprika oleoresin¹. Given a world-wide move to the use of natural products and a European Union ban on the use of synthetic dyes in the pharmaceutical, cosmetic, textile, beverages, meat and poultry, food and confectionery sectors, it is expected that growth in demand for Paprika based products will be in the region of 20% per annum.

This document is part of an overall study named "Competitive Analyses of Seven Subsectors in Tanzania".

¹ Source: FAO-Note that part of the bulk production would be converted to oleoresins.

Currently the main producers of paprika are Spain, Morocco, Hungary, South Africa, Zimbabwe, Malawi, Peru and India. Paprika is either exported in chopped form to be further processed, or as a finished product-either in powder form or as an oleoresin. There is a growing trend that value addition takes place in the productive area. This trend is reflected by the falling export figures for Paprika combined with increased Paprika production in the region².

Within Southern Africa there has been substantial growth in the industry from 1996. Two new extraction facilities were established in South Africa and one in Zambia in 2003 alone. Production has expanded in Malawi and Zambia (currently an estimated 50 000 contract growers producing 4000 Mt-from zero production 6 years prior) taking advantage of the decline in production in Zimbabwe, formerly the largest producer in the region. The reduction in Zimbabwean production (down 3000 Mt to 10 000Mt in 2003) may be attributed to the continued economic decline in that country. New investment in the industry has come from Spain (in South Africa and Tanzania), Netherlands (Zambia and Malawi) and domestic sources (South Africa). This indicates a growing confidence in the potential for the sector to grow further and in Southern Africa's potential as a non-traditional supplier to the EU.

Paprika prices have softened from 2000 when Paprika traded at around Euro 1200. Current prices appear to be Euro 1.08 for A grade, Euro 0.84, B grade and Euro 0.36 for C grade³. These prices are FOB South African port for chopped dried Paprika. It is difficult to determine exact pricing on Paprika, as many transactions are done on an inter-company basis and as such pricing is not disclosed. When analysed, export volumes against declared values do not offer much insight, as the prices appear to be severely under-declared⁴.

1.2 THE MARKET

Areas under cultivation in Spain, Morocco and Hungary are reducing due to the stresses of diseases, high energy costs and low affordable labour availability. Spanish importers have thus been forced to look at alternate areas of production. As part of this process, a Spanish company, EVESA set up Tanzania Spices Ltd in 2000. This has effectively initiated demand for a previously unknown crop in Tanzania. Production of Paprika has gone from zero in 2000 to an estimated 500Mt in 2004 (0.5% of world production).

² Oleoresins are exported under a different HS code.

³ Prices quoted in an article detailing the establishment of a South African production facility in November 2003.

