SOUTHERN AFRICA GLOBAL COMPETITIVENESS HUB

Technical Report:

Paprika Supply Chain in Zambia

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PAPRIKA SUPPLY CHAIN IN ZAMBIA

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ABBREVIATIONS

ADF	African Development Foundation
ASNAPP	Agribusiness in Sustainable African Plant Products
ASTA	American Spice Trade Association
BoZ	Bank of Zambia
CGA	Central Growers Association
CRS	"Central Registry System"
CLUSA	Cooperative League of the United States of America
DRC	Democratic republic of Congo
EDP 1 & 2	Export Development Programme 1 & 11
EBZ	Export Board of Zambia
EU	European Union
FOB	Free On Board
IDE	International Development Enterprise
MACO	Zambian Ministry of Agriculture & Cooperatives
NGO	Non-Governmental Organisations
NORAD	Norwegian Aid
OPPAZ	Organic Producers and Processors Association of Zambia
ORP	Paprika oleoresin
PAZ	"Paprika Association of Zambia"
Ppb	part per billion
PRP	Poverty Reduction Programme
SFAP	Support to Farmers' Associations Programme
ZACA	Zambia Agricultural Commodity Agency
ZAHVC	Zambia Association for High Value Crops
ZAMTIE	Zambia Trade & Investment Enhancement
ZATAC	Zambia Agribusiness Technical Assistance Centre
ZNFU	Zambia National Farmers Union
ZRA	Zambia Revenue Authority

1. BACKGROUND TO HISTORY OF PAPRIKA PRODUCTION IN ZAMBIA

1.1 HISTORY

Interest in paprika production in Zambia commenced around 1993/94 with the entry to the country of Paprika International (Pipo) which contracted with a number of commercial farmers to grow paprika to sell to Pipo, which would then export the dry pod to Spain for further processing. In the immediately following years production in Zambia was led by the commercial farming sector, with exports being made direct to Europe, primarily Spain, or to South Africa, through paprika promoters. Paprika development in Zambia was in tandem with that in Zimbabwe, although the exponential growth in Zimbabwe production has been a marked contrast to that achieved in Zambia to date.

Support for small farmer grown paprika began around 1998/99, especially through such donor supported initiatives as CLUSA. Increasing linkages and donor groupings were reasonably successful in increasing Zambian paprika output through small farmer production. Nevertheless, the sector remains relatively small and undeveloped, despite the substantial quantities of donor, Government and private resources invested into it over the years. It is also difficult to enumerate precisely the actual size of paprika production and export value, although the following tables provide an indication as well as a view of its more recent fortunes:

Table 1: Zambian Paprika Production

	1998	1999	2000	2001	2002	2003	2004
Tonnes (EBZ)*	1,750	2,100	2,000	2,600	1,900		
Tonnes (Trade)		1,600	1,300	2,200	1,450	920	
Tonnes (Est)#							1,650
Export Val US$000s (EBZ)	810	2,800	1,800	2,980	1,630		
Export val US$000s (Est)						1,000	1,900

* Export Board of Zambia (EBZ)
\# Consultant estimate

Interpretation of the above table requires some care. EBZ acknowledges their figures are necessarily inaccurate, with their data being drawn from several sources including the Zambia Revenue Authority (ZRA) and the Bank of Zambia (BoZ), as well as discussions with the companies themselves. Export values are FOB. Where the consultants have estimated 2004 production and 2003 and 2004 export values, these have been based on

discussions with the two principle operating entities. Whilst allowing for the inaccuracies, the overall picture nevertheless shows total production to be relatively small, peaking around 2000-2002 and declining thereafter. Peak activity was during 2001 when some 2,600 tonnes was estimated to have been produced, with an estimated FOB value of US$3.0m.

In prior years there have been a variety of market promoters within Zambia providing some stimulation to production. Outside of the two current primary producing/marketing blocks of Cheetah Zambia and Enviro/ZAHVC, whose current operations are detailed below, earlier players included Pipo, Tanwood and Masstock. For various different reasons, all these market promoters are no longer working in the market. The causes, and especially the repercussions, of their various exits, with some commercial farmers either being out of pocket or losing money, have had an important lasting impact on the credibility and reputation of the paprika sector in Zambia. This is an important factor in the relative lack of interest in the growing of paprika by commercial farmers.

1.2 Current Structure:

1.2.1 MARKET SPONSORS

There are two current primary market sponsors in the Zambian paprika sector. The way the sector has developed in the immediate past is such that it has become highly polarized into two camps surrounding these two main players. Furthermore, these two sponsors have become diametrically opposed in their outlook and competitive behaviour in such a way that not only is cooperation between the two for the betterment of and progress within the sector not possible, but that their activities are such that they are probably doing the sector harm.

The two sponsors are Cheetah Zambia and the Enviro Oil/Bimzi/ZAHVC (ZAHVC = Zambia Association for High Value Crops) grouping. In brief, Cheetah Zambia is a Dutch associate company privately owned commercial operation that has been active in Zambia for some 10 years. It has a modern factory in Lusaka for processing paprika pod into flake and powder and exports primarily to Spain and South Africa. In Zambia Cheetah works with commercial farmers and sponsors small farmers, both under contract. Cheetah Zambia has received limited donor support in the past. It has no growing capacity on its own account. It has a sister operation in Malawi, operating primarily with small farmers, while both Cheetah Zambia and Cheetah Malawi have also been active in promoting small farmer paprika production in Mozambique.

In similar brief, Enviro Oil/Bimzi/ZAHVC ("Enviro") is a Zambian domiciled grouping dominated by Enviro Oil comprising sponsored small farmers through groups under the ZAHVC umbrella grouping and which has, in the past, received substantial donor support. Additionally Enviro grows paprika on its own account close to Lusaka and in the past has contracted major Zambian agribusiness Agriflora to grow paprika for it on a large scale basis. Enviro and ZAHVC sponsored production in the past has been exported direct, mainly to South Africa although small quantities have also been exported to Spain.

While some exports of pod are expected to continue from the 2003/2004 season, Enviro's main focus will be on production of paprika oleoresin through its newly rehabilitated plant in Lusaka.

Outside of these two groups is some independent production, both by commercial farmers and by small farmer groupings, either for sale to the main two groupings or for direct export sale.

Such is the commercial rivalry between Cheetah and Enviro that it has not been easy to establish exact details of operations for fear of one side giving perceived commercial advantage to the other. The following assessment of each operation is presented with this proviso.

1.2.1.1 Enviro/ZAHVC:

The Zambian Association for High Value Crops (ZAHVC) comprises five sponsors of groupings of small farmers, Bimzi, Biopest, Mipachima, Steadfast and White Rose. It would be fair to say that, by sheer weight of production and activity, ZAHVC is dominated by Bimzi, which has common ownership with Enviro. The five members of ZAHVCare also high profile within the Zambian community. Details of 2003/2004 season crop production activity has been provided as follows:

Table 2 ZAHVC Expected 2003/2004 Paprika Production

ZAHVC Member	Direct Prod'n '000kg	Direct hectares	No of s/farmers	Approx hectares	Est yield '000 kg
Bimzi/Enviro	120	59	1,929	866	278
Biopest	7	3.5	432	500	150
Mipachima	7	3.5	682	450	145
Steadfast	3	1.5	101	90	23
White Rose	1.5	1.0	102	24	6
	138.5	68.5	3,246	1,930	602
ZAHVC Combined hectares			**1,998.5 ha**		
Combined estimated production			**740,500 kg**		

ZAHVC production is spread through Southern and Eastern Provinces. During the 2000/2001 season, with Government support through the NORAD assisted Support to Farmers Association Project (SFAP) in particular, ZAHVC sponsors provided support to its contracted small farmers through the provision of inputs (seed, fertilizer and chemicals) under loan, to be repaid through crop bought in by the sponsors, and to be repaid by the sponsors to Government through SFAP. Resulting yields for the season were good, on account of the weather as well as input availability, but ZAHVC indicated the repayment rate of the small farmers was poor mainly due to side selling and possibly the greatest practical hindrance to orderly progress of the paprika sector. In subsequent years input support to smallholder farmers has been confined almost entirely to seed,

although in some areas chemicals have been made available as required to combat specific pest/disease problems. Contributory factors to the inability to extend input loans has been unavailability of funds under the revolving credit made available through SFAP.

In addition to support from SFAP in prior years, ZAHVC members have benefited also from the Poverty Reduction Programme extended by the Ministry of Agriculture and Cooperatives and also administered by SFAP. For Fiscal year 2003 this support amounted to K1,000 million, 25% in grants and the balance as loans. Four of the five ZAHVC members received 97.8% of the funds disbursed. The grant element was intended to provide extension support to small farmers and the balance intended to provide crop finance to the sponsors to enable them to buy in the paprika from small farmers. For the current season funds have yet to be made available and it seems likely that funds will not be forthcoming.

At the time of the writing of this report, the potential lack of access to funding for ZAHVC members has serious implications for their abilities to buy in paprika crop from small farmers. The 2004 crop becomes available from May and the sponsors need to be available to acquire crop with ready cash not only to ensure that they obtain the crop and prevent side selling but also to retain small farmer confidence in the crop and the market structure. This latter especially, given the current dysfunction within the sector, is becoming critical.

Nevertheless, assuming ZAHVC members are able to arrange sufficient funds to enable them to acquire their estimated production, as Table 2 indicates between them the expected availability to them of paprika is some 740 tonnes. The Enviro Oil oleoresin plant, based just outside Lusaka, will be fully operational for the first time for the processing of paprika oleoresin for the 2004 season. The plant was established originally for processing marigold flowers. However, for reasons outside of the remit of this report, there were problems associated with plant specification. As a result the plant has been completely upgraded, primarily with stainless steel fittings replacing former mild steel. The plant has been test run but has yet to run continuously for an extended period under commercial operating conditions. Start up for 2004 currently awaits sufficient volume of paprika pod to enable effective running. Funding for the plant rehabilitation has not been explored in detail, although it was indicated to have cost around US$3.0 million and to have been at least partially funded by a PTA Bank loan. Production facilities include a small on site laboratory for production quality assessment.

Plant management advise that ideal target production for the year would be based on 2,000 tonnes paprika pod which would yield some 200 tonnes of paprika oleoresin at an industry average of 10%. This is based on a running period of 8 months. Earlier indications were that Paprika Oleoresin (ORP) would fetch US$25.00/kg FOB on international markets, although pressure from Indian producers has recently pushed this down to US$20.00/kg, giving potential gross revenue to Enviro of US$4.0m based on a production throughput of 2,000 tonnes paprika pod and 200 tonnes ORP produced. Additionally, in order to maintain the market links already established, Enviro estimates it needs a further 3,000 tonnes annually, a total requirement of 5,000 tonnes annually.

However, the crop production situation in Zambia as indicated above is clearly not going to provide Enviro with 5,000 tonnes of pod. Even in the unlikely situation that Enviro was able to access all the estimated Zambian production for 2003/04, our indications are that under 2,000 tonnes will be produced. Our prediction for crop availability to Enviro for the season per Table 2 is 740 tonnes, to which additional buying from independent sources may be added, giving access to perhaps 800 tonnes for the season. Even from this total Enviro is likely to sell some, either as direct exports or into the local market as ground spice, generating cash flow. We would expect therefore, assuming the plant works as planned, a maximum production of 75 tonnes of ORP for the season, worth perhaps US$1.5 million, although 50 tonnes ORP worth perhaps US$10 million would perhaps be more realistic for 2004 crop. Without knowing the financing arrangements for the plant rehabilitation, there would nevertheless be some confidence in stating that this is not a viable level for the plant to service its operating costs, input requirements or loan/equity servicing. Furthermore, unless the crop production levels can be increased in Zambia, it is unlikely that the plant can be supported on local production resources.

1.2.1.2 Cheetah Zambia:

The commercial rivalry between the two Zambian paprika marketers is such that Cheetah Zambia was unwilling to release specific production details and expectations for the current season. At best, Cheetah was prepared to estimate that it would acquire some 700 tonnes of paprika from Zambia for the 2004 season, split roughly 50/50 between commercial farmer and small farmer production. Small farmer production includes own direct sponsored production as well as crop acquired from (mainly) NGO sponsored groups. Cheetah finances its crop acquisitions from commercial farmers as well as small farmers initially from its own resources and additionally through a foreign currency denominated loan raised offshore. Local borrowing is avoided due to the high interest rates.

Cheetah production facilities in Lusaka industrial area comprises an indicated investment of in excess of US$2 million, all privately funded. Apart from warehouse space it includes deseeding machinery, pressing and baling and a more recently installed high specification grinding mill aimed at ground paprika for the spice sector. In addition Cheetah Zambia has invested in a high specification laboratory, capable of conducting an extensive array of quality control tests. Amongst these are the ASTA tests, a measure of colour intensity and quality and by which deliveries of pod to processors are assessed for pricing. Additional testing is possible for aflatoxin contamination, of increasing importance for capsicum products imported into the EU. Microbiological contamination, including salmonella and e. coli can also be measured, again of increasing importance for exports into the EU and the USA as tolerances are very fine. From discussions it seems that the Cheetah laboratory is the most sophisticated in Zambia, and possibly the most sophisticated and capable in the private sector in the Southern African region. It is mainly used for Cheetah Zambia's own requirements, as well as its sister company in Malawi, although the company is gradually beginning to make the facilities available to third parties, such as groundnut exporters, on a commercial basis. However, such is the state of

animosity between Cheetah Zambia and Enviro that any collaboration between the two over laboratory access is unlikely.

