

Indigenous Maize Speciality Foods
Development, Promotion and Commercialisation Project

Final Report to the Maize Trust

by

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1. Background

The CSIR Bio/Chemtek Technology for Development (TfD) Programme developed a range of indigenous products with the potential to enter various market segments. It is envisaged that these products will allow entrepreneurs participating in the project to establish viable business enterprises that would result in agro-processing job creation opportunities for rural people.

A number of maize speciality products were developed as part of the DST-CSIR Indigenous Foods Poverty Alleviation Project (PAP), viz. Dipabi powder, Dipabi cookies, a Dipabi chocolate bar and Nyakafatane, a pre cooked grain mix (maize, beans, wheat, sorghum). These products underwent “informal” assessment, although no “formal” market testing and / or test-marketing was undertaken.

The development of other indigenous knowledge (IK) - maize speciality products will result in the development of a portfolio of products. These will benefit the maize industry as a whole as these products would enter niche markets, creating a demand for maize products that currently does not exist, and building on consumer perception and confidence in maize, beyond that of maize meal.

The portfolio of IK maize speciality products would be “offered” to previously disadvantaged entrepreneurs, who would be supported in building sustainable enterprises (SMMEs). Emerging farmers would also be supported in that these farmers could supply raw materials to the SMMEs. Should demand outstrip supply, commercial farmers would be used to supply the SMMEs.

In supporting this project, The Maize Trust thus contributes to improving the social and economic development of rural communities, poverty alleviation; creation of sustainable maize speciality SMMEs, promoting an understanding of the potential of enterprise activities based on indigenous resources and innovative technologies and the growth of the maize industry through diversification.

2. Project Objectives

- Development of maize speciality foods, based on IK concepts that will expand on the current portfolio of products.
- Determination of market acceptability for the products through a test marketing exercise.
- Introduction of the products to the market and support to entrepreneurs in the establishment of sustainable SMMES and the commercialisation of the products portfolio.

These project objectives are aligned to those of the DST-CSIR Indigenous Foods Poverty Alleviation Project.

3. Project Activities

The Maize Trust, in 2003, provided funding towards the development of other IK maize speciality products and the “formal” market testing and / or test-marketing of four products, with the ultimate objective of developing a portfolio of maize speciality products.

The proposed project objectives and activities, as outlined in the project proposal, are summarised in the table below.

Project Objectives and Activities

Objective	Activities
<i>New Product Development:</i> Expand on the current portfolio of maize food products, based on IK concepts	<ul style="list-style-type: none"> • Assess recipes compiled from community groups for suitable maize speciality products. • Develop “commercially-feasible” products based on these recipes.
<i>Product Market Testing:</i> determine acceptability for four (minimum) products in selected consumer groups	<ul style="list-style-type: none"> • Conduct discussions with the Mangaung-University of the Free State Community Partnership Programme (MUCCP) and draft and finalise the market-testing questionnaire. • Conduct market-testing activities. • Evaluate findings. • Make recommendations for the Market Testing Phase. <p><i>Note that due to the evolvement of the PAP project, the market testing and test marketing exercises were conducted in parallel.</i></p>
<i>Product Test Marketing:</i> determine potential niche markets, quantify these markets, and obtain feedback on the sales potential of the product in the selected market sector.	<ul style="list-style-type: none"> • Select potential markets based on the information from Phase 1. • Meet with the entrepreneurs / businesses in these market sectors. • Compile questionnaire and test questionnaire on select group of entrepreneurs. • Conduct marketing testing. • Compile data and assess.
<i>Product Development:</i> conduct product development for the four products as per requirements emanating from the product market testing and test marketing exercises.	<ul style="list-style-type: none"> • As per requirements.