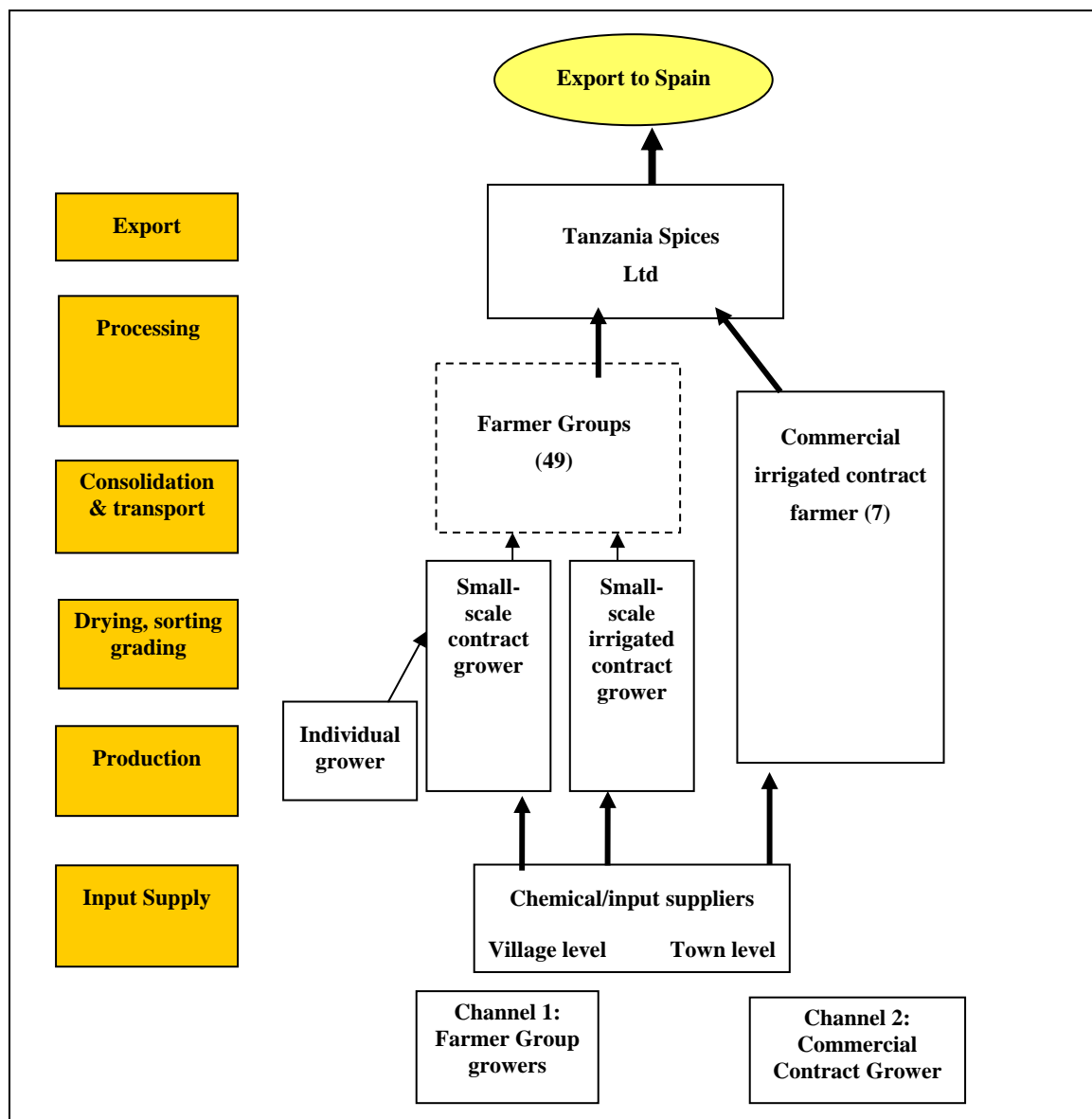
⁴ Further complicating the determination is that prices reflected in trade statistics do not differentiate between the different grades of Paprika.

There is no domestic market other than TSL for paprika. TSL buys Paprika from May to November. Any paprika produced after November must be stored until the following May.

The farmers receive 0.8euros/kg for grade A paprika, which is equivalent to about 1064TSh. Grade B gets 0.4euros, and grade C 0.14euros.

2 THE SUBSECTOR MAP

The subsector map is a schematic representation of the structure of a subsector, essentially showing how products flow through the subsector systems. The map presents the various functions and markets. In other words, a subsector map traces the product flow and the transactional relationships between various actors in a subsector right from inputs supply and production to the consuming markets.



2.1 SUBSECTOR FUNCTIONS AND PARTICIPANTS

2.1.1 Input Supply

Seed supply

The availability of seed is critical for the expansion of the sector. Seed supply is controlled by TSL in order to ensure that they receive a crop of the requisite quality.

Initially, TSL contracted individual farmers to grow Paprika on their behalf. As the numbers of farmers wanting to grow Paprika increased, the administrative burden of monitoring the individual contracts became too onerous. A corporate decision was then made to deal with groupings of farmers; or large individual producers. In terms of the contract TSL provides the seed, the price of which they deduct from the delivered crop. The amount of seed (0.4kg/acre) provided to a group or individual under contract is determined by the acreage intended for cultivation of Paprika.

There is a perception that there is a seed shortage and farmers are finding it difficult to obtain seed. This constraint relates more to an ignorance of process rather than to an actual shortage (though there has been a late delivery of seed in the past). Farmers wishing to grow Paprika are not generally aware that they have to contract with TSL in order to be provided with seed, and as such will try and obtain seed or seedlings from contracted farmers. In other instances farmers have not approached TSL before the season, or they wish to try the crop before formalising a relationship with TSL.