The benefits available to Cheetah from its laboratory are obvious. It exercises tight quality control and for example tests every 1,000 kg of pod it acquires across the range. It has therefore been able to build up customer confidence in its export product as well as minimising disputes over ASTA rating of paprika pod delivered to export customers. It offers the capability also to make payments by ASTA rating to its producers, which Cheetah does for all deliveries over 1,000 kg. The benefits are not just to the producer as payment by ASTA rating focuses attention by the grower more strongly on grading quality, reducing the costs for Cheetah in crop processing prior to export.

Annual crop throughput for Cheetah Zambia's facility is insufficient at current estimated 700 tonne levels. Even combined with Cheetah Malawi and the two associates' activities in Mozambique an implied total throughput of 2,500 tonnes for 2003 was insufficient to justify the investment levels made so far. Cheetah Zambia estimate that 4,000 kg is an adequate target between the three countries to pass through its facility, with 2,500 tonnes of this being sourced from Zambia. On current outlook this is unlikely to be achieved.

1.2.1.3 Other production:

Production outside of Enviro and Cheetah Zambia is difficult to pin down. Major commercial farmer Jerry Carbin, who used to work for Masstock, grows paprika close to Kariba. Up to the 2001 season it is understood his crop was marketed through ZAHVC although from 2002 onwards his production, estimated at approximately 100 tonnes annually off some 40 hectares is exported direct to South Africa. Independent buyer Pepe/Chakanika is understood to have stopped buying operations from 2003, his activities until then accounting for some 100-200 tonnes annually and exported direct to Spain. Other buying activities account for perhaps 50 tonnes annually. These include buyers for the Zimbabwe and South African markets as well as buyers from the Democratic Republic of Congo (DRC) who are believed to be supplying the domestic spice market in the DRC.

1.3 CONSTRAINTS

As outlined above, the biggest constraint to the paprika sector in Zambia is the lack of paprika product to buy. The two main market sponsors, Cheetah Zambia and Enviro have a potential combined annual requirement from Zambian paprika production of 7,500 tonnes. Recent production has fluctuated between 1,000 and 2,000 tonnes, exceeding 2,000 tonnes only once in the past 5 years and with current year production expected to be below 2,000 tonnes, giving a requirement shortfall of more than 5,500 tonnes.

Discussions with various parties on the ground in Zambia have given some insights into the constraints faced by producers and which are discussed below, divided into Commercial Farmers and Small Farmers. Both will be examined under the major perceived constraints:

- **Weather**
- **Competing crops**
- **Finance**
- **Support**
- **Market**

1.3.1a Commercial Farmers

A relatively small number of commercial farmers in Zambia are growing or have grown paprika. The most suitable regions in Zambia are agreed to be Southern and Eastern Provinces while some has been, and is being, grown in Central Province, with paprika requiring very similar growing conditions to tobacco. Within the longer established commercial farming community, i.e. not those recently arrived from Zimbabwe, there is a small nucleus that have grown paprika more or less continuously since the crop was introduced to Zambia. These few are concentrated around Mazabuko and Lusaka and between them produce perhaps 200 tonnes, all of which is sold to Cheetah Zambia. In addition a single large scale farmer, Jerry Carbin, grows around 100 tonnes and which is exported to South Africa directly. In prior years Jerry Carbin has sold to ZAHVC. Continuing to sell to ZAHVC is Agriflora, which is a large agribusiness whose primary business is the export of fresh flowers and vegetables to Europe.

Agriflora has been growing paprika under center pivot irrigation on a farm understood to be owned by ZAHVC lead member Bimzi on behalf of Bimzi. Commercial farmers tend to regard paprika as a secondary crop, their primary crops being coffee, cotton or, increasingly, tobacco. Also, significantly, commercial farmers tend to grow paprika as a winter crop, under irrigation (either center pivot, overhead or drip) and to apply recommended levels of fertilizer and chemicals under a planned system. Yields tend to be between 2,500 and 3,000 kg/hectare. Areas grown tend to be not less than 5 hectares. Outside of Jerry Carbin and Agriflora, with production from up to 80 hectares, the largest individual commercial farmers tend to grow up to 40 hectares. Crop financing tends to be from own resources.

Some large scale farmers have found problems with growing paprika in some areas of Zambia. This is especially the case along the Zambezi where, although there is plenty of water available they have found it impossible to apply it fast enough to have effect before the evaporates in these very hot areas.

1.3.1b Small Farmers

Small farmers tend to grow paprika as a secondary cash crop, that is after their primary subsistence crop, maize, any surplus from which they will sell, and after their primary cash crop, which tends to be cotton. It is unusual to find any small farmer growing paprika as a primary cash crop. Small farmers tend to be organised in groups, under patronage of one of the market sponsors ZAHVC or Cheetah, or under an NGO/donor initiative, such as CLUSA. Such groupings have, in the past, benefited from supply of inputs under credit, although given the experiences of the market sponsors and the donors, more recently small farmers have benefited only from seed distribution under credit. Advice on crop husbandry, handling, processing and storage appears to be very limited.

Small farmers in the majority grow rain fed crops, and areas grown tend to be small, from ¼ hectare (known as a Lima in Zambia) to perhaps as much as 1 hectare, the norm being around ½ hectare. Yields under good weather conditions and with recommended application of fertilisers in particular can be upwards of 1,500 kg/hectare. However, with minimal, if any, application of fertilisers and average rainfall conditions, yields of 250 – 400 kg/hectare are more normal, and more recently have been reported as being as low as 140kg/hectare.

1.3.2 Constraint 1: Weather

1.3.2a Commercial farmers

Commercial farmers, because they tend to grow paprika under irrigated conditions over the dry season in Zambia, are less affected by weather patterns than if they were to grow during the rainy season. Additionally, the more tropical growing conditions are, the less easy it is to grow paprika profitably due to the intensity of rainfall and the ensuring pests and disease problems attendant with very moist conditions for capsicum crops. In Zambia commercial farmers tend also to grow paprika under what is known as “ranching” conditions, relatively large areas under low intensity input and management. With irrigation yields of 2,500 to 3,000 kg/hectare are the norm. This is in contrast to what was being achieved in Zimbabwe by commercial farmers following very high intensity growing conditions on smaller units, and achieving yields in excess of 12,000 tonnes/hectare. This was achievable under high management conditions utilising drip irrigation, backed up by foliar analysis available from laboratories etc. These high intensive management techniques are less viable in Zambia due to the less developed agronomic back up infrastructure.

Obviously an important pre-condition for dry season irrigation is water availability and on some commercial farms this has been an important limiting factor – not only from the actual physical presence of water but also the cost of the irrigation equipment needed. Dry season/winter temperatures also tend to be lower and this can affect the grow out rate of the plants which will be slower than achieved in the warmer temperatures with rain fed crops.

1.3.2b Small Farmers

Availability of irrigation during the dry season enables greater certainty for large scale farmers, but small scale farmers are more vulnerable to the weather patterns for each growing season. While an early start to the rains may catch the small farmer off guard, leading to late crop establishment, more likely is a late start which shortens the establishment and growing out period for the crop and leading to smaller and less developed plants with lower potential yields. An early end to the rains will have a similar effect, resulting in lower yields. Paprika is vulnerable also to a wide range of pests and diseases. Very heavy periods of rain during the season can lead to a build up of pests as well as rotting diseases such as anthracnose and various forms of mould, all of which will reduce yields as well as quality. Growing in the dry season reduces these risks, and is possible only with access to water and the means to apply it. Commercial farmers reckon on a need for applying 2 inches (50 mls) water per week to grow a sufficiently viable crop.

From the end of the rains small farmer paprika growers benefit from residual moisture in the soil and will be able to harvest two "flushes" from the paprika plant (the pods occur in distinct cycles – "flushes"). Extension of moisture availability through irrigation beyond the end of the rains could enable a third flush and increase yields significantly from a well managed crop. Commercial farmers with their irrigation capability can expect four or more flushes during their growing season. Ability to irrigate therefore has the potential to spread the risk of weather patterns for the small farmer as well as the potential to increase yields through extending the cropping period.

1.3.3 Constraint 2: Competing crops

1.3.3a Commercial farmers

Paprika, being a relatively new commercial crop for farmers in Zambia, tends to be regarded as a minor diversification as opposed to a mainstream crop for commercial farmers and small farmers alike. This affects the focus and attention the farmer gives to his crop, with inevitably the greater attention and resources given to the mainstream crop. For commercial farmers in Zambia mainstream crops increasingly have become tobacco, coffee, maize and cotton. These are long established, traditional commercial crops in Zambia, for which known and reliable markets are established. They are supported also, to a large extent, by well developed infrastructure in the form of sector bodies performing regulation and support as well as market information, advice, research and development and so on. Additionally industry service/input support has developed around these crops, the volumes grown of these crops enabling practical and economical service by the support sector.

A commercial farmer therefore will consider tobacco for example as being the primary crop while a perceived minor crop such as paprika will be considered a minor, albeit potentially profitable, sideline diversification. Additionally, a commercial farmer will consider how a crop such as paprika will fit into his cropping scheme. With paprika and tobacco both being solenaceous species they are not compatible in the same rotation system due to similar pests and diseases. This does not rule out growing tobacco and paprika on the same farm, but does mean that separate rotation systems will need to be followed. Paprika is more compatible with maize, cotton and coffee.

However, paprika grown as a dry season crop is compatible with commercial farming operations in other ways. Its harvest period, which is relatively labour intensive, is after that of tobacco for example and spread over longer periods. Drying of the harvested pod is easier in the dry season.

An additional factor affects newly establishing former Zimbabwean commercial farmers. These farmers are generally establishing themselves on derelict farms. Their main thrust apart from farm rehabilitation has been in growing tobacco crops which give them proven returns and for which they are receiving substantial support in the form of finance for inputs and infrastructure from the tobacco merchants. These farmers do not have the time, capacity or resources currently to consider additional high value crops. However, as they become more established, these farmers, many of whom will have had experience in growing paprika in Zimbabwe, could well be in a position to consider further diversification in their cropping programmes, not least to lessen their dependence on the tobacco sector. Opportunities for paprika promotion would result.

1.3.3b Small farmers

Small farmers make similar decisions to commercial farmers when deciding their cropping mix. Traditionally their major cropping activity has been, and remains, maize. Typically upwards of half of their annual cropping programme will be maize, aiming for sufficient for their own requirements and any surplus available for sale. The small farmer's cash crop thereafter may well be cotton, or, increasingly, tobacco. Perhaps a quarter of his cropping programme will be this major cash crop while the remainder may well be a mix of cash crops including fresh vegetables, sunflower etc.

It is into this mix that the paprika promoter has to project his crop. Those small farmers that are growing paprika are, in general, growing it as a supplementary cash crop, mainly to cotton. They are also, generally, growing paprika as an additional crop, maintaining their proportions of maize and cotton. Paprika has as yet not graduated to the position where it is regarded as the primary cash crop on the same pedestal as, say, cotton. The reasons for this include the long established nature of the cotton sector and long standing, proven if unspectacular returns available. Substantial support for the cotton, tobacco and coffee small farmers is provided also by the market promoters, in the form of input supply on credit, field support and advice including field days, open pricing and grading policies and including established licensed markets in the case of tobacco, with

arbitrators available in the case of disputes. Visibility and organisation by the sector sponsors is very high throughout, maintaining a high profile in the field.

In comparison the paprika promoters' profiles are lower to almost non-existent. As discussed elsewhere, input support is now largely confined to seed supply only although in earlier years fertilizer and chemicals were made available also. Visibility of the paprika promoters during the growing season is low with little if any effective extension service or advice being provided. Crop buying follows little in the way of formalised activity, with often prices not being advised until after the buying season has commenced. Crop is bought at the farm gate literally but standards on grading vary and buyers transacting their business at night are not unheard of. All these factors combined serve to create a lower visibility and credibility for paprika in the small farmer's mind set in comparison to the more established cotton, tobacco and coffee sectors.

1.3.4 Constraint 3: Finance

1.3.4a Commercial Farmers

For high intensity farming as undertaken by larger scale farmers there are two main components requiring finance – inputs and infrastructure. Indicative direct costs for paprika production, following recommended rates of fertiliser application and following recommended spraying routines, are put at around US$1,500/hectare. Even a fairly modest area of 5 hectares would cost a minimum of US$7,500 while a larger scale 20 hectares would cost US$30,000. The paprika growing cycle, irrigated over the dry season would typically be 8-9 months. With most resources dedicated to the primary crop of tobacco, maize or whatever, resources available to the commercial farmer for finance of paprika are scarce.

Crop finance for commercial farmers is beyond the resources of the two paprika promoters, although in the past Enviro/Bimzi has been able to supply inputs received under the SFAP scheme to the Agriflora managed paprika production unit. Under this scheme it had been argued successfully that to develop the industry input credit support should be made available to the commercial farming community through donor/Government funding as well as to the small farmer sector. How widespread this donor funding for the commercial sector was made available is not clear, with only one other commercial farmer benefited under this scheme, also for supply to Bimzi/Enviro through ZAHVC. It is uncertain whether this arrangement will remain in place with the current phase out of the SFAP programme, although it seems unlikely and the window for commencing in time for the 2004 season as at the time of writing this report (May 2004) is almost over.

