



Zimbabwe, Zambia, Malawi and Tanzania: priority fruit species and products for tree domestication and commercialisation

Improving the well being of rural dwellers in the miombo ecosystem through improved domestication, utilisation and commercialisation of indigenous fruit trees and their products is a key goal of a collaborative regional project coordinated by The World Agroforestry Centre. This *"Domestication and Marketing of Indigenous Fruit Trees of the Miombo for Improved Nutrition and Income in Southern Africa"* project is a sub-component of the World Agroforestry Centre's *"Zambezi Basin Agroforestry for Sustainable Rural Development"* programme.

The World Agroforestry Centre, the Southern Alliance for Indigenous Resources (SAFIRE) and the Commercial Products from the Wild (CPWild) Group from the University of Stellenbosch (www.cpwild.co.za) conducted product priority setting workshops among local processing groups in Zimbabwe, Malawi, Zambia and Tanzania to determine tree species and product preferences amongst processing groups in these countries. This would assist in developing agroforestry commercialisation strategies that would aim to improve processing group operations.

Priority setting workshops

In collaboration with partners, the World Agroforestry Centre established a number of fruit processing groups in Zimbabwe, Zambia, Malawi and Tanzania. These groups are actively involved in the processing of products such as wines and jams and sell their products in their respective districts (Akinnifesi *et al.*, 2006). During 2003 a number of these

groups and other stakeholders were consulted regarding the fruit species and products that they prefer to process, and other aspects such as training, marketing and general constraints.

A total of 97 people attended three workshops at Magomero in Malawi, Tabora in Tanzania and Harare in Zimbabwe. Processing groups from Malawi and Zambia attended the Magomero workshop while processing groups from the Tabora district in Tanzania attended the Tabora workshop. The Harare workshop was attended by a variety of stakeholders, including, research organisations, NGOs and private enterprise. The product prioritisation process for the Harare workshop was based on the ecological, marketing, socio-economic and technological aspects of market analysis and development. Each category has several indicators against which each product is evaluated. The process followed for the Harare workshop was further refined

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for the Tabora and Magomero workshops. This was done by combining the methodology for the Harare workshop with community level methods suggested by Franzel *et al.* (1996).

Discussion

Preferred species and products

During the workshops at Magomero and Tabora participants were asked to focus not only on indigenous fruits. It was found that they listed a substantial number of exotic fruits as well. Mango was highest on the list of preferred species followed by indigenous fruits such as masuku (*Uapaca kirkiana*) and baobab (*Adansonia digitata*).

Many exotic fruits included in the priority lists raise the question about the need to include exotic fruit trees in indigenous tree domestication programmes. Exotic fruits such as mango could be used as a driver for domestication and commercialisation programmes and indigenous fruits could be introduced as complementary products.

Marula (*Sclerocarya birrea*) products were strongly promoted by the more commercial orientated participants of the Harare workshop. However, marula products received a much lower rating by the community processing groups who attended the Tabora and Magomero workshops.

The participants from the Harare workshop also focussed strongly on oil products, but the Tabora and Magomero participants did not list oils as preferred products. This could possibly be attributed to the higher level of technology required for commercial oil processing that is not available at rural community level. The markets for oils seem to be mostly export orientated and community groups are not aware of these markets or do not have access to them.

Product evaluation

Ecological evaluation

The ecological evaluation was conducted to determine the impact of harvesting on the fruit supply and to look at aspects such as fruit availability and ease of harvesting. The results show a large difference between the community groups who attended the Magomero and Tabora workshops. At the Magomero workshop exotic fruits such as mango were rated highest, whereas the Tabora workshop participants preferred indigenous fruits.

The Harare as well as Magomero workshops gave the lowest ecological ratings to marula products. It seems however that there is no clear correlation between ecological preferences of the different workshops. It could probably be assumed that ecological preferences are

strongly dependent on the regional distribution and availability of the different fruit tree species.

Socio-economic evaluation

The socio-economic evaluation determined how beneficial these products would be to development and if it could be used as vehicles for development. The commercial processors attending the Harare workshop rated the high value oil products as most beneficial to socio-economic development with jam and jelly products as the least beneficial. The community processors who attended the Magomero and Tabora workshops rated the lower value products as having a higher socio-economic potential than the high value wine and juice products. The reason for this discrepancy could be in the levels of experience in processing the different products.

Mango, guava, groundnut and tomato products were rated the highest by community processors. The reasons for this could be that the fruits are easily accessible and abundant and that people would be more familiar with the processing of these fruits than with indigenous fruits. This again highlights the need to focus not only on indigenous fruits but also exotic fruits in domestication and commercialisation programmes.