TSL provide two cultivars of *Capsicum annum* seed. A King cultivar is supplied to those farmers who have irrigated lands, as it is better suited to this type of farming and provides better yields. About one third of the farmers contracted by TSL use irrigation, generally on larger plots. The King cultivar is imported from South Africa and at USD 50/kg is twice the price of their own locally produced Queen seed. TSL will select, dry and treat seed from the received harvest. Individual farmers are not able to do this, as they do not have the facilities to treat the seed. Untreated seeds result in poor germination and reduced quality. The Queen cultivar accounts for the majority of the seed provided.

Fertiliser

Paprika needs regular applications of fertiliser throughout the growing season, especially if grown on irrigated land. The recommended type is a mix of NPK and CAN. In some villages, the fertiliser is available in the village, at other villages; the farmers travel to town to purchase it. In Magubike, for example, fertiliser (NPK) can be bought in the village for 19,500TSh, while in town it costs 18,500TSh (the bus fare to town is 1000TSh). In Kaning'ombe, a more isolated village, there is no local input store, so each farmer goes to town to get his/her own fertiliser – this costs 1400TSh for the outward journey, and 3000TSh for the return, because they also have to pay for the transport of the fertiliser. Many go to town on their bicycle, which takes over an hour.

Many small farmers can't afford to follow the recommended fertiliser application regime. Some don't apply it at all, and thus harvest a poor crop. Some put on as much as they are able to afford. Some compromise by using CAN or Urea, which are cheaper, at 16,000TSh per bag for CAN and 15,000TSh per bag for Urea. Most farmers are growing Paprika on existing shambas and as such fertility is not optimum. Where Paprika is grown on new shambas, the results are much improved.

Pesticides/fungicides

Regular applications of pesticides (Karate) and fungicides (Bravo) are required, but many farmers can't afford these inputs and their crops suffer from insect and fungus damage. Many farmers don't possess a spray pump, and therefore are obliged to borrow one. In an average farmer group of five, one or two will have a pump. Farmers usually spray their paprika when they observe that there is a need, rather than applying it according to a pre-planned schedule.

2.1.2 Production

Irrigation

Commercial farmers all use irrigation, and have the financial capacity to produce paprika with the required amount of inputs, whereas small farmers have limited access to working capital and therefore often do not manage to achieve the same levels of production. Most of the paprika cultivation is done on 1-2 acres under rain-fed conditions. Rainfall appears to be adequate. Only about a third of the farmers who grow paprika use irrigation. The season is longer and the yield is better if they plant on irrigated land.

Production Levels

TSL have set up their operation to process 2000 Mt of Paprika a year. With current levels of production this would equate to 11,000 acres under cultivation. If production were at optimal levels, only 1500 acres would be required. TSL expect that the 2004-2005 season will provide them with the required 2000 Mt.

Labour

More affluent farmers may contract in labour to do the more time consuming tasks, such as cultivation, weeding, fertiliser application, spraying and harvesting. For cultivation, the cost is 10-12,000TSh per acre, and for weeding it is 8000/acre. Most farmers however will prepare and care for the crop themselves together with family labour.

Production season

Rain-fed paprika is planted in December when the rains start and harvested between May and June. Irrigated cultivation carries on for a longer period. Paprika may be planted in October and harvested from April. Productive season for irrigated lands is longer as the plants will continue to flower and produce pods. There is a drop in quality as the plants age, and the pods lose 10% of their colour each month.

Harvest

Paprika is harvested when it reaches a requisite colour and dryness.

The production schedule for paprika cultivation for one season is charted in Annex 2.

2.1.3 Drying, Sorting and Grading

Drying

Paprika is dried on mats in the sun for about a day.

Sorting and Grading.

Farmers sort and grade their own paprika. Paprika is graded A (best quality-highest price), B and C (lowest quality-lowest price). Grading is done primarily on colour. About 70% of a crop will be grade A, 20 % grade B and 10 % grade C. Farmers who cultivate paprika on rain-fed shambas don't usually have to store their paprika.