Alternate sources of input financing for commercial farmers are effectively non-existent. Commercial financing through the banking sector is widely regarded as not being an option. This is firstly due to the high cost of borrowing, and although borrowing rates have reduced to around 40%, these remain too high for crop finance. Additionally commercial farmers indicated that the expertise in the banking sector for assessing the risk of crop finance for crops such as paprika is non-existent. In the past the banking

sector was claimed to have been an active supporter of the agricultural community in general but that this appetite and understanding of the sector had died away while the banks had pursued perceived easier and more lucrative opportunities in the Government financial securities markets. Reduced opportunities from this market of late may stimulate the banking sector to seek out more real lending opportunities, including to the agricultural sector, although this has yet to materialise. However time precluded the opportunity to discuss the situation with the banking sector.

Commercial farmers also need to finance the infrastructure needed for irrigation. Indications are that a center pivot system, capable of irrigating a relatively large area of 40 hectares, would cost upwards of US$250,000 while a shade netting housing covering one hectare would cost about the same with the additional requirements of a drip irrigation system required to be financed as well. Sources of finance for this investment for the average commercial farmer are effectively nil.

1.3.4.b Small Farmers

As with farmers the world over, large or small, financing the annual cropping programme is a major consideration affecting actual cropping activity. Small farmers in Zambia are no exception to the rule. The early stages of encouragement of small farmers to grow paprika in Zambia was accompanied by inputs made available on credit through the paprika promoters and additionally through donors in the donor supported groups. Inputs supplied covered seed, fertiliser and chemicals. The recognition is that paprika is a potentially high value crop and that in order to achieve the high yields that will provide high returns, farmers need to apply the inputs in recommended quantities and frequency. Without these inputs and methodology high yields and quality, and therefore additional higher level income generation for small farmer communities is unlikely to be achieved.

This is ably demonstrated by the yield experience in the small farmer sector. In the earlier stages, when full input levels were being made available under credit to small farmers, yields were in the 600-700 kg/hectare level. In the latter period to the present, in which input financing for small farmers has been dropped except for seed, yields have dropped to the 200-250 kg/hectare and lower. While other factors also have an effect, including weather, it is arguable that lack of access to inputs, especially fertiliser, has been the biggest single factor in reduction in yields and a major contributory factor in the stagnant growth in Zambian paprika production. Lack of extension services and advice, whether or not fertiliser has been provided, is another important factor.

The withdrawal of input finance by both the paprika promoters as well as the donor grouping support systems is examined in further detail below. Principally the difficulty in ensuring credit repayment from small farmers has been the major problem. This has led to reduced level of revolving funds for the donor supported groups and loss of investment in the case of the paprika promoters. However, as discussed below, a major part of the problem has been with the paprika promoters themselves who have been unable to cooperate with each other to prevent side selling, amongst other sector interests. Side selling occurs when growers, in spite of contracts or other agreements signed between themselves and the promoters who have extended credit to them, sell to other

parties instead. The grower avoids repayment of the input loans maximizing his income from the crop while the promoter loses his investment in the inputs extended as well as the crop he was expecting to buy that had benefited from those inputs.

Side selling is neither unique to paprika nor to Zambia. While it is probably impossible to eliminate the problem completely, elsewhere and in other cropping sectors including Zambia, the interested promoters have been able to work together to try and minimise the problem. The willingness and ability of the two Zambian paprika promoters to work together so far on this and other common sector problems has been negative, to the detriment of paprika production in Zambia.

1.3.5 Constraint 4: Support

1.3.5a Commercial Farmers

In general commercial farmers have been relatively well supplied with agronomic support and advice by Cheetah Zambia, whose staff includes an agronomist as well as other support field staff. Cheetah Zambia also hosts field days and provides advice on growing as well as market information. Cheetah Zambia advises its growers, who are under contract, of expected price levels prior to planting. Pod is delivered to Cheetah Zambia still with seed inside but with stems removed. Payments are based on delivery to the factory at Lusaka in bales of hessian similar to those used by the tobacco sector. Payments are made according to ASTA tests undertaken by Cheetah. It is in the growers' interests to grade the delivered paprika as well as possible so as to maximise the ASTA test result. With the pod containing seed on delivery and therefore included also in the ASTA testing, ratings are lowered as a result of the debasing by the seed. On the other hand the grower is delivering a greater weight through including the seed. In general, commercial growers seem satisfied with Cheetah's handling of the ASTA testing. Mechanisms for independent testing of ASTA are not available. Cheetah attempts to ensure that commercial farmers are settled in full within three weeks of delivery to the Lusaka factory. Again, Cheetah's growers seem generally satisfied with the arrangements. The obligations of each side are clear and by and large are adhered to.

There are no equivalent commercial farmers supplying to Enviro/ZAHVC at present to enable direct comparison.

1.3.5b Small Farmers

Support provided by the two paprika market sponsors to small farmers on the other hand is to a large extent more cursory. This is not entirely a matter of lack of resources, although that is certainly a factor. Although Cheetah in the past would seem to have provided a greater degree of extension and support service to its contracted small growers, this is currently not as full a service. Very little, if any, effective extension and support service is provided by ZAHVC members to its contracted growers. This is despite receiving grant funding specifically for this purpose from Government of Zambia through SFAP.

Indeed indications have been that neither of the two paprika promoters show much support or interest in the small farmers from the time seed is distributed to signed up farmers until the time to collect the dried pod. This is clearly not entirely a fair assessment as both groupings do have infrastructure supporting their small farmers, based on a group structure, with an overall district leader responsible for a series of distributors who in turn work with a grouping of farmers. However, it is likely that the resources available to this is insufficient, especially given the large areas over which small farmers are disbursed. Travel conditions during the rains are on poor rural roads. A support system using motorbikes and bicycles to provide access into the rural areas and the small farmers is used, although these resources seem thinly spread given the numbers of farming units.

The training and knowledge of those in the field also seem open to question. Of course paprika is a relatively new crop in Zambia and there is not much knowledge of it either amongst the rural farmers or amongst Government extension personnel. Indeed the lack of knowledge for the crop together with lack of Government resources was admitted at the Ministry of Agriculture and Cooperatives, where officials were quite clear that the operators within the sector had the obligation and duty to develop the extension service to farmers, especially small farmers. It was stated this development should be in conjunction with the Ministry and aimed at developing capacity for the sector and improvement in crop management and yields. Provision of expertise by the promoters would supplement and backstop that provided by the Ministry, whose employees are by training generalists with little in the way of specific knowledge of specialist crops such as paprika. The Ministry noted also that in the major agriculture sectors of cotton and tobacco the merchants provided their own extensive extension services. The Ministry would like to see paprika extension develop along the lines of tobacco and cotton.

A part of the funding made available through the Ministry via SFAP to ZAHVC (Cheetah Zambia did not benefit as it was not, and is not, a member of ZAHVC) included a 25% grant element that was expected to be used to assist in the provision of extension services.

Certainly the limited views in the field visits indicated that further extension services to small farmers would be very beneficial. Focus on crop management in the field combined with wider support and advice on pest control and disease prevention should lead to yield improvements in the relatively short term, even without the application of fertilisers. Yields should be able to be increased from the current under 250 kg/hectare to perhaps 400 kg/hectare. Further extension advice into wider issues such as rotation requirements, companion planting to help in the minimizing of pests etc and would boost yields to perhaps 600 kg/hectare and over. Additionally clear advice needs to be given on harvest, post harvest handling and storage, which will minimise loss and improve quality. In particular advice on drying methods and techniques are essential to prevent microbiological contamination and aflatoxin build up. These are critical in exports for both spice and for oleoresin and tolerance limits are very fine. Current small farmer techniques observed in the field heighten risks from these contaminations and risk debasing the reputation of the national crop in international markets.

In a wider sphere it is clear also that there is no sector policy and/or coordination in addressing issues of concern and interest to the sector as a whole as opposed to individual promoter interests. These include research into new paprika varieties, or at least into varieties suitable for growing in tropical conditions, and/or varieties suitable for spice and those suitable for oleoresin – currently varieties grown in Zambia are used for both. Research into pests and diseases is also important for the sector as a whole, especially as the crop is relatively new, has a high affinity for pests and especially diseases under rain fed conditions, while as a member of the solenaceous family shares many pests with tobacco, and many commonly grown vegetables such as tomatoes and eggplants (brinjals). Some sort of national policies are desirable regarding crop hygiene and practice – such as disposal of crop residues to prevent pest harbouring.

1.3.6 Constraint 5: Market

1.3.6a Commercial farmers

As observed under Constraint 4: Support, those commercial farmers currently active growing paprika for supply to Cheetah are generally satisfied with the deal they receive from Cheetah. An important element in encouraging additional commercial farmers to start growing paprika is the satisfaction of existing growers and their continued participation. Some commercial growers have been in continuous production for around 10 years and other commercial growers inevitably will be interested as they assume they would not continue unless they were satisfied and the crop was profitable on a long term basis. However, the number of commercial farmers growing paprika is relatively small and the impact of the message of their continued faith not widespread.

Counteracting the positive image of continuous paprika growing is the more negative image of something of an insubstantial sector, with a perhaps unsavory past as a result of the bad associations engendered by the promoter failures over the past 10 years – Pipo, Tanwood and Masstock (twice). Stories of money lost, shady deals, untrustworthy participants, whether justified, true, or not, continue to linger and be associated with the trade. Time, and with positive associations resulting from long term producers would inevitably counter bad images – providing the sector avoids any further pitfalls that could muddy its image further in the eyes of the commercial farming community.

The lack of an industry association may well contribute to the perception of a lack of substance to the sector. Unusually for Zambia there is no “Paprika Association of Zambia”. Yet it seems that just about every sector – from tobacco and cotton, through coffee to bee keeping, pineapples and crocodile farming have their own association representing their interests and presenting them to the wider world. This lack of visibility – or coherence – may impact negatively on the sector. Some may point to ZAHVC as being an industry association, however this would be a wrong interpretation. Whilst ostensibly ZAHVC is open to a wider membership, in practice its membership is confined to a small group interest – a grouping within the sector effectively, with close affiliation to one of the two paprika market sponsors. This very focus may well prevent others from wishing to join, but whatever the case, ZAHVC does not represent a cross – section of the stakeholders in the paprika sector, and furthermore it does not act as an

association per se, as it is actually involved in trading on its members behalf – having carried out exports in the past. Cheetah is not a member, while neither are the various donor supported groupings of small farmers that would give any "paprika association" a wider brief and mandate to represent the interests of the sector.

The major contributor to the negative perception of the sector however is the current dysfunction and animosity between the two major players. The resulting "atmosphere' associated with the sector adds further to the perception of a slightly shady industry. While this is a negative flavour for the commercial farming sector, for the small farmer where the animosity asserts itself, the effects are potentially disastrous.

1.3.6b Small Farmers:

It is arguable that for a sector seeking to increase production and create a viable critical mass, it is doing very little to enhance its image and encourage the confidence of small farmers. While the issues of support for small farmers have been detailed above, the market arrangements also leave much to be desired. While the two market promoters cite that side selling is a major factor in limiting the support they are prepared to give to small farmers, their own rivalry and inability to coordinate and work together through establishing and maintaining codes of conduct is a major factor in enabling side selling to become endemic.

Both Cheetah and Enviro/ZAHVC report that their rivals routinely buy in paprika pod from small farmers contracted to them and to whom they have extended support. As a result both report reluctance to invest in more substantial infrastructure in the form of support, inputs and latterly markets as they feel it would be sunk investment costs that benefits only their rivals. In the resulting dysfunctional market, neither promoter will announce firm prices for buying in pod from small farmers until actual buying starts, and even then prices may vary from region to region and depending on whether the rival is active in that region.

Once marketing has commenced, buying is conducted from house to house by promoter agents/employees. There is no formal established selling point in each area to which paprika growers will bring their pod and therefore the transactions are not as transparent as they could be. There is room for dispute over grading, with small farmers complaining of pod being down graded and attracting a lower price. There is no mechanism for resolving disputes. Where the farmer owes money to the promoter, these days mainly for seed, the farmer has little option but to sell to the promoter at the indicated price. In addition it appears relatively common that settlement in cash is not immediate and that it can be several weeks before the farmer receives full and final payment for the pod acquired. Cheetah advises that it does not remove bought in pod from the area before it has been paid for in full. Nevertheless, to ensure transparency, trust and confidence in the market, it is clearly essential to ensure that the farmers are paid promptly and satisfactorily for their produce.

There are admittedly practical problems in handling large quantities of cash within the rural areas, especially from a security viewpoint. However, the practice of traveling from

house to house to acquire paprika contributes to this problem, whereas a more centralized and institutionalized market would help to minimize these risks. It is notable that other traders in other crops manage to resolve the issue satisfactorily. The rural areas post harvest time are full of maize buyers buying maize for cash generally at reasonably centralised points. Tobacco buyers have established markets within the tobacco growing areas to which the growers bring their tobacco for sale. Cotton growers bring their cotton to centralised depots or to the gins for payment in cash.

However, the distrust and disharmony that has developed between the two main paprika promoters is such that they are unable to agree to such formalised marketing arrangements and instead chase down each grower. The result of course creates conditions ideal for side selling to the detriment of both promoters. Ultimately also the small farmer suffers because promoters are no longer prepared to extend input credits, which means that small farmers' yields do not reach expected levels, which means that small farmers lose confidence and interest in the crop. Production levels stagnate and even decline, creating an imploding cycle. The side selling issue becomes so endemic that other promoters of small farmer groupings are reluctant to extend input credits either due to the risks of being unable to effect repayments. Ultimately, the system that has evolved is doing disservice to the small farmer and could well undermine completely the whole sector.