<p><i>Entrepreneur Identification and Support:</i> establish suitable criteria for selection of entrepreneurs to participate in the indigenous foods initiative and provide on-going support to entrepreneurs on a needs basis.</p>	<ul style="list-style-type: none"> • Discuss criteria for selection of groups / entrepreneurs for participation in the project. • Develop criteria. • Get comments on the criteria. • Adjust and finalise. • Liaise with the entrepreneurs to get feedback on their business ventures. • Identify needs/problems and devising suitable solutions. • Implementation of solutions. <p><i>Note that this activity was closely aligned to the PAP project activities.</i></p>
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4 Product Development

The objective for product development was to develop “commercially-feasible” products based on recipes compiled from community groups in order to expand on the portfolio of maize food products.

A minimum three cycles of product modification / reformulation were conducted per the recommendations emanating from the product evaluation and product test marketing exercises.

Annexure A provides details relating to product formulation, processing and packaging, costing and suppliers’ details, and labelling information for the six products and two concept products developed in the course of this project.

4.1 Dipabi cookies

The production of Dipabi cookies was optimised in early 2003, using DST Poverty Alleviation funding. These biscuits are being produced and marketed by the TsaSetso Foods Enterprise, in the Free State Province. TsaSetso Food Enterprises falls under the management of IndiZAFoods, a Section 21 Company (see Annexure B – TsaSetso Food Enterprises). Consequently, no product development was undertaken on Dipabi cookies in this project, and the project sought to identify alternative complementary novel products to augment the maize-products portfolio.

4.2 Dipabi chocolate bar

The Dipabi chocolate bar (a sweet based on a maize and peanut mix) was developed based on the Dipabi powder IK food concept. The Dipabi chocolate bar recipe was reformulated, with the objective of replacing the more expensive recipe ingredients in order to allow production of the bars at a more competitive cost. The formulation of the chocolate bars was “designed” to allow marketing as energy bars, thus potentially positioning the chocolate bars to enter the “sports, leisure and health” market segments.

Product reformulation was an iterative process dependant on feedback from the market testing studies. The final recipe as developed within the project scope is outlined in Annexure A. Based on laboratory scale cost projections, the ingredient cost of the maize bar is estimated at R0.89/100g (bar equivalent). Packaging and associated manufacturing costs must still be included, but scale-up and supplier negotiations should reduce the cost given above.



Top: Dipabi chocolate bars

4.3 Novel maize speciality products

A further five maize speciality products were developed for the project:

- A gluten-free maize bread premix and two variants,
- A maize salsa, and
- A non-dairy fermented maize dip.

These products were formulated to appeal to certain niche market segments, *e.g.* gluten and lactose intolerant individuals. These product characteristics are in addition to the “indigenous foods” market appeal.

4.3.1 Maize Bread Pre-mix

A gluten-free maize bread premix, using soy protein isolate as binder was developed based on a traditional maize bread concept. Two variants were also developed, *viz.* a morogo and sun-dried tomatoes maize bread and an onion and mixed herbs maize bread. These products can be produced at laboratory scale at an ingredients cost of R1.44, R1.64 and R1.54 respectively for a 250g (loaf equivalent) pre-mix.



Maize Bread Pre-mix and Loaf

4.3.2 Maize Relish

The maize relish is based on the chakalaka concept. An imbuya-tomato relish developed in the PAP has proved popular in Kwa-Zulu Natal and it was anticipated that the maize relish would be similarly received. The relish, predominantly comprising maize, green and red peppers and onion, was produced at a laboratory scale ingredients cost of R7.15/kg (R1.79 / jar equivalent).



Top: Maize Relish

4.3.3 Maize Spread

Initially two products were developed based on the concept of fermented indigenous products, viz. a maize dip and spread. The maize dip concept was subsequently abandoned due to comments received during the preliminary informal evaluations conducted for the products and also challenges experienced in product development.

A non-dairy fermented maize spread was subsequently developed. This product comprises fermented sweetmaize, to which gherkins, red peppers and spring onion are added. The maize spread is produced at a laboratory scale ingredients cost of R13.16/kg (R1.32 / container equivalent).