2.1.4 Consolidation and Transport

Consolidation

Once graded the pods will either be bagged and sent directly to TSL (in the case of the larger farmers who have a direct contract with TSL) or will be consolidated with other farmers produce before going to TSL. In the case of consolidation, other farmers in the group will crosscheck the grading. The crop will then be consolidated and bagged according to grade. The group leader will keep records as to the crop contribution of each farmer.

The Paprika is packed tightly into sacks. It is not damaged due to its rubbery nature after drying. Maroba sacks with an extension on the top, increasing capacity by about a quarter are used. The sacks weigh between about 50-80kg, but if very tightly packed can weigh as much as 120kg.

Transport

Sacks are packed tightly in order to reduce the number being transported to market. Transport is charged per sack and not weight. Sacks are transported to Iringa by truck at a cost of Tsh 1000 from Iringa surrounds. The trucks may either be based in the village (as in the case of Magubike) or come in from Iringa to collect various crops. Where farmers travel with their crops to TSL there is a further cost of Tsh 2400, return.

Farmers in more isolated areas usually transport their crop to the nearest main road by bicycle for collection by truck.

Farmers in Songea are faced with far higher transport costs. The distance from Iringa and relatively low current volumes in the area contribute to this. TSL will consider setting up a collection point in Songea when there is sufficient volume.

2.1.5 Processing

Dried Paprika is delivered to the TSL warehouse where it is weighed and the grading is checked. The paprika is then put in a machine to de-seed it and to dry it further. The pods are then chopped. Installed capacity for the facility is 2000Mt. The final products are seeds and chopped paprika. Seeds, after being separated from the pods, are packed into 185cm sacks.

The processed paprika is pressed and packed into bales. The bales are loaded into containers, which are treated with a cocktail of rat/insect poison and fungicide. The Paprika is subjected to further processing in Spain, where the oleoresins are extracted for use in the food and cosmetic industries as a colorant.

2.1.6 Export

Both the chopped Paprika and seeds are exported to the mother company, EVESA, in Spain. TSL covers all transport charges from Iringa through to Spain.

The total amount of paprika exported to Spain 2002-2003 was 160Mt. TSL estimates that the 2003-2004 crop may be as high as 500Mt, but will probably be in the region of 250Mt.

2.2 SUBSECTOR CHANNELS

There are two channels through which Paprika moves to the market:

Channel 1: Farmer Group Growers

This channel consists of non-commercial oriented small-scale farmers who cultivate Paprika as a cash crop. They will commonly be cultivating Paprika alongside other crops such as maize, sunflowers and beans. They may previously have been cultivating tobacco.

Due to the nature of the supply contract to TSL, these farmers have organised into groupings of suppliers. There are 49 farmer groups growing paprika under contract for TSL. The majority of groups are in Iringa region (46 groups) while in Ruvuma region there are three groups who sell their produce as one group. A group varies in size from two to ninety-two members. In Magubike village there are eight groups of about five farmers each. There is also a primary society, which has about 90 members. In Magubike the farmers have appointed a marketing officer, who would deal with the payments and collect the cheque from TSL for all the farmers in the village.

TSL no longer keep records of how many individual farmers are involved in paprika production, although they estimate that there may be as many as 8000 farmers involved in the 2003-2004 season. A total of 4000 acres are under cultivation in the 2003-2004 season, up from 1800 acres the previous season.

Within this channel there will be both small-scale contract growers as well as small-scale irrigated contract growers. Irrigated farms have higher yields and profitability.

Channel 2: Commercial Contract Growers

This channel accounts for 10% of the supply to TSL. All commercial growers would be cultivating on irrigated lands.

3 PRODUCTION ASPECTS

Under ideal conditions (irrigated and pertinent agro-chemical applications), yield from one hectare is 4000kg (equivalent to 1600kg from one acre). In Tanzania the average yield per hectare is 700kg (280kg/acre, which can drop as low as 90kg/acre). Yields may be improved substantially through the appropriate use of irrigation and additional agro-chemical inputs. Irrigation will extend the productive season (several harvests) and so improve yield. An appropriate fertiliser regime will also substantially improve yield. Applications of pesticides and fungicides will improve the quality of the yield. A lack of appropriate knowledge on the part of the farmers, in terms of plant spacing, weeding intervals and pesticide and fungicide application periods contribute to the lower yields. Some farmers have however graduated from a basic farming regime to irrigated, improved input regimes.