Competition in the field for crops of course is generally recognized as a good thing, especially in ensuring that the farmer receives the best price for his produce. This ideal becomes complicated when promoters extend input credits to the farmers and also make investment in extension and promotion services for those farmers. The costs for the promoters of acquiring product in the rural areas are also high. The infrastructure and transport to factory may as much as double farm gate prices. In competitive world markets, promoters need to minimise the costs of their purchases in order to remain competitive in their international markets. But this does not mean stifle the supply of product completely.

1.3.7 Other Constraints:

While the above major points represent the main constraints to the expansion of production of paprika in Zambia, there are several other issues that have been raised as constraints by stakeholders and that have an impact on production to a greater or lesser extent. These include:

1.3.7a Laboratory facilities

The lack of an independent laboratory to enable independent testing and quality control has been raised by some stakeholders as being a constraint in the promotion of paprika production. Laboratory facilities are available of course – at Cheetah Zambia, one of the two main paprika promoters. Given the poor state of relations between Cheetah and Enviro/ZAHVC, cooperation over the use of the laboratory – in which Cheetah obviously has a proprietory right given that it has self financed it – is highly unlikely.

The laboratory is used primarily for quality control and for ASTA testing. These are important for maintaining standards for the export crop and can be used also for grading and pricing crop bought in from farmers. Pre-testing of exports is especially for ASTA ratings but also for ensuring microbiological and aflatoxin contamination levels are below minima and therefore minimising potential for disputes with export buyers. For national crop image this is an increasingly important consideration. Tolerance levels for aflatoxin in EU markets is 10 ppb (part per billion) while for the USA it 15 ppb.

Given the current levels of production in Zambia, and even looking at possible production levels and including Malawi and Mozambique production, it is unlikely that the sector could justify more than one dedicated laboratory. It is also difficult to see justification for donor or public funding for a second dedicated laboratory, rendering the private sector investment in the existing laboratory a waste of resources and putting that company at a disadvantage.

Resolution of this problem will be made easier through an improvement in relations between the two main promoters. If this were the case it would be easier to explore options whereby perhaps access to the existing laboratory could be established for other operators within the paprika sector (the laboratory is available already for operators outside the paprika sector). Alternatively, if donor/public funding is considered the best way to proceed, it should be on the basis of a laboratory with the capability of servicing the needs of the Zambian agricultural sector as a whole, not just paprika, which remains a relatively very small proportion of the agricultural sector. Paprika specific testing requirements, such as ASTA ratings, should remain the responsibility of the promoter.

1.3.7b Finance for crop buying

This is a major problem that is by no means confined to the paprika sector. The approach by the two main paprika promoters in Zambia to this problem has been interesting. Cheetah arranges offshore bank finance through its Dutch parent as well as using its own resources. Enviro/ZAHVC, while also using its own resources, has been able to benefit from the Poverty Reduction Programme (PRP) Revolving Fund administered by SFAP for the 2002 and 2003 buying seasons. A more detailed examination of this funding is made in Section 2.

While Cheetah indicates its funding for crop purchase is in place for the 2004 season, the status of the PRP for 2004 is uncertain, with the ending of SFAP in June 2004 not being in a position to administer it. Buying of paprika from small farmers by both promoters commenced at the beginning of May 2004.

In an increasingly liberalised economy, it would seem difficult to justify public or donor funding being made available for the essentially private sector activity of funding crop purchases, even allowing for the need to empower small farmers. Provision of such support funding to one of the two active promoters also runs the risk of unbalancing the sector.

Private sector sources of funding of course are difficult to arrange, especially in a relatively new sector such as paprika. The banking sector in Zambia is reported to be risk adverse, especially in relation to the agricultural sector, although this may be changing as a result of the less attractive market for Government securities. Nevertheless local borrowing rates remain high at over 40% while access to foreign funding for borrowers without overseas connections. Access to funding for crop acquisition will remain a problem and no easy fix is likely to be able to be suggested.

1.4 Paprika Supply Chain

Zambia – Export markets

The paprika supply chain in respect of Zambia can be represented schematically as follows:

Small farmers **Own Production** **Commercial farmers**

Donor support groups

Donor & Govt funding supp.

Promoter support groups

Donor support

Govt support

P U R Cl H A S E S

Purch-ases

Govt & Donor support funding

Enviro

Cheetah

Oleo resin manu-facture

Export Customers

Ground & Pod.

South Africa & Spain

Export Customers?

Process to pod & Oleoresin

Export & Domestic SA customers including Spain

2. ZAMBIA MARKET SITUATION REPORT

2.1 WORLD MARKETS

2.1.1 Market size

Worldwide production of paprika is difficult to assess accurately, not least due to some countries, notably China, combining paprika and chillies in their statistics, but has been estimated at some 120,000 tonnes annually. Of this some 25,000 tonnes is estimated to be used for processing into oleoresin with the remainder used in one form or another as a spice condiment. In view of the fact that Zambia has an oleoresin extraction plant and also that market feedback indicates a preference for use of Southern African paprika for colour extraction rather than spice, this market analysis concentrates more on oleoresin than the spice. Oleoresin is also the section of the market showing most potential for world growth, despite current production over capacity.

2.1.2 Market uses

Paprika oleoresin is a solvent extraction from paprika pod that concentrates the essential qualities of the pod. For paprika those qualities are primarily colour, which is used in a variety of food applications as a colourant. The use of a solvent enables the extraction to be dissolved in oily bases and therefore give a wide range of applications within the food sector. These include processed meat and fish colouring, vegetables, soups, sauces, chutney, dressings, cheese and dairy products, margarine etc. Wider range applications in the food sector include baked goods, confectionary, snacks and beverages. Increasingly applications are being found also in non-food industries, especially cosmetics and pharmaceuticals. Amongst the latter applications are in products such as toothpaste, mouthwash and disinfectants while in cosmetics potential applications include lipsticks and skin creams.

Increasing restrictions on cosmetic applications due to concerns over carcinogens in particular can be expected to increase demand for natural colourants such as paprika. Further stimulation of demand should come from increasing consumer concern over the use of synthetic materials and a broader based consumer preference for natural products. However, this preference will be tempered overall by price. The increase in oil prices during 2004 could well produce a stimulus for natural colourants and flavourings, although the oleoresin process does use hexane in its extraction, meaning the price of inputs for extraction will also rise. It should be noted also that paprika is by no means the only natural colourant available in red – others include annatto and cochineal.

Paprika is not the only spice that can be converted into oleoresin. Others include ginger, turmeric, coriander, pepper, mustard amongst many others. The oleoresins represent a concentrated flavour and/or colour profile of the spice. The rationale of the industry is that 10 per cent by weight of the dried spice represents the main characteristics of the spice – aroma, colour, flavour and pungency. Concentration enables end users more flexibility as well as storage, quality and transportation advantages. Extraction by solvents, such as hexane as used in paprika is an oleoresin while extractions using steam distillation is an essential oil.

For paprika the constituent element wanted is the colour, which is a deep red. The colour can be varied through mixing with other oleresins such as marigold to produce oranges. When used as a colourant, it is important that the other characteristics of the spice are minimized, especially pungency.

2.1.3 Oleoresin Producers

India is the world's largest producer of oleoresins with world production capacity estimated at around 12,000 tonnes. Indian industry leaders estimated in August 2003 that world market capacity for all types of oleoresins is around 4,000 tonnes, with paprika accounting for around 2,500 tonnes. Demand across the oleoresin range is estimated to be increasing at a rate of 3-4%.

Although India is the largest world oleoresin producer, its paprika oleoresin production is relatively small at 350-400 tonnes annually, using some 8-10,000 tonnes of paprika pod, and providing some 15% of estimated world demand. India's problem is that paprika is also used in the national diet and the oleoresin industry competes with the local market for product to convert into oleoresin. In periods when paprika has been short in India, for example in drought years, shortages develop and the local price rises leading to a shortage of product available to the extraction sector. In the past India has imported paprika pod from South Africa in order to maintain production – 1,000 tonnes in 2002 for example.

Along with India other main producers of paprika oleoresin include:

Country	**Est production paprika oleoresin (tonnes)**
Spain	1,200
South Africa	500
Zimbabwe	400
India	350
Mexico	500
USA	?
Zambia	200
Ethiopia	100

Spain has traditionally dominated the paprika oleoresin sector, although increasing costs of production of the crop in Spain has led to the importation of pod for extraction. Closest to home has been paprika production in Morocco, but additionally Spain has been acquiring paprika for processing from Southern Africa – Zimbabwe, Zambia, Malawi and South Africa. Additionally Spanish extractors have started to look outside of Spain for manufacturing capacity. Notably Chr-Hansen, one of the largest Spanish extractors, has acquired an extraction facility in India, although it is less certain whether this is with the primary aim of paprika extraction or of other spices.

The rule of thumb for conversion rates of paprika pod into oleoresin is given as around 10% although Indian rates appear slightly lower at around 8-9%. This implies an annual

world requirement for production of 2,500 tonnes paprika oleoresin of some 25-30,000 tonnes, rising at, perhaps, 4% annually. This is slightly over 20% of estimated annual world production of paprika. Additionally it should be noted that over capacity in the industry is creating pressure on prices and terms of trade. It is reported that Indian producers have recently dropped prices to US$20/kg and offered 90 day payment terms.

2.1.4 Spanish market example – Evesa SA

A detailed telephone conversation with an executive of Evesa SA (Extractos Vegetales S.A.), a Spanish paprika oleoresin producer based near Barcelona, Spain, enabled a view of the Spanish market. Evesa is a private, family owned firm that has been extracting paprika oleoresin since 1970. It claims to be one of the world's largest producers of ORP, currently about 350 tonnes per year. Besides paprika it produces also other oleoresins such as thyme, rosemary and oregano. It produces also essential oils.

For its paprika requirements, besides buying local Spanish crop which is used mainly for spice, it imports upwards of 5,000 tonnes of paprika annually. This is sourced from South America, mainly Peru, Morocco and Southern Africa – South Africa and Zimbabwe. In the past it has imported small quantities of paprika from Zambia through Cheetah Zambia, mainly seed but also some pod.

Evesa is continually looking for a wider range of sources for paprika pod and would welcome the chance to acquire more from Zambia – if it could produce, and including 2004 crop. It notes that South America is the main competition for Southern Africa in the southern hemisphere and also that a large crop is expected from South America for 2004 and also 2005, which will push prices downwards.

Evesa comments on South American and Southern African paprika were illuminating. Evesa noted that South American paprika generally was better for paprika powder and for use as a spice while Southern African paprika was better for oleoresin. This was based on Southern African paprika being a little too pungent – paprika as a spice is mainly used as a blending base with other chillies for different pungency levels for different markets. Southern African paprika however had stronger colour which was better suited for oleoresin extraction. However, Southern African paprika tended also to be aflatoxin contaminated which was a big problem for use as spice. Aflatoxin contamination could be reduced – though not eliminated entirely – through the solvent extraction process, which increased costs but was nevertheless feasible. Other microbiological contaminations such as e. coli and salmonella could be controlled through sterilisation, which was carried out routinely with all imports.

Evesa noted that India was Spain's biggest competitor for ORP production, noting also that the quality was not as good but that the product was cheaper. Pungency levels in Indian ORP are reduced through further refining.

2.1.5 Southern African paprika production

Within the Southern African region, the dominant producer of paprika has been Zimbabwe, reaching a peak of some 20,000 tonnes in the late 1990s. The problems within Zimbabwe have led to a significant fall in production, believed to have reduced to 8-10,000 tonnes for 2004. The take up of the slack has not been within the region, but is understood to have been taken up by South American producers, mainly Peru. Zambia, along with Malawi and Mozambique, have lost a clear opportunity here to boost their production levels and this opportunity is likely to have been lost completely. Production within the Southern African region for 2004 can be estimated as follows:

Country	**Est. 2004 Paprika production, tones**
South Africa	12,000
Zimbabwe	10,000
Zambia	1,700
Mozambique	1,000+
Malawi	1,000-
	25,700 +/-

Of this production, feeding approximately 1,100 tonnes regional oleoresin requirement would have a regional requirement of some 11,000 tonnes, with the remaining approximately 15,000 tonnes regional production being exported either for extraction to oleoresin elsewhere or for use as spice.

2.1.6 Zambian relative position

2.1.6.1 - Transport costs

With respect to production for the oleoresin industry, whether for conversion in Zambia or for extraction elsewhere, Zambian paprika has a range of advantages and disadvantages. Clearly transport costs for extraction in Zambia gives the greatest advantage in lowering the cost base for the oleoresin. Adding value close to the site of production clearly makes sense, while transport of the extract with its lower volumes to international markets will clearly be cheaper than export of unprocessed pod. Supply of pod within the region for extraction still requires transport to the plants. Obviously the closest plants to Zambia are in Zimbabwe, but exports of pod from Zambia for the region have been to South Africa, a considerably greater distance. Export further afield to Spain entails even greater transport costs, with the region including Zambia at a major disadvantage to, say, Morocco, in supply to Spain. A 20' container, filled with 18-20 tonnes of pod, will cost between US$2,500 and US$3,000 to transport to Spain. This compares with perhaps US$500 or lower from Morocco. Southern African producers therefore must absorb the US$2,000 to US$2,500 difference in transport costs in order to be competitive.