Top: Maize Spread

4.4 Concept Products

Concept formulations are ideas for future development work. Some experimental work has been done to formulate workable recipes, but the formulations have not been optimised.

The two products for which concept formulations have been done are:

- Dipabi toffee, and
- African dukkah. Dukkah is a Middle Eastern product combining either hazelnuts or chickpeas with pepper, coriander, cumin and sesame seeds. This product is crushed into a powder and served with olive oil and bread. The concept with the African dukkah was to formulate a product similar to the Middle Eastern product, but using Dipabi (roasted and milled maize) to give an African flavour.

5. Entrepreneur Identification and Support

The identification of entrepreneurs and establishment of SMME processing centres progressed significantly under the auspices of the DST Poverty Alleviation Project. A Section 21 company, IndiZAFoods, was established, with the directors drawn from the community, private sector, academia, the CSIR, and funding agency representatives.

IndiZAFoods Board of Directors

Members	Directors
TsaSetso Foods Enterprise	Tshidi Moroka (CSIR)
Katleho Dairy Products	Prof Wessels
Isintu Foods Enterprise	Mr. Nkana Makena (SAB)
Chivirikani (Swa Xintu Foods Enterprise)	Ms. Nthabiseng Matsobane (Ploughback)
DST	Prof. Mazibuko (GTZ)
CSIR	Mr. Mqaise (Bhp Billiton)
National Department of Agriculture	

IndiZAFoods is the umbrella body for several food processing SMMEs. Community based multi-purpose demonstration centres have been established in the Free State, Kwa-Zulu Natal and in Limpopo. These centres are managed and staffed by previously disadvantaged individuals, predominantly drawn from the communities who were originally involved in the Poverty Alleviation Indigenous Foods Project. Catering groups in the region are also supported in the serving of indigenous foods at various occasions.

The mechanisms and processes adopted in the establishment of the SMMEs and entrepreneurs are outlined in Annexure B. Details of the Free State centre, TsaSetso Foods Enterprise, are also given.

This enterprise seeks to serve supermarkets, wholesalers, catering companies/group, schools, and the hospitality and tourism industries in Bloemfontein and surrounding areas (Mangaung, Botshabelo, Thabanchu). A managing entrepreneur was contractually appointed to the centre in 2003, with the option taking over the business after a designated period. TsaSetso Foods Enterprise comprises a staff component of seven, all historically disadvantaged individuals. The product range currently comprises six products *viz.* Dipabi powder; Dipabi cookies; Dipabi chocolate bars; Potele muffin mix; Nyakafatane and Mohadikoane. The centre also supports a further 40 people associated with the Etsa Phapang Farmers' Group and the Fadimehang Catering Group.

Technical, marketing, business, and legal support are provided to the centres established under the PAP, as well as the auxiliary groups, by the Tfd Programme on a needs basis. Service providers have also been contracted to assist in the development of sustainable SMMEs. In addition, the umbrella Section 21 Company, IndiZAFoods, also provides guidance and management to the centres.

A supplementary activity to the project was the identification of existing BEE food manufacturers. Sources such as BRAIN (Business Referral and Information Network), NAMAC (National Manufacturing Advisory Centres) and The Enterprise Magazine's directory of black business were consulted. These sources, and in particular data supplied by BRAIN, showed that butcheries, wholesalers and retailers were the only SMMEs listed in the food sector. The only manufacturers listed were large companies such as Nola and Premier that had achieved BEE status through share deals. This would appear to pose a challenge when considering expanding production of maize speciality products to other BEE SMMEs.

6. Market Evaluation

Evaluation of the six maize speciality products *viz.* the Dipabi chocolate bar, the maize spread, the maize breads and the maize relish, took place on five levels:

- Informal, unstructured evaluations conducted in-house,
- Two rounds of formal, structured evaluations conducted by the University of Pretoria (Annexures C, D and E),
- An evaluation by a selected group of health stores (Annexure F),
- An evaluation by two of the PAP centres, and
- An evaluation of three food industry SMMEs.