While land availability is usually not a constraint, availability of irrigated land is. Irrigated land may be rented and in Magubike is available at 30,000TSh per acre. Appropriate irrigation technologies (such as drip kits and treadle pumps) from EnterpriseWorks, an NGO, exist and could be applied to Paprika cultivation.

TSL estimates that, on the basis of the paprika in the shambas, Iringa region will produce about 250,000kg of paprika in 2004, about half the expected total. Variables like the presence of fungus or insects could reduce the estimate. For Ruvuma region, the estimated total production is 32,000kg. There are smaller amounts of paprika being grown in Morogoro, Tabora and Mbeya.

4 KEY SUBSECTOR SERVICES AND SERVICE PROVIDERS

Extension services

Extension services have been provided by TSL. TSL visit the Paprika shambas once a year to provide technical assistance. Some training in Paprika cultivation has been provided to extension officers in the Iringa region. There is a clear need for more training for extension officers in order to enhance their capability to provide appropriate training to the farmers. Extension services are under-resourced, further complicating their ability to assist farmers.

Finance

Farmers growing paprika have been able to access loans through PASS in conjunction with the Chamber SACCOS of TCCIA, and also directly through CRDB. As the farmers have a guaranteed market the institutions are willing to advance the monies. However, in Magubike, the groups, which received loans, indicated that the money came late (the end of February) and that they were not able to buy the fertiliser needed for the initial stages of production so reducing the potential harvest. Some SACCOS do exist in previously farmer groups.

Most access to finance for inputs is done on an informal basis through a network of affluent contacts. Monies will be advanced for fertiliser on the understanding that when payment for the Paprika is received the loan is repaid with a margin (e.g. fertiliser is supplied at 18 500 Tsh a bag and repayment is at 22 000 Tsh per bag). The loans may range from 3 months to 6 months. On a three-month loan the indicative rate of interest would be 75% per annum.

5 GROSS MARGIN ANALYSIS

Gross margins in this case simply refer to revenue minus direct or variable costs. It does not take into account overheads, capital investment, or cost of borrowed capital. This is partly because small-scale farmers do not often incur much of these costs and partly because such information is often not readily available. Thus data provided below should not be misconstrued to represent profits, but rather its proxy. Family labour was costed where data on local wage rates was provided.

Two scenarios are explored here – the first is a more affluent small farmer who can afford inputs and can hire labour, while the second is a small farmer who uses only family labour and who can only afford to buy about half the recommended amount of inputs. The analysis is based on the village of Magubike, which is relatively easy to access from town and which has reasonable transport links.

TABLE 1: GROSS MARGIN ANALYSIS – PAPRIKA PRODUCTION ON ONE ACRE OF RAIN-FED LAND IN MAGUBIKE.

DESCRIPTION	ORDINARY FARMER	AFFLUENT FARMER
	Amount Tsh	Amount Tsh
Seeds @\$25/kg – 0.4kg/acre	11 000	11 000 (\$10)
Fertiliser for nursery – 2kg NPK	500	500
Labour – Preparation of shamba		12,000
Planting seedlings @1000TSh/man day, 5 man days		5,000
First fertiliser application – 4 bags NPK @19,500TSh/bag (bought in the village)	39 000- (Half Amount)	78,000
Pesticide/fungicide	7 000 (Half Amount)	14,000
Labour – Weeding, 2 people @8000TSh/acre/man day, 3 times		48,000
Second fertiliser application		78,000
Transport to Iringa – 8 sacks of 80-100kg @1000TSh/sack	2 000 (2 sacks)	8,000
Return fare to Iringa	2 400	2,400
Total costs per acre	61 900	256,900
Approximate Yield -Kg/ Acre	200	600

Gross Return Note: Split 70% A grade € 0.80, 20% B grade € 0.40 and 10% C grade € 0.14.	211 204	607 652
Gross Margin per acre	149 304	350 752

- It is interesting to note that the application of minimal extra inputs by the Affluent Farmer increases profitability by 42% over the Ordinary Farmer.
- This profitability would be further enhanced should the Affluent Farmer use own/family labour and irrigation.