2.1.6.2 - Yields

In terms of production, Zimbabwe led the world in terms of yields with their high intensity and management farming methods achieving yields in excess of 12 tonnes/hectare (reports of higher yields than these are probably exaggerated). Zambian

commercial farmers employing less intensive ("ranching") type methods, using irrigation, are achieving 2,500 to 3,000 kg/hectare and are relatively efficient. However, Zambian small farmers, with yields currently of 250 kg or less per hectare are performing well below potential and offer the main key to raising national production in the short term. Yields in India are indicated to be in the 800-1,000 kg range, levels which should be achievable by Zambian small farmers.

2.1.6.3 - Contamination potential

Zambian production does suffer a potential disadvantage in terms of quality. This covers various spheres – partly in overall quality of pod due to poor management of the crop in the field, including post harvest handling. More importantly, with increasingly strict tolerance levels for aflatoxin and microbiological contamination levels for entry into EU and USA markets, Zambia runs a risk of gaining a reputation of high contamination production unless it takes strong remedial steps in its crop handling by small farmers. It is believed that this problem has been encountered already with aflatoxin contamination on exports to Spain. These tolerance levels are important in both the spice and the oleoresin markets. Concentration in the solvent extraction process increases also the concentration of contaminants. EU maximum tolerance levels for aflatoxin contamination is 10 ppb, while for the USA it is 15 ppb.

While European importers routinely sterilise imports of paprika from Africa, whether used for spice or for oleoresin, this is an added costs for them. Aflatoxin contamination can be reduced in oleoresin extraction but not removed completely. African paprika production is renowned in the market for its contamination levels, and therefore suffers a disadvantage against, say, South American crops. Indian crops as noted elsewhere tend to have higher pungency levels. Further extraction can remove this so the product is suitable for colouring, but involves additional cost which Indian producers can bear with their lower costs, but not necessarily the European producers.

Although the potential for microbiological and aflatoxin contamination in Zambian paprika production currently is high, largely a factor of poor hygiene in crop handling and processing in the field, the lack of pesticide use by its small farmer producers is an advantage in terms of pesticide residue levels – again an important issue in imports into the EU and the USA. Paprika produced by Zambian small farmers currently should have an almost zero level of pesticide residue. In India certain pesticides, including BHC, are allowed to be used in chilli crop cultivation, although they are banned in most of the world. Residue levels in commercial farmer produced paprika is easier to monitor and rectify at farm level using good practice and also pod washing at harvest. In India also the pungency levels used in paprika extraction tend to be higher than in Southern Africa, including Zambia. The pungency also becomes concentrated on solvent extraction rendering the product less suitable for colouring unless the pungency levels are further reduced.

Finally, a major disadvantage faced by Zambia, especially in establishing itself in the oleoresin sector, will be gaining access to markets, especially in what is clearly an oversupplied market currently, with pressure on prices and payment terms.

2.1.7 Conclusion

Many of the factors affecting the oleoresin market affect also the spice market in terms of wider crop cultivation and quality. Value adding in Zambia will comprise mainly grinding for use in the spice market and Cheetah has this capability at its Lusaka factory. Its high specification laboratory is also able to maintain quality levels to enable export markets tolerance levels to be met. More important is gaining access to bulk markets – a problem common also to oleoresin.

However, whatever the market opportunities that exist potentially for Zambian paprika production, whether for spice or for oleoresin, Zambia will be unable to participate unless it is able to demonstrate its potential to produce. Efforts over the past 3-5 years to stimulate production have been unsuccessful and unless Zambia can demonstrate its potential to become a serious player through production of viable levels of crop, exploration of market opportunities are relatively meaningless.

As detailed in Section 1 of this assignment, production levels currently are insufficient to serve the indicated requirements of the two market promoters currently forming the Zambian market. Admittedly these two promoters are seeking to satisfy perceived market demand in their own right. However, they are unable to do so as production levels have not risen to meet their anticipated demands. Therefore, before seeking to identify and satisfy additional markets and involve new partners, Zambia needs to stimulate production of paprika to levels at which local demand at least is being reached. As production rises to meet these demands, the local market promoters will be in a position to seek new external markets and partners as necessary. Efforts to stimulate new markets too early could be counter-productive leading to Zambia becoming branded as an unreliable producer.

2.2 KEY PLAYERS IN THE ZAMBIAN PAPRIKA SECTOR

2.2.1 Zambian Market sponsors:

The two key paprika market sponsors in Zambia are Cheetah Zambia and Enviro Oil/ZAHVC. Their activities are detailed under Section 1 of this assignment and are summarised in this section.

Sponsor	**Est 2004 throughput '000 kg**
Enviro/ZAHVC	800
Cheetah Zambia	700
Other/Direct exports	150
	1,650

In the context of world paprika production, expected Zambian production represents approximately 1.4% of world production while estimated 2003 exports of US$1.63m (EBZ) represented less than 0.5% of Zambia's non-traditional exports for that year.

Zambian paprika is primarily exported to either South Africa or Spain. Cheetah Zambia is exporting to both markets, with most going to Spain for extraction into oleoresin. Ground paprika is being exported also to Spain for use as spice, generally being blended with other paprika in Spain. Paprika pod is also exported by Cheetah to South Africa for extraction as oleoresin.

Enviro Oil in the past has exported paprika pod primarily to South Africa either on its own account or through ZAHVC, with limited quantities also sent to Spain for oleoresin extraction. The plans for Enviro Oil are to export oleoresin as from 2004 following the completion of the rehabilitation of the oleoresin plant in Lusaka. No exports of oleoresin as yet have been made.

In South Africa the principle customer for Zambian paprika pod is Color-X, of Brits, Gauteng. In Spain customers include Chr-Hansen, Navaro and Evesa-SA. In India, the biggest producers include Synthtite Chemicals, Kancor and Akay, the latter owned by Chr-Hansen. Potential customers for the Zambian oleoresin include all these existing producers seeking to supplement their own production. More desirable clearly would be to develop own end user customers, but as yet, until production has commenced and proven itself on the market, and Enviro proven itself as a reliable producer, this will not be possible.

2.2.2 Zambian Paprika Production Facilitators

2.2.2.1 International Development Enterprises (IDE)

IDE is a Lusaka-based NGO aimed at uplifting poverty levels of small farmers through the use of irrigation. Support comes fom USAID and CIDA. It aims to achieve this through making available cheap but effective irrigation machinery and providing linkages to real markets. IDE had identified paprika as being a potential major crop for it to support as it believed that the cropping programmes it supports should be able to earn an additional US$500 in incremental income per farmer and paprika has demonstrated this potential.

Early trials showed that there were a number of practical problems with the paprika model, especially in the areas of crop management in the field – fertiliser application, pest and weed control, as well as water application management. To increase yields using irrigation IDE has been experimenting with 3 models:

a. Commence growing season with irrigation so enabling early and dependable crop establishment. But this means there is cropping during potentially heavy rains which can be difficult for smallholders

b. Extension of the cropping season after the rains have ended through use of irrigation. This model has yet to be examined by IDE.

c. Pure irrigation with totally dry season crop, commencing after rains have finished. The cold winters here can affect yields significantly so areas have to be chosen carefully.

IDE has demonstrated the feasibility of its methods and its problem is the market linkages – donor funding interfacing with the private sector. IDE's role is the promotion of irrigation equipment and application as well as establishing linkages and to enable small farmers to maximise returns. However, treadle pumps cost US$150-200 each on top of which to be effective requires investment in fertiliser, seed and chemicals. The combination is out of reach of most small farmers. However, neither of the two market promoters, Cheetah Zambia and Enviro/ZAHVC are prepared to fund the inputs and/or irrigation equipment due to the problems of side selling and the risk of losing a high proportion of the input finance. IDE notes that if the market system was working smoothly and was transparent, the problem of side selling would largely disappear.

IDE has found also that the farmers groups with which it has worked tend to expect IDE to lobby on their behalf in their relationships with the market sponsors – a role it is not cut out to cover. It has found itself organising collection of the pod for sale to the market promoters and has experienced direct problems with the marketing, such as pricing details and disputes over grading. It notes that the marketers do not give firm pricing indications at the start of the growing season and that even at the start of the selling season clear pricing for grades can be difficult to ascertain. This is of great relevance for farmers who have borrowed to produce the crop. IDE noted also that the differential in rates offered between grades was not sufficient to encourage more of the higher grades. In fostering market linkages IDE has much of relevance to note on the workings of the market, including the observation that the market sponsors need to move more in tune with the groundwork undertaken by the donor sector. For example IDE noted that in the small farmer production sector the marketers were geared for buying paprika solely from rain fed crop, not for irrigated crop, which inevitably is available at a different time of year. The marketers are required to adjust as the groundwork progresses in order to foster confidence from small farmers.

Nevertheless following a pilot scheme, IDE is expecting to implement a 2004 dry season scheme involving 150 treadle pumps for small farmers who are expecting to sell their product to Enviro. The pilot scheme was funded through SFAP but funding has yet to be identified for the 150 farmers (which will include the 24 included in the pilot scheme).

IDE itself does not make available treadle pumps. Instead it holds the Zambian patent for the manufacture of treadle pumps which it licenses to third parties in Zambia for manufacture. Manufacturers and distributors include such companies as Duram and United Chemolide. IDE also promotes a mini drip irrigation system based on a 350 litre water storage tank. The manufacturers of these systems naturally need to be paid for their supply.

- **Partnership role**

IDE has much to offer in working together with institutions and marketers in stimulating improvements in paprika yields by small farmers. However, provision of irrigation facilities to small farmers in isolation is not likely to lead to sustainable increase in yields unless the problems of side selling are addressed. Unless the full package of inputs is made available to the small farmers, irrigation facilities will do little to improve yields. And unless there is reasonable assurance that input credit loans, and ultimately irrigation equipment loans, are likely to be repaid, there is little point in pursuing this route. Ultimately before pursuit of irrigation can be made effectively the market promoters need to come together and establish a code of conduct that will enable practical support for the small farmer sector to progress. Once this is achieved, it would be appropriate to involve IDE as a partner in developing further the potential to increase paprika yields for small farmers.

2.2.2.2 Support to Farmers Associations Project (SFAP).

SFAP is a capacity building project established as an initiative between Zambia National Farmers Union (ZNFU), Agri-business Forum (ABF) and the Ministry of Agriculture and Cooperatives (MACO). Financial assistance has been provided by the Norwegian Government (NORAD) and the programme ends June 2004.

The objectives of SFAP have been to improve performance in the agriculture sector through the creation of viable farmers' associations involved in market orientated agricultural activities. Outside of cotton, outgrowing activity by small farmers has been a relatively new concept and the success has been perceived to be through strengthened farmers' associations and linkages into the agri-business sector.

Inter-alia, SFAP objectives have included….

- provision of effective training to farmer associations, private companies and NGOs
- strengthening of existing farmers associations growing crops for market and support development of new associations
- provision of assistance to farmer associations involved in contract farming
- facilitate attachment of MACO extension staff to farmer associations and private companies

Crops deemed of most interest have been paprika, fresh vegetables for export, honey and bananas, while additional support has been given to cotton, groundnuts and essential oils. Paprika has received the greatest level of support, indicated to have received around 50% of resources. Experience with paprika has been mixed as reported in the University of Zambia Mid-Term Review August 2003 (carried out in year 3 of 4 of the project). Yields dropped from first year (2000/01) of support of 351 kg/hectare to 140 kg/hectare for 2001/02. Total paprika produced in 2000/01 was 451.8 tonnes while for 2001/02 production was 231.7 tonnes. This was marketed through ZAHVC. Input loan recovery

dropped dramatically from 61% in 2000/01 to 39% the following year. Inevitably this has reduced the funding available to be re-lent the following year.

A part of the reason for the decline in paprika performance has been the poor rainfall levels of 2001/02 while also in that year fertiliser was not included in the input support scheme (and nor was it included for 2002/03), mainly due to the poor repayment of input loans and therefore availability of resources under the associated revolving fund. Grants were provided to agri-business companies for each of the first three years, primarily in support of extension activities amongst small farmer groups. For paprika this was extended through ZAHVC as follows:

Table 2.1: SFAP Grants issued to outgrower companies – Paprika

US$	2000/01	2001/02	2002/03
Agricrops	14,209	0	0
Biopest #	7,563	37,611	67,361
Central Gowers Ass'n*	16,228	56,384	45,093
Enviro Oils #	26,490	154,600	154,729
CLUSA	15,769	0	0
Mipachima Farms #	0	18,347	57,477
Steadfast Action Found.#	2,914	15,231	15,625
Whiterose #	0	8,797	7,063
Cheetah Zambia	7,206	0	0
	90,379	290,970	347,348

* Grant includes funding support for tobacco and cotton as well as paprika
# ZAHVC members

Source: Support to Farmers Associations project – Mid-Term Review, Institute of Economic and Social Research, University of Zambia, August 2003

The SFAP Mid-Term Review also catalogues the number of small farmers active in paprika growing and benefiting from SFAP support, together with production statistics, as follows:

Table: SFAP Paprika Farmer Participation, Area grown, Production

	2000/01	2001/02	2002/03
No. of Farmers	2,450	3,234	3,271
Area planted (hectares)	1,288	1,650	1,263
Expected production ('000 kg)	942.8	960.6	715.5
Actual production ('000 kg)	451.8	231.7	n/a

Source: Support to Farmers Associations project – Mid-Term Review, Institute of Economic and Social Research, University of Zambia, August 2003

For the same period the Mid-Term Review details the Paprika Input Loans extended together with the loan recoveries for the first two years of the project as follows:

Table: SFAP Paprika Input Loans and Repayments

	2000/01	2001/02	2002/03
Input loans extended Km	617.1	224.2	92.5
Input loans recovered Km	374.0	105.7	n/a
Percentage loan recovery	60.6%	47.1%	n/a
Loan balance outstanding	243.1	118.5	n/a

Source: Support to Farmers Associations Project – Mid-Term Review, Institute of Economic and Social Research, University of Zambia, August 2003

The Poverty Reduction Progress Report for 2003 notes that of the Government support for outgrower institutions for the 2002/03 season, K1,209m (approx. US$300,000) had been extended to SFAP, with most being extended to the paprika section. From this amount, K417.2m (approx US$90,000) remained outstanding for payment into the revolving fund as at end of 2003 – the note indicating that "….(SFAP) have been unable to service their loan and arrears stood at…"

Additionally, under the Poverty Reduction Programme the Government in its 2003 Budget released a total of K9.5 billion as support for Outgrower Schemes of which K1 billion (approx US$220,000) was made available for support for paprika outgrower schemes during fiscal year 2003/04 under the Paprika Support Programme administered under SFAP. The funds were to be used in the provision of fertilisers and chemical inputs, crop marketing, capital investment, farmer mobilization and monitoring, backstopping and management.