6.1 Informal In-House Evaluations

Two rounds of informal evaluations of the Dipabi chocolate bars, prepared maize breads, the salsa, and the maize spread and dip products were conducted using a panel of ~ten people. The product formulation was adapted based on the feedback from the panel members.

6.2 Sensory Evaluations

Two rounds of sensory evaluations were conducted, the results of which are outlined in Annexures C, D and E.

6.2.1 First Sensory Evaluation

In the first round of sensory evaluations the target market was identified as white female consumers, LSM 7-10, aged 25-55 years and frequent shoppers. The objectives of the consumer assessment and evaluation were:

- To explore consumers' expectations of health products
- To determine consumers' acceptance of the concept of maize based health products
- To gauge consumers' acceptance of the maize products via structured tasting
- To determine consumer preference for the three bread variants
- To provide recommendations, if necessary to improve the maize products
- To better understand potential product usage and usage occasions.
- To probe preferable serving sizes, packaging options and price aspects.

The consumers expressed their perceptions of health products and selected maize products in a structured manner. Standard Sensory Evaluation principles were adhered to throughout and a skilled moderator facilitated discussion. The discussion was structured in such a way that the respondents generated attributes of importance, pertaining to the health products. There was also a subsequent structured blind tasting of all the maize products.

Since the study was conducted solely on a qualitative basis, it should be taken into consideration that the findings provide indications only and cannot be used for numerical and statistical quantification. The latter would call for a separate numbers-based quantitative study.

Maize Loaves

The study found that the three loaves differed significantly with regard to overall liking, liking of taste, liking of aftertaste as well as the liking of the aftertaste with butter. In all these instances, the herb and onion maize loaf attributes were significantly preferred. Based on sensory properties it was clear that the morogo and maize loaf required further development.

Maize Energy Bar (Dipabi Chocolate Bar)

The maize energy bar failed to receive acceptable ratings for any of the attributes evaluated.

Maize Relish

The maize relish received acceptable ratings for all attributes evaluated, except liking of appearance.

Maize Spread

The maize spread failed to receive acceptable ratings for any of the attributes evaluated.

The following key findings were identified in this first study:

- Consumers expect these products to be tasty, healthy, affordable and available at regular retail outlets. They also expect it to be suitable for the whole family.
- Consumers seem to be very positive about a range of maize speciality products, as they are of the opinion that there are only a limited variety of speciality products currently available. They recommended many additional products for this range.
- Overall, the herb and onion maize loaf seems to have the best market potential.

A number of recommendations were made pertaining to improving the maize speciality products. Where possible, these suggestions were adopted and the products reformulated for the second sensory evaluation.

6.2.2 Second Sensory Evaluation

The objective of this study was to determine consumer acceptability of the maize speciality products, and to further gauge information on usage, price, packaging etc. by using a consumer panel. The target market for this study consisted of black and white male consumers and black female consumers, aged 18+ years in LSM 7-10. The products that were evaluated comprised:

- Maize energy bar
- Two maize relishes (current and improved)
- Two maize spreads (current and improved)
- Plain maize loaf mix
- Herb and Onion maize loaf mix
- Two morogo and maize loaf mixes (current and improved)

A Structured tasting of the products took place, with a nine-point scales being used to determine liking, and just about right scales to indicate possible modifications. A post tasting questionnaire addressed issues such as usage occasion, price, packaging etc.

Maize Energy Bar

The sweetness of this product was the only attribute that received an acceptable mean rating (above seven).

Four attributes received mean ratings under six (“like slightly”), namely the liking of the outside appearance, inside appearance, chocolate colour and the aroma.

The colour of the chocolate coating as well as the inside bar colour is perceived to be too dark, whilst the aroma is perceived to be slightly too strong, the texture slightly too hard and the chocolate coating not quite thick enough.

Maize Spread

Initial Maize Spread

None of the attributes received an acceptable mean rating. The spread is perceived to be not quite salty enough, slightly too sour and slightly too grainy.