TABLE 2: ESTABLISHMENT EQUIPMENT COSTS ARE SMALL

ITEM	AMOUNT TSH
Hand hoe x 3 (family labour)	9 000
Water container x 2	2 000
5 sacks	2 500
Mat for drying	500
Backpack pump for spraying (Usually owned by more Affluent Farmers)	15 000

6 INSTITUTIONAL AND REGULATORY FRAMEWORK

Taxation

Tanzania Spices Ltd is registered as a Tanzanian company. As such they are required to pay the usual taxes on employees, company taxes, income tax and import duties. Income tax must be paid in advance, which is difficult when the season's harvest is unpredictable. In 2003 the company paid income tax on an estimate of turnover based on the expected harvest. The harvest did not meet expectations. In 2004 TRA were not willing to make adjustments accordingly, even though the export documentation would verify the reduced exported quantities. Another problem cited by the company is that they are entitled to claim VAT back but it takes three years actually to receive the money back.

Cess

No district crop Cess is applicable on Paprika. This may relate to the fact that it is a new crop and no policy has been formulated as yet.

Government Subsector Development

The Government of Tanzania, as part of the promotion and development of the spices sector in Tanzania, has formed a Spices Sector Development Strategy. After the demise of the state-owned General Agricultural Products Export Corporation in the mid 1980s, the spice sector has been neglected. However during the budget speech of 2001-2, the government recognised that spices could become a strategic sector in the fight against poverty. Hence the formation of the Spices Sector Development Strategy.

Board of External Trade (BET), established in Tanzania in 1978, is a body which assists industries to find markets for their products, as well as providing overseas businesses with information about Tanzanian products, and business and investment opportunities. Under the auspices of BET, the Tanzania Spices Producers and Exporters Association is in the process of being set up, as a part of the new Spices Sector Development Strategy. Its role will be to work out strategies for enhancing the sustainability and growth of the spice industry, with a view to setting up a regional umbrella organisation, the East African Spice Producers and Exporters Association (EASPEA). EASPEA will have several objectives, including building a common marketing strategy to enhance the brand image for East African spices, and a common logistic approach in terms of transport to external markets. It will also assist the growers to reach international quality standards and delivery schedules.

7 SUBSECTOR DYNAMICS

This section considers where there is growth, and so an ability to improve incomes and employment, or decline in the subsector.

There has been a **rapid growth of the subsector** since the inception of TSL. Both the numbers of farmers producing the crop and the area under cultivation have increased dramatically over the past 4 years. As an example, in a village in Songea, Paprika production started in 2001 with two farmers cultivating one acre between them, producing 400kg of paprika. The following year, ten people joined the group, cultivated 10 acres and harvested 3.2 Mt. In 2003, 89 new farmers joined the group and are now cultivating 150 acres. Similar expansion has been seen in many other villages.

Most of the **development in the sector has occurred in Channel One**. Initially TSL intended to contract with larger commercial farmers (Channel Two). After a few seasons, most of the larger commercial farmers have reverted to growing tobacco as their systems are more geared to this crop. Further development within Channel One is the advent of irrigation technology and improved inputs leading to higher yields and improved profitability.

There has been a **strong demand from farmers to grow paprika**. The increasing numbers of farmers growing the crop as well as new farmers, not knowing the contract process, seeking seeds in order to grow the crop, evidences this.

There is a **gradual geographic spread to Songea** of growers. Once the crop had been introduced in the area, there has been a rapid expansion, even though the cost of transportation reduces profitability. Geographic proximity to Iringa is an advantage that is being exploited by many small-scale farmers in the area.

7.1 DRIVING FORCES

The driving forces refer to those factors that are at the root of the dynamics and change within the subsector. These often relate to market demand, technological change, barriers to entry, input supply, profitability of different niches, risks or policies.

- **The presence of TSL.** TSL has been the major driving force in the growth of the subsector. They are providing the local market and stimulating production by managing seed supply through to market. The company has as yet not managed to obtain sufficient raw material supply for its installed capacity, which indicates a continuing demand for Paprika.