Disbursements through SFAP under the 2003/04 Poverty Reduction Programme for the paprika scheme have been as follows:

Table 2.2: Poverty Reduction Programme Disbursements – Paprika Outgrowers, 2003/04

Institution	Disbursed Km	No. of farmers benefiting	Hectares producing	Expected produce value Km
Enviro Oils *	710.1	881	431	775.0
Biopest *	134.2	434	249	448.2
Mipachima *	150.4	682	245	440.6
Steadfast *	17.5	101	39	70.2
Central Gr. An	20.0	63	11	18.9
Leobex Coop.	2.9	8	5	8.1
TOTALS	1,035.1	2,169	980	1,761

* ZAHVC members

Source: Poverty Reduction Progress Report for 2003

Notable again is the dominance of ZAHVC members as beneficiaries, accounting for 97.8% of disbursements under the scheme. It is notable also that Cheetah, apart from a small grant in 2000/01, has not benefited at all from any of the funding administered by SFAP. Actual utilisation under the disbursements is not clear. From discussions with stakeholders it does seem that input finance for small farmers has not been a priority as all parties have indicated that low yields are to be expected due to non-provision of fertiliser. Much of the funding is expected to have been used by ZAHVC members as trade finance for the acquisition of the crop from small farmers.

The SFAP scheme with NORAD support comes to an end in June 2004 after four years. The Norwegian component is being combined with a wider Dutch Government donor support scheme that will replace SFAP. The ZNFU and MACO remain partners but the modus operandi for the new scheme remain to become established. Whatever, it seems likely that similar trade finance funding made available under the Poverty Reduction Programme is unlikely to be made available in time for the 2004 small farmer paprika purchasing season, if at all.

2.2.2.3 Central Growers Association (CGA)

CGA is a small farmer grouping centred around Kabwe in the Central Province. It has a range of cropping activities including cotton and tobacco as well as paprika. CGA has its own organisation and support. It has benefited in its own right from SFAP funding, primarily for input finance. Visiting CGA in the time available was not feasible but subsequent to leaving Zambia e-mail contact with CGA was undertaken. The association encompasses some 300 small farmers growing around 100 hectares of paprika. Additionally the association grows tobacco and soya bean. CGA reports average yields of around 500 kg/hectare, significantly above those reported by association directly supported by the two market promoters. CGA includes fertiliser and seed in the input programme. Upwards of 50 tonnes paprika is expected to be marketed for 2004 crop.

Marketing is either to Cheetah or to Enviro/ZAHVC. However, CGA administrators emphasized many of the market constraints noted above in relation to the conduct of the market by the promoters indicating high dissatisfaction levels. However, a well organized association with access to inputs and control over side selling (the marketers are not very active around Kabwe) illustrates that reasonable small farmer yields are possible and that with additional extension advice and possibly irrigation facilities yields could be enhanced further.

2.2.2.4 Zambia Agribusiness Technical Assistance Center (ZATAC)/African Development Foundation (ADF)

During May 2004 ZATAC announced its appointment by the ADF to support the development, implementation and assessment of ADF funded projects in Zambia. Its first two projects cover paprika and beekeeping, both in partnership with the Zambian Government. The paprika project covers 450 small farmers and envisages US$245,000 support over a five year period. The grouping is expected to operate relatively independently of the two marketing promoters, even keeping open the possibility of

exporting paprika pod directly on its own account. Mechanics of the programme have yet to become clear, but production for 2004/2005 is expected to top 100 tonnes.

- Partnership role

Clearly the ADF with a declared commitment to Zambia as well as a demonstrated new initiative in the Zambian paprika sector is a potential partner for spearheading further expansion in the paprika small farmer grower base. Liaison through ZATAC could also prove a useful stimulation in establishing further working partnerships with new entrants in developing a broader production and export base for Zambian paprika.

2.2.2.5 Cooperative League of the United States of America (CLUSA)

CLUSA started in Zambia in 1998, with the objectives of promoting high value crops and with USAID support. This involved the introduction of new crops to smallholders and was carried out on a trial basis within groups. As yields built, areas grown were increased within the cooperative scenario.

CLUSA's principle role has been to offer technical training in production and has carried out extensive training in the technical aspects of paprika production, from nursery through transplant to post harvest handling. CLUSA provided the total package of seed, fertiliser and chemicals to small farmer groups and achieved some impressive yields, some 600-800kg per lima (quarter hectare). It worked hand in hand with market promoters Bimzi, ZAHVC and Cheetah, growing on their behalf within specific areas. It produced up to 130 tonnes in the past, with 60 tonnes supplied to Cheetah during 2003. Currently it supplies nothing.

Major problems were experienced at market time with most group members avoiding selling through the system meaning input loans were not serviced and eroding the revolving fund for input loans. This experience was across the board, not confined to any one market promoter or area. CLUSA found especially galling the fact that within designated areas for each market promoter, that promoter's own agents were competing with CLUSA for their group paprika.

In 2001 CLUSA undertook a Pesticide Evaluation Report & Safer Use Action Plan (PERSUAP) on CLUSA's operations. The net result of this evaluation was that CLUSA suspended its support for paprika production in view of the requirement for immediate removal of certain chemicals from the programme as well as practices in the use of chemicals in the field being adjudged dangerous. Additionally USAID is precluded from funding programmes using restricted or banned chemicals.

As a result, CLUSA dropped its main programme approach to the paprika sector, transferring its groups to Bimzi/ZAHVC and Cheetah for input loans and support. CLUSA concentrated its support instead to offering technical training. The market promoters quickly discovered that extending – and gaining repayment – of input loans was tricky, and so suspended all input support except for seed. Yields as a result showed a marked decline.

CLUSA's main areas of operations were in Eastern Province and in Central Province and their groups were taken over in specific areas by the market promoters. However, not all associated directly with either ZAHVC or Cheetah.

CLUSA's main thrust in technical training is through Conservation Farming (CF) and sees this as one of its main strengths in improving food security and income generation. This method promotes crop diversification, with a legume such as soya always promoted within the package as a rotation crop. Training emphasises soil improvement and soil conservation leading to improved yields while minimizing degradation. This includes promotion of composting, green manures, strict rotation and Integrated Pest Management (IPM). CLUSA admits these techniques were not promoted well in respect of paprika, although farmers are using the methods for maize and it is performing well. Paprika, being a high value crop and associated with potentially high pest combat requirements, was also associated from the start as a crop that needed a high chemical input for pest control. However, using CF techniques would, in retrospect, probably be significantly more beneficial in promoting increased yields in paprika production with small farmers than is being achieved at present. The integrated crop programme promoted by CLUSA with a variety of crops within the rotation programme and established multiple links with agribusiness concerns also has substantial merit.

- Partnership role

CLUSA would make a very suitable partner through the provision of extension services in enabling increase in paprika yields utilising conservation farming techniques including IPM methods to and minimising the need for inputs thus avoiding the problem of credit repayments through side selling. An added advantage of this approach would be avoidance of any potential residual pesticide problem in the export of paprika to EU and USA markets. A closer integration of the extension service with actual farmers should enable improved post harvest handling techniques that would also enable minimisation of aflatoxin and microbiological contamination.

2.2.2.6 Agribusiness in Sustainable African Plant Products (ASNAPP) and Organic Producers and processors Association of Zambia (OPPAZ)

ASNAPP is USAID funded and supports a wide range of initiatives in promotion of sustainable commercial exploitation of African plants. Paprika essentially does not fall under its remit so it is not involved in the promotion of paprika. Similarly, despite indications that there was some organic paprika production being undertaken in Zambia, it was ascertained that in fact there is not. However, should an initiative ever arise in Zambia for the production of organic paprika (for which there is demand as a spice, although a fairly small market), OPPAZ would be a good potential partner. Such a programme could build on the conservation farming techniques envisaged as being promoted through CLUSA.

2.2.3 Institutions

2.2.3.1 The World Bank

The Zambia Country Office of the World Bank advised that the bank had no programme involving paprika in Zambia at the present time. It did have plans to have some involvement at a future stage, probably as one of a range of higher value crops rather than on its own. The bank's primary focus at present within the agricultural sector was on extension, and even this involvement was limited. Linkage between producers and markets was perhaps a further 2-3 years away. The World Bank therefore remains a potential partner in Zambian paprika, but not in the shorter term.

2.2.3.2 Zambia National Farmers Union (ZNFU)

The ZNFU is a partner in the current Support to Farmers' Association Project (SFAP) along with Agri-business Forum, Ministry of Agriculture and Cooperatives (MACO) and Norwegian Aid Agency (NORAD). ZNFU sits on the SFAP Steering Committee and maintains an active role in overseeing its activities. On the expiration of the current SFAP at the end of June 2004, ZNFU will also be a strategic partner in the SFAP replacement scheme being established in conjunction with the Dutch Government and again MACO. Currently the new scheme continues to be refined. Overall objectives are likely to remain similar to those under SFAP, primarily the strengthening of farmer association and facilitation of extension services to farmers and private business. However, based on the experiences of SFAP, the methods by which it will go about its objectives remain to be established, although the experiences of loan repayments under SFAP together with limited successes in expanding paprika production are likely to mean that the approach to the paprika sector, if accommodated, will be radically different to that under SFAP.

ZNFU is well aware of many of the issues affecting the paprika sector. Not least it recognises that it has a lack of infrastructure as a relatively new industry when compared to the long established cotton, tobacco and coffee sectors for example. These sectors to a greater or lesser extent – especially cotton – benefited from earlier state investment in establishing or strengthening the industry when Zambia was operating under a more socialist agenda. The appropriateness of Government involvement in essentially provision of private sector infrastructure and operational funding however sits somewhat uneasily against a liberalized agricultural sector and background economy. ZNFU also is aware of the distrust and dysfunction in the paprika sector.

- Partnership role

The ZNFU is seen as a possibly vital partner in helping to bring the paprika sector together through acting as a third party non-partisan player in brokering common ground through which the two main market promoters may come to an accommodation through which to progress the sector. In particular this could be through sponsoring the establishment of a truly representative "Paprika Association of Zambia" (PAZ) through which the many extant dysfunctional issues can be addressed. This would include coordinating and seeking binding agreement over codes of conduct especially on the area of side selling, and also addressing common approaches to extension services, grading, methods of payment and establishing arbitration services between the market promoters and growers. Apart from these areas of assistance, further initiatives can be developed

through PAZ aimed at bolstering the reputation, visibility and transparency of the sector. These would include standards for conducting of sales – whether in a designated market place or in a farmer's home. Such minimum codes as clearly identified prices per grade, clear definitions of grades, clearly defined times for conducting trades (i.e. avoidance of night time buying), clearly assised and properly hung scales would be mandatory.

On technical issues PAZ with support from ZNFU including through the new Dutch Government support as well as EDP 2 (below) could seek to strengthen the capacity of the paprika sector in a variety of ways that have been demonstrated to be lacking to date. These areas include development of R&D into seed varieties and improvements, support for seed multiplication and certification (funding was available as a grant under SFAP but does not appear to have been utilised for paprika), funding for trial and demonstration sites, agronomist assistance, pest and disease research etc. The point is that the resources sourced through PAZ would be accessible to all members within the paprika sector.

PAZ would be able also, with the non-partisan assistance of a third party such as ZNFU, be able to tackle thorny issues perceived as stifling the development of the sector. These include the need for access to a laboratory for example. Quality control improvements linked to the laboratory facilities could be extended to requiring mandatory testing for aflatoxin and microbiological contamination immediately prior to export aimed at ensuring the quality and reputation of Zambian paprika product. Linkages into other areas to strengthen sector capacity and performance would be through ZACA (see below) with the setting up of a centralised grower registration scheme incorporating recording of input and equipment loans and which would be accessible to market promoters aimed at preventing cross selling.

The above examples are not exhaustive but are indicative of the kind of positive industry enhancement and capacity building that can be achieved for the sector as a whole acting together and which is not possible under the current dysfunctional industry structure. Access to donor support through a sector representative body as opposed to selective groupings or on individual application basis is also more likely to be successful. ZNFU has indicated its willingness to act as a disinterested third party broker in an effort to bring the sector together.