Improved Maize Spread

None of the attributes received an acceptable mean rating. The spread is perceived to be not quite salty enough, slightly too sour and slightly too grainy.

Maize Relish

Initial Maize Relish

Only two attributes received mean ratings under six, namely overall liking and the liking of the sauce.

Improved Maize Relish

The mean rating for liking of the sauce was rated less than six.

Plain Maize Loaf

All the evaluated attributes received acceptable mean ratings (above seven) except the saltiness and texture of the loaf, as well as the saltiness, sweetness and aftertaste with butter (received mean ratings under seven).

Herb and Onion Maize Loaf

All the attributes evaluated received acceptable mean ratings, except the taste, saltiness, and the saltiness, sweetness and aftertaste with butter.

Morogo and Maize Loaves

Initial Morogo and Maize Loaf

The majority of attributes received acceptable mean ratings, viz. liking of appearance; liking of crust colour; liking of bread colour; liking of softness; liking of moistness, liking of taste with butter.

Improved Morogo and Maize Loaf

The following attributes received acceptable mean ratings:

- Overall liking
- Liking of appearance
- Liking of softness
- Liking of taste with butter

The improved morogo and maize loaf was perceived to have a slightly too strong aroma, was not quite salty enough, not quite sweet enough, slightly too moist, and the texture was found to be slightly too dense.

6.2.3 Overall Assessment of Maize Speciality Products

The likelihood of purchase was determined by adding the percentages for “probably buy” and “definitely buy”, and a rating of 75% or above was considered as a good indication (from a sensory perspective) that the product is ready to launch.

Based on the summation of the two studies, the maize loaves / pre-mixes are ready for launch, while the maize relish is very close to launch. The Dipabi chocolate bar still requires some improvements. For the maize spread, however, the improved variant actually scored lower than the original product, indicating that some changes are required if this product were to be launched.

It is interesting and important to note that different responses were obtained from the two target groups. The results below, indicating the percentage of participants that would buy the product, are for target group 1 and target group 2 respectively.

Plain Maize Loaf

52.2% of the respondents will purchase this product
61.6% of the participating respondents will purchase this product.

Herb and Onion Maize Loaf

68.3% of the respondents will purchase this product
53.9% of the participating respondents will purchase this product.

Morogo and Maize Loaves

30.4% of the respondents will purchase this product
50% of the participating respondents will purchase this product.

Maize Energy Bar

34.8% of the respondents will purchase this product
55.1% of the participating respondents will purchase this product.

Maize Relish

81.8% of the respondents will purchase this product.
46.9% of the participating respondents would purchase this product.

Maize Spread

36.4% of the respondents will purchase this product
27.5% of the participating respondents will purchase this product.

The results highlight the importance in selecting the correct target market for the different maize products, e.g. white female consumers would more readily purchase the maize relish, whilst black consumers would be more likely to purchase the morogo and maize loaf.

6.3 Interviews with Health Shop Owners

Six health shops situated in the Pretoria region were visited. The objective of the study was to ascertain the acceptability of the maize speciality products by this niche market, and to determine key attributes relating to the health store market. Questions relating to the latter included:

- Types of products stocked by these retailers
- Products that are currently popular and comprise a large percentage of the turnover of the store
- Products that are increasing in popularity
- Types of consumers served by these stores
- Reasons why consumers purchase products from health stores
- Availability of and demand for gluten-free / dairy-free products
- Idea of the range of a maize speciality range of health products

The storeowners were also requested to assess the maize speciality products. The products that were evaluated were those that had been reformulated subsequent to the second round of sensory evaluations. Information provided by the retailers was treated confidentially. The report relating to this study is given in Annexure F.