- **World Market.** There is a growing demand for Paprika produced in Southern Africa as is evidenced by the continued growth in the sector within the region. The trend appears to be to go up the value chain and establish more sophisticated processing and extraction facilities in the region. Previously tariff barriers into the EU played a role in the non-establishment of these facilities, though this appears to have changed on the back of lower production costs in the region, so that processed Paprika products can enter the market on a competitive basis.
- **Profitability and ease of process.** The perceived profitability and ease of growing Paprika relative to other cash crops has been a driving force in the rapid expansion of the subsector. Previously many of the farmers growing Paprika would have been growing Tobacco. Paprika is a less labour-intensive crop to grow and is more profitable. Furthermore, payments for Paprika take place on delivery as opposed to the two months it normally takes to receive payment for tobacco. The supply process of Paprika is also not tainted by the history of corruption and poor business leadership that applies to tobacco co-operatives. Paprika has also replaced maize and tomatoes as a cash crop in certain areas.
- **Identification at district level as a growth sector.** Both district and ward agricultural officers are enthusiastic about paprika and its potential to increase incomes for small farmers. They have had the opportunity to witness the change in poverty status of villages growing the crop and as such are actively promoting Paprika as a crop.

7.2 POINTS OF LEVERAGE

Points of leverage are those points where working with a few individuals or organisations can cause a larger number of individuals to benefit. In the case of Paprika this may include institutions and geographic clusters.

- **Farmers Associations.** As a response to the contractual requirements of TSL, farmers have begun to organise themselves into groupings. Some of the groupings have begun a process of formalisation and registration. The associations have real potential for leveraging DAI-PESA project interventions.
- **Extension Services.** District and ward agricultural officers can play an important role in improving the performance of the subsector. They would however require extensive specialist training in production of Paprika.
- **Geographic Clusters.** Paprika growing is clustered around Iringa and Songea, allowing for relative ease of access for interventions.
- **The NGO Community.** Several NGOs are active in the Paprika growing region offering complimentary assistance to the communities. Intervention initiatives

may be considered jointly with these NGOs in order to leverage their access to the communities.

8 CONSTRAINTS AND OPPORTUNITIES

8.1 CONSTRAINTS

Constraints refer to factors that inhibit MSEs in the Paprika subsector from performing their business activities optimally. Opportunities refer to the prospects of businesses that can be undertaken as part of resolving those constraints. Thus behind every constraint there is an opportunity or opportunities for business or a development intervention.

8.1.1 Production Constraints

- Low utilisation of agro-chemical inputs, usually due to the perceived high cost and an inability to afford them, resulting in poor crop husbandry practices and lower yields.
- Under utilisation of appropriate irrigation technology, resulting in lower yields.
- Poor and under-resourced extension services at producer level. While supplementary specialised services are available from TSL, they are unable to provide them on a continuous basis to all the farmers.
- Under skilled farmers unable to make decisions as to best practice in production.
- TSL closes in November forcing farmers who have irrigated their crops to retain and store a portion of the Paprika until May when the factory re-opens.

8.1.2 Transport Constraints

- Poor rural infrastructure contributes to the high cost of transport.
- More isolated areas have less developed and irregular transport systems.
- The high cost of transport from Songea to Iringa exacerbated by the lack of collection or storage points in Songea.

8.1.3 Financial Constraints

- The lack of access to appropriate and affordable financial instruments for inputs reduces the ability of farmers to farm more productively and profitably.

8.1.4 Marketing Constraints

- TSL is the only buyer in the country. This removes the farmers' ability to negotiate pricing and is a threat should TSL decide to terminate operations.

8.2 OPPORTUNITIES

Opportunities or favourable factors that can result in the subsector growing and improving income and employment for enterprises include the following:

- The number of small-scale farmers that are replacing existing cash crops with Paprika as their primary cash crop indicates an improved profitability. Poor crop husbandry evidenced by the low use of agro-chemicals due to perceived costs, lack of technical skills, lack of appropriate extension services and low use of irrigation technology constrain growth in the sector. There are however focal points in the form of groupings, NGOs and extension services that may be utilised to promote growth in the subsector.
- There is a dedicated, growing, market which can be used to enhance growth. The dedicated market promotes current certainty in terms of price and demand. Should an alternate market appear this would enhance competition and stabilise long term demand.
- The presence of a dedicated market allows itself to be utilised to develop appropriate financial instruments to meet the needs of the farmers.