2.2.3.3 Ministry of Agriculture and Cooperatives (MACO)

MACO is clearly involved in the support for paprika development through the Poverty Reduction Programme extended by Government through SFAP and through its successor organisation being established with Dutch Government financial support. Within the overall remit of Poverty Reduction, the initiative identified as offering potential has been export crop production, within which paprika was identified especially as offering rural dwellers the opportunity to increase their income levels.

While recognising the need for seed, fertiliser, chemicals and irrigation to increase yields, MACO believes strongly that the operators have a strong obligation to develop extension services for paprika in conjunction with Government services. The funding provided

through SFAP included a component of 20% as a grant intended to enable small farmer mobilisation and extension – areas specifically noted in the Mid-term Review of SFAP as being poorly addressed by grant recipients. Government extension workers are generalists and have little knowledge of specialist crops such as paprika and MACO believes in working together this knowledge can be developed. MACO notes that tobacco and cotton extension services are provided comprehensively by the industry itself.

MACO recognises that it will not be possible for it to provide the major support levels for paprika that it did under SFAP, especially finance for crop buying. Government recognises that it is better for the private sector to develop paprika production through its own initiatives and that it is preferable for Government to provide support for industry associations as opposed to separate groupings and/or companies.

- Partnership role

Nevertheless Government through MACO has a role to play through an industry body such as a proposed PAZ as envisaged above under the ZNFU section. A key area will be acting in conjunction with PAZ and possibly CLUSA as envisaged in expanding MACO staff extension officer knowledge both of conservation farming techniques and the crop husbandry handling including harvest and post harvest handling of paprika. This could take the form of MACO staff secondments to market promoter training schemes for example. Additional support could be provided by MACO to PAZ through facilities for seed research and development, seed multiplication and certification, assistance in the establishment of trial and demonstration plots. All areas arguably more appropriate for assistance and assistance more effective through an umbrella body incorporating the greater interest of the industry as opposed to piecemeal individual company support as has been the case in the past.

2.2.3.4 Zambia Agricultural Commodity Agency (ZACA)

ZACA is involved primarily in resolving the conundrum of agricultural credit, working towards establishing a framework against which it will be possible to introduce warehouse receipts in Zambia. These will provide farmers with negotiable instruments against their crops which will be tradeable. Amongst other issues, ZACA is reviewing the Agriculture Credit Act, which has a number of practical anomalies as well as not recognising warehouse receipts.

While aimed especially at maize, the amended Agricultural Credit Act and warehouse receipts will have application across a wide range of commodities. The issues of side selling are a component part of this review and with the wide ranging side selling problems in the paprika sector currently, ZACA could clearly have an important input in an enabling structure within which the paprika sector could operate. Areas being pursued by ZACA include the creation of a central registry of charges created against borrowers against which buyers will be able to check before handing over cash in exchange for crop to ensure that all endorsements have been satisfied. A strong onus will be on the buyer as well as the seller to ensure the interests of the underlying credit supplier are not jeopardized. Transgression would be a criminal offence.

The timespan for the review of the Agriculture Credit Act, its implementation and the introduction of warehouse receipts is not clear. However, in the shorter term it is possible that ZACA would be able to give guidance to the paprika sector in setting a central registry of growers against which credit charges could be recorded in an endeavour to bring some discipline to the sector.

- Partnership role

The primary area of partnership in which ZACA could be involved with a possible PAZ as suggested under the ZNFU section above would be in assisting to formulate a workable centralised registry system firstly for all paprika growers who would be registered with PAZ. Alongside this registry would be capacity for registry of charges against the grower in respect of input credits including equipment such as irrigation. This system would clearly delineate for market promoters growers in whom they have an interest and whom they should avoid unless the charge created has been released. Clearly not all side selling problems will be avoided through this mechanism but it will help in instilling a code of practice for the market promoters as well as encouraging an element of discipline amongst the farmers. ZACA would be enabled first hand experience in practicality of such a system and development within the frame of the proposed amendments under the Agriculture Credit Act.

2.2.3.5 Export Development Programme 11 (EDP 2)

The first Export Development Programme, EDP 1, sponsored by the European Union, ran from 1993 to 2003. Major objectives included the provision of assistance to producer associations through short term loans. Beneficiaries included the major agriculture sub-sectors of tobacco, cotton, coffee and horticulture. Short term loans were extended through the associations for the acquisition of crop inputs by association members and for the acquisition of non-profit making machinery by the associations that would provide a benefit for all association members. Euro6m was made available and lent out at a rate of LIBOR+2%, around 5-6% for the period.

ZAHVC became a beneficiary late into the scheme, receiving Euro445,000 as a loan and a further Euro300,000 as a grant. EDP 2 officials advise that the Euro445,000 has yet to be repaid. Utilisation of the loan and grant by ZAHVC has not been made available.

EDP 2 commenced during 2003 and is aimed specifically at non-beneficiaries under EDP 1. Although ZAHVC did benefit under EDP 1, it did so at a late stage in the programme and therefore would be eligible under EDP 2 – provided it discharges its obligations under EDP 1 first, as advised by the EDP Secretariat. EDP 2 encompasses also a grant scheme for private companies.

- Partnership role

EDP 2 would be receptive to receiving an approach for capacity establishment and support from a paprika association representing the wider interests of the whole paprika sector. Such support could include supporting the establishment of such an association and developing its capacity for undertaking the various roles foreseen including also perhaps promotion in overseas markets and collation of market information.

2.2.3.6 Royal Dutch Embassy

With the phasing out of the NORAD supported SFAP programme, a new agreement has been concluded between the Dutch Embassy and ZNFU. The new programme will incorporate combined Norwegian and Dutch funding, split on a 50/50 basis, with the Dutch administering the Norwegian component on their behalf.

Emphasis under the new programme will be chiefly technical, and will not address finance of crop inputs. Emphasis instead will be on technical issues, including facilitating market linkages, preparation of business proposals, assistance for members within associations. There could be room for assistance for the paprika sector under the new scheme, although it would likely be confined to support for a broad based paprika association

- Partnership role

A partnership role for the paprika sector would be through the proposed PAZ group association and probably through support for the more technical aspects envisaged. These could include helping to finance the setting up of the proposed central registry system for example, and/or helping to set up trial/demonstration production sites and running subsequent attendant field days for small farmers. Assistance with funding of R&D into appropriate paprika species, agronomists, pest and disease research could also be subject to seeking support. Market linkages, especially into the EU, could be an appropriate additional role serving the market orientated section of the membership.

3. CONCEPT PAPER – PAPRIKA PRODUCTION & MARKETING ALLIANCE

3.1 The main problem

The comprehensive review of the paprika sector in Zambia undertaken during May 2004 leads to two key conclusions:

- At the current stage of the development of the Zambian paprika sector, the key problem is not so much market development as production of sufficient paprika volume to meet existing demonstrated demand. Despite several years of extensive support and resource extension by Government and the donor community, Zambian paprika production has topped 2,500 tonnes only once while current production is stagnating between 1,000 and 2,000 tonnes. Demand levels to satisfy indicated local requirements of the two market promoters are some 7,000 tonnes;
- The major factor preventing progress in production levels for Zambian paprika is the dysfunctional conflict between the two main market promoters, Enviro/ZAHVC and Cheetah Zambia. Unless this conflict can be resolved there is little prospect for the paprika sector to progress out of its current hiatus and every possibility of its imploding further.

Unless or until the structure of the paprika sector in Zambia settles, new initiatives seeking to involve new or additional partners within the sector could well prove counter productive and serve to fragment the sector further. Efforts should therefore focus on conflict resolution, sector capacity building and thereafter seek to increase production levels within the existing resource base. It is believed this latter objective is possible by taking a multi-pronged approach: increasing yields for current small farmer groupings; encouraging more production by commercial farmers; and encouraging further small farmer groupings to grow paprika based on the success achieved through yield increases.

3.2 Establishment of a paprika association

Any plans for the sector as a starting point must be to effect a reconciliation between the two market promoters in such a manner so as to enable the paprika sector to progress, build capacity, capability and credibility. This is not to say that the two should work together completely in tandem, but they should cease pulling in opposite directions and bringing the sector into disrepute across a variety of levels. Once a reconciliation has been effected and commitment given to working towards the common good of the sector, many of the perceived barriers holding back development should fall away. Progress will then be stimulated through working together in key areas while maintaining a competitive position.

The positions of the two market promoters seem on the face of it irreconcilable, are based on deep seated mutual distrust of each others' ethics and business practices. Previous efforts at working together and establishing a mutual code of conduct have broken down. However, to be able to develop the sector in any meaningful way the two market promoters must find a mechanism to work together.

Given the previous failures to find ways of working for the mutual benefit of the sector, it is contended that the only possible way to progress is through a third party non-partisan broker, who is acceptable to both sides. With the entrenched positions of both parties it is unlikely that any such third party would be completely acceptable, but nevertheless it is believed that the Zambia National Farmers Union (ZNFU) would be potentially acceptable, as well as willing to act in such a way. The vehicle suggested as the means of effecting a viable working atmosphere is through the establishment of a paprika association – for want of a better title the Paprika Association of Zambia (PAZ).

Key to the pressure to come together and form the association will be the realisation that the donor community is unlikely to provide any further assistance to the paprika sector except through an industry association that is representative of the sector. Furthermore that support will be mainly for capacity building within the sector and will be through such an association only as opposed to support for minority groupings or individual companies. Whereas Cheetah has received little in the way of donor support at all, it will nevertheless recognise the potential in a truce for further capacity development, not least being the chance to bring side selling under control. For Enviro/ZAHVC the realisation that the only way to continue receiving donor support for sector development is through a transparent representative sector association should be a powerful motivator in seeking an accommodation.

Assuming a workable atmosphere is achieved, the association membership should be expanded across the range of the paprika sector, covering not only the market promoters but also the commercial farmers, the small farmers – probably through association groupings - likely institutions, facilitators and other special interest parties. Care should be taken in ensuring that it is not possible for one organisation or specially affiliated grouping to gain control of the association, thereby jeopardising the interests of other members while debasing the broad representation across the sector. Here again involvement of a third party broker such as the ZNFU should have a beneficial, stabilising influence.

Primary areas of initial focus within the association should cover:

- Development of a code of conduct covering interaction between market promoters and farmers growing paprika
- Development of a system of central registration for all paprika growers in order to monitor input credits extended to growers and their discharge status. A central registry will also enable a more accurate record of sector progress and present a more dependable interface to the outside world – whether international markets, local institutions, Government of Zambia, donor community etc
- Develop a plan and seek funding for enhancement of sector capability in research and development into paprika seed varieties, seed multiplication, pests and diseases, demonstration units
- Develop a plan for working in conjunction with facilitators such as CLUSA, MACO and others to strengthen and improve extension advice to

small farmers aiming at improving yields, paying especial attention to conservation farming techniques and minimising of chemical and fertiliser inputs

- Develop plans for enhancing the international reputation of the sector through quality control efforts such as mandatory testing of paprika pod and powder immediately prior to export for contamination.
- Establish means of funding the association so as to become self sustaining once production reaches a critical mass.

3.2.1 Code of Conduct

The development of a code of conduct for the paprika sector is important for a variety of reasons, but not least to engender confidence in the integrity of the marketing system, currently lacking amongst the small farmers especially. The code of conduct should cover not only the interface between market and small farmer but also the wider issues of levels of support provided to small farmers, including over and above whatever is to be provided through the association.

Of course a major aim of the Code of Conduct will be the reduction in the possibilities for side selling, which will ultimately be of benefit to all as the way will be cleared for market promoters to have confidence in supply of inputs under credit and providing additional extension services without the risk of losing such investment due to side selling.

It is notable that in the more mature agriculture sectors in Zambia such as cotton and tobacco, side selling problems were encountered and eventually resolved through dialogue, mainly through the relevant sector associations. Even now, where disputes arise, they can generally be resolved through the Cotton Board or the Tobacco Board of Zambia. No such mechanism or association exists currently for paprika.

The code of conduct will need to establish areas of respect for each other's operations especially with small farmers, so that farmers/groups to which one company has extended credit and support through extension advice and covered by contract do not sell product to the other company. Whether this is worked out in terms of specific zones allocated to each company in which they operate exclusively, or whether some other form of delineation between their respective areas of interest is worked out would be up to the companies to negotiate in collaboration with PAZ.

3.2.2 Market venue

Within their operations in the small farming sector the market operators should be required to improve the transparency of their dealings and thereby improve the confidence in which the small farmer holds the sector. Apart from more visibility and support to be provided during the growing season, at market time PAZ should lay down specific rules including, amongst others:

- Clear declaration of pricing and grades at commencement of the marketing season and such prices should be visible on site to all at point of sale
- Clear definition including samples available at point of sale of the different grades that will be accepted by the buyer
- Clear identification that the buyer at point of sale represents the appropriate market promoter
- Clear definition of selling times – buying should not be undertaken at night
- Scales should be assized, accompanied by an up to date assizing certificate from an appropriate authority, and should be hung properly at point of sale
- Settlement at point of sale should as far as possible be in full in cash; in any case full settlement should be made not more than a week after the purchase is made; pod which has not been settled in full should not be transported from the district until settlement has been made in full

The problem of market venue will need to be addressed further. Currently the practice is to visit the buyer's home and buy the product literally on farm. Much of the motivation for this stems from the buyers' concern that unless they reach the farmer first the opposition will and they will not be able to buy the product. The code of conduct hopefully will eliminate much of this risk and provide a more orderly market. In this case consideration could be given to more centralised marketing points, perhaps established by each company within their agreed zones, to which the growers bring the product. This procedure is working well for tobacco, with each market place established by buyers being licensed by the Tobacco Board of Zambia (TBZ) and with TBZ officials on hand to arbitrate in case of disputes. The paprika sector is probably neither big enough nor mature enough for this approach as yet. However, a more open and regulated market place would provide greater visibility and confidence in the sector, especially if PAZ arbitrators were on hand also to assist in the case of disputes. The tobacco sector of course is controlled by law under the Tobacco Act and this approach is not suggested for paprika. However, many of the provisions encompassed by the Act could serve the industry well.