Constructive advice was received from the health storeowners regarding improving of the products. The energy bar was generally well-received and was seen as a viable product as there is an existing trend for similar products in the market. Similarly the health storeowners appreciated the maize breads. All the owners agreed that there is definitely a market for the loaves, with the majority agreeing that the loaves are viable as a ready prepared loaf, as well as in a pre-mix form. The storeowners also liked the maize relish, and all agreed that it was an attractive and tasty product. The retailers agreed, however, that there is no existing need for the relish product in the health market. As there are no similar products, and as the relish is not a product that is used everyday, it is not a product that any of them would stock. Only two of the owners liked the maize spread, with the other four commenting that the product was either too sour or had an undesirable smell. None of the retailers felt that there was a need for such a product, and as with the relish, felt that it can be a good alternative to the spread products currently available at general retail stores.

6.4 Evaluation by the PAP Centres

Two existing indigenous foods manufacturing centres were selected to participate in the evaluation of the maize speciality products. These centres are based in Richards Bay (Kwa-Zulu Natal Province) and Bloemfontein (Free State Province). Participants were mostly clients to the centres, centre staff, and general public (shoppers, catering customers etc.). The products evaluated were those that had been reformulated subsequent to the second round of sensory evaluations.

The maize breads were generally well-received by participants both centres, with the mixed herb and onion receiving the most favourable comments. In the Free State, however, it was felt that it was too much of a luxury to buy the product from the shelf. Similarly participants at both centres liked the maize relish.

The maize spread was not liked by Kwa-Zulu Natal participants, but was, however, appreciated in the Free State. The Dipabi chocolate bar was not well-received by the participants at either centre.

Constructive comments were received for the further enhancement of the products, dependent on the target markets that are selected for product marketing.

6.5 SMME Interviews

The maize speciality products were evaluated by three selected enterprises according to the perspective of the sectors in which the SMMEs operate. This was to gain a view of the opportunities that these diverse enterprises perceived in the products. The products that were evaluated were those that had been reformulated subsequent to the second round of sensory evaluations. The report relating to this study is attached as Annexure H.

The three entrepreneurs interviewed were Cynthia Motau of TsAfrica; Sydney Mshweshwe of The Gauteng Entrepreneurship Centre; and Jill Holloway of Holloway Investments.

The three organisations provided very different responses to the products and this may be related to their particular business areas. Cynthia Motau was impressed by the uniqueness of the maize breads, but felt that the other products did not have any unique characteristics and that these products would not be accepted within her business. She sees a large market for the maize breads in the restaurant and catering industry and expressed a desire to become a distributor for maize bread premixes. Sydney Mshweshwe was generally not impressed with the products as a consumer. He believes that opportunities for Black Economic Empowerment (BEE) for the products would lie within the area of affirmative procurement by institutions, such as hospitals, prisons and schools and possibly in feeding schemes and famine relief. Jill Holloway was not very positive about the maize salsa and the “energy bar”, finding the flavour of the former lacking and commenting on the abnormal flavour and texture of the latter. She was impressed by taste and flavour of the breads and the maize spread. In particular she felt that given the good traditional taste of the maize bread products, there was an opportunity to develop a product specifically focused at those consumers raised on farms where maize bread was home-baked.

The presentation of the maize speciality products elicited real interest and there appeared to be an appreciation for the project and the fact that it brought new products to the attention of entrepreneurs.

6.6 Supermarket Survey

Due to the reluctance of supermarkets to be canvassed on their perceptions of the maize speciality products, it was decided to focus this study on surveying the health products / competing products stocked by 18 retail supermarkets belonging to the national Pick ‘n Pay, Spar, and Checkers store chains. Key issues addressed in the study entailed:

- Placement of the health products in the store
- Range of health products available
- Shelf space reserved for health products
- Competing products identified
- Packaging sizes and prices of competing products

The results of this study are presented in Annexure F.

In considering competing products, it is encouraging that with the exception of Spar (maize loaf), none of the stores stocked either a maize loaf or maize bread premix. There were also limited products competing with the Dipabi chocolate bar, the maize relish or the maize spread. Dependant on the target markets selected, consideration should be given to approaching selected retail chain stores with a view to stocking the maize speciality items.