9 RECOMMENDED OPTIONS FOR DAI PESA ASSISTANCE

Paprika offers very strong potential as a cash crop in the region. DAI PESA should concentrate on helping farmers to apply better technological packages to enhance their productivity and improve their marketing channels to TSL as well as trying to attract other possible buyers. In order to do this, the project can:

- Facilitating demand driven formation of strong and sustainable farmer associations in the two geographic clusters of Iringa and Songea. Initially, this process should take place in the Iringa region as the bulk of the nascent groupings are there. Given a dedicated, profitable market and the current expansion in the sector, there ought to be a strong incentive to establish the groupings. Furthermore, the groupings provide an entry point for providing further technical assistance.
- Enhance technology utilisation at farm level. Productivity may be improved through the utilisation of irrigation technology and appropriate input utilisation. DAI PESA could facilitate this process which may be done in conjunction with EnterpriseWorks and Extension Officers. It would be imperative that the Extension Officers receive specialist training in Paprika production from TSL. An important component of promoting the use of appropriate inputs would be to highlight the improved profitability when used. Once this is done, the issue becomes a financing constraint rather than a production constraint.
- Improve access to finance. DAI PESA could play a facilitatory role in linking input suppliers, credit institutions, farmer groupings and TSL in order that they develop an appropriate financial instrument to finance input supply.
- Begin a process to attract an alternate buyer to the market. The alternate buyer may be a processor that adds further value to the Paprika in the form of extraction of oleoresins.
- Work closely with TSL to help them extend their collection network. This may occur in the identification of new farmer groups that are willing to grow Paprika. The strengthening and sensitization of the farmer groups will add credibility to this process.

ANNEX 1: PEOPLE MET DURING THE COURSE OF THE STUDY

District Agricultural Extension Officer,	Songea	Mr Maswaga
District Horticulture Officer	Songea	Mr Mwela
Kitanda Ward Extension Officer	Songea	Mr Mwakyusa
Tanzania Spices Managing Director	Iringa	Sergio Bellot
Iringa Rural District	Magubike	Group of paprika farmers (10 men)
Iringa Rural District	Kaning'ombe	Group of paprika farmers (14 men, 5 women)

ANNEX 2: CALENDAR FOR THE CULTIVATION OF PAPRIKA ON ONE ACRE OF RAIN FED LAND BASED ON FARMERS' PRACTISES IN MAGUBIKE, IRINGA

Stage	Nursery Prepare in place near water	Prepare shamba	Make the holes and bring the seedlings from the nursery	Apply fertiliser (after 7 days)	Apply pesticide/fungicide	Weeding	Apply fertilizer (after 21-28 days)	Harvest, dry and grade
Month	November	December	December	January	January-April	January-March	February	May
Labour	One person	Usually family labour Some use labourers	Usually family labour Some use labourers	Family labour	One person	Family labour Some use labourers	Family labour	Family labour
Cost of labour	-	10-12,000TSh per acre	1000TSh per day (5000TSh)	-	-	8000TSh for one acre	-	-
Length of time	Half an hour to prepare nursery and plant seeds 40 days, watering every day	Takes a week to prepare terraces, cultivating with a hand hoe	2-3 days alone, one day with family or 5 labourers	One day	Can spray 4 or 5 times in one season, depending on signs of insect or fungus damage	Takes 4 people one week to weed an acre. Weed 3 or more times.	One day	Once a week for about 5 weeks
Equipment	Hand hoe Water container	Hand hoe	Basket		Backpack pump	Hand hoe		Mat for drying Sacks for taking to town
Inputs	Seeds 2kg NPK			4 bags of NPK/CAN	200ml Karate (insecticide) 1 litre Bravo (fungicide)		4 bags of NPK/CAN	
Cost of inputs at Village	Approx. 500TSh			1 bag @ 19,500TSh = 78,000TSh	Karate – 4500TSh Bravo – 9500TSh		1 bag @ 19,500TSh = 78,000TSh	

COMPETITIVE ANALYSIS OF THE PAPRIKA INDUSTRY IN TANZANIA
FINAL REPORT