While the problems of announcing small farmer prices at the start of the growing season are acknowledged, market promoters should be encouraged to announce clearly some sort of minimum price expectation by grade for small farmers at the start of the season.

Crop inputs and extension services to be provided by market promoters could also be formalised through PAZ. However, with acceptance of the code of conduct between the marketers, in theory the problem of side selling should be reduced. The need for the promoters to harmonise their approach inputs on credit and extension services provided should fall away. This would give the growers an element of choice of market promoter, including efficacy of their extension service.

3.2.3 Central Registry System

The primary purpose of establishing a Central Registry System (CRS) would be to help reduce further the problem of side selling. However, once established the CRS would also be able to provide much useful industry information that is currently lacking or difficult to piece together. Such knowledge would enable industry supporters to identify areas of support required for example and to target this support more effectively than at present.

It is suggested that the CRS be set up in conjunction with ZACA on the basis that it would be a useful practical pilot study for ZACA into the updating of the Agriculture Credit Act as well as being instrumental in solving a specific problem for the paprika sector – and for similar minority crop outgrower schemes involving inputs or equipment on credit.

The CRS ultimately would record every farmer growing paprika, whether under a group scheme (most small farmers) or as independents. It would be the responsibility of the input credit providers to provide the information to the CRS, who in time would not necessarily just be market promoters and/or group co-ordinators – and to keep the register updated, including when the charges/input loans are redeemed. It would then be the responsibility of the market promoters to check against the register when buying produce from the farmer to ensure firstly that the farmer is in fact contracted to themselves and that if not, no produce is acquired from that farmer if input credits remain outstanding to other parties. Some form of identification – possibly a laminated card bearing a photograph and other relevant data (even perhaps a GPS reading identifying the actual farm) that would link the farmer into the CRS would be required. As part of the code of conduct, promoters should not buy product from any person who cannot be tied up directly into the CRS.

A weakness of this approach of course is if the promoters transgress the code, what sanctions can be brought against them. If membership of PAZ and resolving of the issues between them is undertaken in good faith, this should not present a major problem. If not, access to the criminal courts should be enabled, and indeed is envisaged under the amendments for the Agriculture Credit Act, both for the farmer who is avoiding paying for the inputs and for the buyer who is knowingly buying product in which other parties have interest.

3.2.4 Extension Services

While the market promoters should undertake extension services in their own right and in their own interests, this has been demonstrably a problem and a major contribution to the poor yields achieved by the small farmers, especially since promoters suspended supply of inputs under credit. Grants made available through SFAP to ZAHVC members for the provision of extension service to small farmers do not seem to have been effective. It is in the industry's interest to increase yields from small farmers from the current 250 kg/hectare and less levels achieved without use of chemicals or

fertilisers to the levels achieved by CLUSA before its suspension of paprika support. CLUSA was able to achieve small farmer yields equivalent to over 2,000 kg/hectare using full inputs and with favorable weather patterns.

To address the problem of inputs, a dual extension programme should be pursued. Firstly the CLUSA approach using conservation farming methods and minimising inputs should be followed, in partnership with CLUSA if agreeable and funding can be arranged. At the very least good crop management techniques should enable an increase in yields without much difficulty. These techniques are not evident currently. Without chemicals or fertiliser, but using green manures, compost, natural pest control techniques including Integrated Pest Management, rotations, legumes etc, yields should be able to be increased to upwards of 600 kg/hectare, that is more than double what is being achieved currently and if some reports of 140/kg per hectare are to be believed, four times current yields.

Along with CLUSA, extension staff from MACO as well as from the market promoters should join PAZ staff for training in the crop management techniques so as to be able to extend the knowledge within the paprika growers groupings. Continuous monitoring of the crop growing programme from seedling establishment through to final harvest and drying and crop residue disposal should be an integral part of extension service.

Apart from crop management techniques, extension training and associated service provided to small farmers should include detailed harvest, post harvest and storage techniques. This latter part of the crop management cycle will become of increasing importance in the future as tolerance levels for microbiological and aflatoxin contamination levels continue to reduce. Good crop hygiene techniques combined with a successful programme of growing paprika without recourse to chemical pesticides could lead to a comparative future advantage for Zambian production, helping to overcome the transport cost disadvantage.

However, paprika is a pest intensive crop and a programme of extension for small farmers using conventional fertilisers as well as pesticides could be pursued in parallel to the conservation farming path. Emphasis on pesticide handling, storage and disposal as well as application by small farmers would be an essential part of the programme. Funding for such an extension service would need to be sought, but support from specific chemical companies or distributors should be avoided so as to prevent bias in extension training. This parallel extension service will be possible only once the issue of side selling and input credit repayment avoidance has been resolved and in the earlier stages of seeking to increase yields for small farmers the conservation farming extension model should receive the main emphasis. Yields in excess of those achievable using conservation farming techniques should be a success criteria, while income levels net of crop input credits will also be a main criteria of success for the small farmer. Either way, the important emphasis is to increase yield achievements by small farmers over and above the current poor levels. Yields in the range of 800-1,000 kg using fertilisers and pesticides should be sought as justification for using these costly inputs.

Once yields have been demonstrated to have improved through the extension service provided, consideration can be given to enabling further yield improvements through the use of irrigation. There is no point in encouraging the use of irrigation without the raising of the level of crop management. A poorly managed crop will benefit little from the availability and use of irrigation equipment, let alone provide benefit to a farmer through incremental income of sufficient level to service the cost of the equipment. Obviously also the issue of side selling will have to have been largely resolved through the above suggestions prior to extending irrigation equipment to small farmers through any credit scheme. Once there is confidence – as adjudged through PAZ – that there is sufficient benefit to be gained by all concerned by the introduction of irrigation for small farmers, then support partners such as IDE could be brought on line. But, the process should be a stepped process. Initial focus should be increasing yields for rain fed crop, whether using conservation farming techniques or conventional fertilisers and pesticides. Once demonstrated success has been achieved, the next stage of increasing yields further should be taken.

3.2.5 Research & Development

In parallel to the programme aimed at raising small farmer yields, a programme benefiting the sector as whole covering research and development is required. No such R&D is being undertaken at present – neither market promoter is in a position to undertake such programmes while the distrust situation in the sector is a major disincentive to undertaking any initiative on behalf for the sector as a whole. While Cheetah has agronomists and technical staff on its payroll, Enviro/ZAHVC does not and the latter encountered significant disease problems during the 2003 winter growing season that **may** have been resolvable had sufficient industry resources been available in the country.

That episode aside, paprika is being grown in Zambia, under tropical conditions, using seed varieties not necessarily best suited to those conditions. Alternately, there is no seed breeding programme aimed at improving variety performance under Zambian conditions. As a relatively new crop, with widespread production being promoted, there is a duty of care required in not only understanding the pests and diseases to which the plant is susceptible, but also to the side effects that may be passed on to other crops. Here especially important are the areas of crop rotation and crop residue disposal aimed at minimising pest rollover into following seasons, a practice strictly followed in Zimbabwe.

Under SFAP, funds were available in grant form from MACO to assist in seed multiplication and certification. It is not certain whether these were taken up by ZAHVC (they were certainly not by Cheetah as it did not benefit under SFAP at all), but the 2003 allocation was not fully utilised. Extension of this facility into the new Dutch administered scheme could and should be sought on behalf of the sector through PAZ, including an extension into variety research and development as well as probably pest and disease control. Aside from MACO as a partner here, utilising its resources such as

the Seed Control and Certification Institute, Mt, Makulu Research Institute, funding assistance could also be sought through the new Dutch support programme. The results of the programme would be made available to the sector as a whole through PAZ. Any additional R&D conducted by the market promoters themselves would be their proprietory information, to be given wider dissemination at their own initiative.

3.2.6 Quality control

With the increasing concern over contamination levels of all kinds in EU and USA markets – covering carcinogens such as aflatoxin, health and hygiene such as e. coli. Salmonella et al. as well as pesticide residues, there is a strong case for an industry body such as PAZ to initiate quality control standards for the industry. These would be aimed at maintaining and uplifting Zambian paprika reputation in terms of integrity and quality in international market terms, as well as seeking to prevent the Zambian crop gaining a reputation for contamination and/or breaching tolerance limits. It is understood that to some extent this is occurring already following a shipment to Spain containing paprika with aflatoxin levels over limits.

It is interesting to note that the Spices Board of India has recently taken steps to ensure that, in compliance with a directive from the European Spice Trade Association (ESTA) tests are undertaken on exports of Indian chillie products to ensure that there is no contamination by Sudan-1 Red. Indian Spice Board is considering extending tests before export to include aflatoxin contamination levels. In Zambia such an initiative could be taken a step further and include tests on micro-biological contamination levels as mandatory prior to export.

This leads to the problem of laboratory facilities, raised by the Enviro/ZAHVC promoters as being a key constraint in the development of the industry. Of course Cheetah already has its own privately funded very high specification laboratory which is fully capable of undertaking the broad spectrum of tests required on paprika product. This places Cheetah in a strong position in international market terms as it carries out extensive tests on all its product prior to export and is able as a result to deliver an assured and respected product and which is recognized in the international market place.

The current state of distrust in the Zambian paprika sector is such that it would be unrealistic to expect the Cheetah laboratory facilities to be made available to other parties in the paprika sector, even at a substantial fee. It would also be an unfair distortion of private sector enterprise if donor funding for a second such laboratory were to be made available. In the event that the Enviro/ZAHVC market promotion team are unable to fund such a laboratory through their own resources as Cheetah has done, there could be an argument for PAZ to help resource sufficient facilities to enable the integrity of Zambian paprika to be maintained. This would entail a thorough research of the laboratory facilities available currently in Zambia, identification of what would be necessary to upgrade these services in terms of equipment and training, and then to seek funding in partnership with the laboratory resource. These laboratory tests would not be paprika specific, but would be widely useable within the agricultural sector and therefore provide

benefit across a wider crop range than just paprika. Apart from basic moisture and ash content tests, aflatoxin and microbiological contamination tests are applicable across a range of crops grown in Zambia such as groundnuts and soya, as well as the fresh vegetable sector.

In partnership with PAZ in seeking to facilitate existing laboratory upgrades, ZNFU would be uniquely well placed, having access to the broad range of the agriculture community. Although time precluded exploration of possible laboratory upgrade candidates, consensus seemed to be that the University of Zambia was well placed for such assistance. Again, partnership funding is believed to be available from the USA specifically for laboratory upgrading work which ZNFU/PAZ could tap into.

For more specific paprika tests such as ASTA colour ratings, it would be the recommendation that this is a promoter obligation as opposed to a general industry requirement, and other market promoters should, as Cheetah has done, make their own investment in such facilities.

3.2.7 Funding

Obviously an association suggested such as PAZ should become self financing in the fullness of time and equally obviously in the short term PAZ is unlikely to be self sufficient. Sources of funding from own resources should include obviously a membership fee, which should be graded at various levels according to membership category. These would be individual small grower, grower associations, commercial farmers, market promoters etc. An annual registration fee for the CRS could be raised while access to the CRS database could also attract a fee. Additional funding should come from a levy imposed on crop production, payable at source when crop is acquired, collectable by the market promoters and payable to PAZ. This levy would contribute towards the extension services being provided through PAZ. Additional levies should be raised also on export volumes, whether for powder, pod, seed, flake or oleoresin. It is not suggested that these fees be onerous, but they should nevertheless be meaningful and as far as possible reflect the service benefit gained by the member from the association.

Donor support would need to be sought while the association and its services are being established, and either EPD 2 or the new Dutch capacity building fund would be clear possibilities for such support. Assuming PAZ' activities and policies on stabilising and then expanding the sector are successful, a realistic target for becoming self sufficient within, say, 5 years, could be set.

3.3 Definitions of success

Clearly the definition of success for PAZ will be the establishment of a viable paprika industry in Zambia, at a production level of say 8-10,000 tonnes paprika pod grown and marketed in one form or another within a five year period. Within this increase in production target yields for small farmers should be in excess of, say, 600

kg/hectare across the board, and in excess of 1,000 kg/hectare for full input small farmer crops.

Based on demonstrated success of yield improvement initiatives through extension services, targeted increase in small farmer groupings and small farmers growing paprika should become more realistically achievable while small farmer enthusiasm will be based on tangible results. A more transparent marketing mechanism should enhance the visibility of the sector and engender greater trust by the farming sector at large. Elimination of side selling is probably impossible, but meaningful reduction to absorbable levels through the measures taken is essential.

A more visible paprika sector, with a focal point such as PAZ, together with a perceived settling of volatile players and endemic distrust should do much also to encourage greater participation by the commercial farming sector – who could be targeted more directly also by PAZ once established.

At a level of 8-10,000 tonnes the sector would be covering existing demand requirements with some extra. Either this additional capacity would be absorbed through the two current market promoters through their existing operations, or an additional operator could be attracted into the sector, giving again a wider and potentially more stable base.

However, without genuine will and cooperation, this more rosy future is not likely to occur and an opportunity lost. It may already have been.

APPENDIX 1
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