6.7 General Recommendations Emanating from the Market Evaluations

Based on the results of the various market evaluation studies conducted, the maize loaves / premixes appear to be products that could be readily commercialised. The maize relish has considerably potential for commercialising in selected targets markets. The potential of the maize spread needs to be further explored, with some product reformulation still required. The reformulated Dipabi chocolate bar does not appear to have much appeal, with the more expensive variant developed in the PAP project is better received by the current market.

7. Problems Encountered

As outlined in the 6-month interim report, most of the activities of the IK Maize speciality Foods Development, Promotion and Commercialisation Project were proceeding according to schedule. A delay was, however, experienced regarding the sensory evaluation of the products. A private company, Sensory Assignments, with whom initial prior discussions had been held, was approached to undertake the assignment. After several meetings and reworking proposals, negotiations had advanced to the point where contractual arrangements were to be finalised, when unexpectedly the project team was informed that the business was going to cease operations. After discussions with alternative service providers, the University of Pretoria was appointed to undertake the sensory evaluation work.

Some adjustments were made to the project plan to compensate for the unexpected delay. As part of the sensory evaluation, it is planned that the University will consult selected businesses in Pretoria / Johannesburg to provide insight to the products potential and the Poverty Alleviation Project-established food SMMEs in KZN and Free State conduct evaluations of selected products with their customer base.

An unexpected development was the reluctance of any of the retail chain stores to participate in product evaluation. Although this was foreseen with regards to retail chain stores such as Pick 'n Pay and Woolworths, it was anticipated that the Spar stores would be open to participating in a tasting led by an independent body.

The focus was therefore re-directed to determining the range of similar niche products carried by the retail chain stores.

Intricacies in the development of a brand for IndiZAFoods and its products impacted on the project in that packaging and labelling of the products could have been significantly enhanced viz. the IndiZAFoods brand, and access to niche markets could also have been facilitated.

8. Project Publicity / Dissemination to Maize Industry

Subsequent to the approval of this report by the Maize Trust, publicity for the project will be sought in various fora viz. radio, publications (Food Review) *etc.* Wide consumer feedback will be encouraged as part of this process and will be captured.

The project outcomes will also be highlighted in the Special Food edition of the CSIR Technobrief, which is broadly disseminated to the private and public sector, as well as to international clients.

It is planned that the project outcomes and products samples will be presented at the next Maize Forum meeting. A handout will be produced that will allow for easy dissemination amongst the Maize Forum members, and will also serve as marketing material for the products, the SMMEs and the project.

The CSIR Bio/Chemtek electronic newsletter that can be accessed at (http://www.csir.co.za/plsql/ptl0002/PTL0002_PGE005_DIVISIONS?DIVISION_NO=1010012) and the IndiZAFoods website (www.indiZAFoods.co.za) will carry information relating to the activities of the Maize-Trust project.

9. Utilisation of Results within South African Maize Industry

The outcomes of this project can be used for establishment of food-based SMMEs, producing maize speciality products.

The insights gained in the various market evaluation studies can be used by the maize industry to investigate other potential maize speciality products. These studies will also be useful for examination as part of the tender recently issued by the Maize Trust.

10. Way forward

The products developed in this Maize Trust-funded project have received favourable comments.

Technology transfer for the production of the developed products to the processing centre(s), established under the DST-CSIR Indigenous Foods PAP should be undertaken. Technical support, relating to the products, needs to be provided to the centre(s).

Significant efforts should be expended to commercialise the maize breads, and consideration should be given to commercialisation of the maize relish. Product reformulation of the maize spread should be conducted, and target markets sought for commercialisation of this product. Commercial efforts relating to the Dipabi chocolate bar can continue to be pursued under the auspices of the TsaSetso Foods Enterprise.

Based on the inputs received from the sensory panellists and the health stores, consideration should be given to expansion of the maize speciality products portfolio.

11. Acknowledgments

The project team would like to thank the Maize Trust for funding this project.