Market evaluation

The Harare workshop focussed on an international and regional marketing perspective. This workshop rated marula products the highest. Marula is one of the best-known natural products in the southern African region made popular by the Amarula Cream liqueur of Distell Corporation in South Africa.

The community groups in the Magomero and Tabora workshops rated marula products last. These community groups also rated high value products such as wines much lower than lower value jam products. This indicates a need for a differentiation in marketing strategies when dealing with the marketing of fruit products at local and regional/international level.

Technology evaluation

The technology evaluation shed some light on the reasons for rating high value oil and wine products lower than low value juice and jam products by community groups. It seems in most instances people are aware of the value of these products but they do not have access to the skills and technology required to process wine and oil products. It also seems that people are more familiar with the technologies required to process exotic fruit products than indigenous fruits.

Overall rating

The overall product rating for Magomero indicated that mango products were the most preferred. Only one indigenous product i.e masuku juice, was rated amongst the top five products from Magomero (see table 1).

In the case of Tabora, zambarau (*Syzygium guineense*) juice was rated as the overall most preferred product with two other indigenous products, namely ntonga (*Strychnos cocculoides*) juice and ntalali (*Vitex mombassae*) jam, amongst the top five products. In both instances marula and baobab products did not receive a very high rating.

The Harare group rated the high value oil products overall behind masawu (*Ziziphus mauritiana*) fruit leather and marula jelly. Therefore, jam and jelly products are the most preferred products overall.

Table 1: Species and products identified at the three workshops, in order of preference.

Magomero	Tabora	Harare
Mango jam	Zambarau juice	Masawu fruit leather
Tomato jam	Guava jam	Marula jelly
Mango dried	Ntonga juice	Marula oil
Mango juice	Ntali jam	Parinari oil
Masuku juice	Groundnut butter	Masuku jam
Baobab juice	Mango juice	Ntonga jelly
Masuku wine	Marula wine	
Baobab wine	Parinari wine	
Marula juice	Baobab juice	
Marula wine	Flacourtia jam	

Constraints to processing

The Magomero and Tabora workshop participants indicated that a lack in processing equipment and packaging materials, insufficient capital to acquire processing equipment and a lack of markets are the main constraints faced by rural processing groups. Seen in the context of the product priority setting exercise, these constraints effectively prevent rural processing groups from focussing on the production of higher value products such as wines and oils.

Strategies

When the Magomero and Tabora workshop participants were asked to select the species important to them, they selected a combination of indigenous and exotic species as well as tree and non-tree species. This selection illustrates the integrated nature of agroforestry as implemented by

rural communities.

The selection of products focussed mainly on jams, juices and wines. Wines can be seen as high value products but the wine products were consistently rated lower in terms of social, marketing and technological aspects than most other products. Jams and juices had the highest ratings in terms of community value adding and employment creation potential.

The exercise dealing with technology and skills showed that the participants had less knowledge about the production of wines and juices than of the making of other products such as jams and dried fruit. It can probably be concluded that the participants see products such as wines and juices as high value, high-income products but they currently lack the skills and knowledge required for the production of these products.

Mango and tomato products were consistently rated higher than the indigenous fruit products in the Magomero workshop. Reasons for this might be that these fruits are generally more available and accessible. This preference for exotic fruits is must be kept in mind in future domestication strategies.

An enterprise development model based on high value preferred products such as wines and juices could form the basis for support to enterprise groups. Within such an enterprise development model the following strategies should be considered:

- Combine indigenous and exotic fruit trees in domestication and commercialisation programmes.
 - Focus on training in the processing of high value products such as wines and oils.
 - Support processing groups in acquiring appropriate technology.
 - Support processing groups in finding markets for their products.
 - Link processing groups with commercial enterprise partners who could assist them in producing preferred products of acceptable quality and the right quantities.
- Strategies related to the commercial processing of fruit products could be coupled with support in terms of processing materials, training and micro-financing.

Conclusions

The three workshops have highlighted the differences in perceptions regarding fruit trees and fruit products between commercial and community processors, as well as between processors in different areas of southern Africa. Evidently, communities involved with the processing of fruit, prefer to utilise both indigenous and exotic species.

In developing agroforestry strategies it would be critical

to consider these differences between processing groups. The focus should be on a range of tailor-made domestication and commercialisation strategies for different processing groups, levels of commercial development and geographic regions. Such a strategy could present regional development agencies an opportunity to concentrate on smaller more focussed projects instead of large regional initiatives that are difficult to manage.

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- The full report on these priority setting studies is available on the Commercial Products from the Wild website – www.cpwild.co.za**