

partageons les connaissances au profit des communautés rurales

sharing knowledge, improving rural livelihoods

Rural Radio Resource Pack

No 07/5

INDIGENOUS FRUITS



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The Technical Centre for Agricultural and Rural Cooperation (CTA) was established in 1983 under the Lomé Convention between the ACP (African, Caribbean and Pacific) Group of States and the European Union Member States. Since 2000, it has operated within the framework of the ACP-EC Cotonou Agreement.

CTA's tasks are to develop and provide services that improve access to information for agricultural and rural development, and to strengthen the capacity of ACP countries to produce, acquire, exchange and utilise information in this area.

Rural radio
Radio remains, despite all the interest in the new ICTs, one of the most important communication tools in ACP rural communities. CTA began supporting rural radio back in 1991. Every year since then we've produced a set of Rural Radio Resource Packs (RRRPs).

Each pack is on a specific topic – anything from crop storage and cassava to small ruminants and soil fertility. The choice of topics depends on what ACP partners suggest. The number of topics covered has now reached 51. Inside each pack are materials for a radio programme on that topic – interviews on cassette or CD, a transcription and a suggested introduction for each interview, technical information on the topic, advice for how the pack can be used and a questionnaire for users to provide feedback to CTA.

You can find most of the RRRP material on CTA's Rural Radio website http://ruralradio.cta.int/.

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This CD can be played in an audio CD player, and also contains pdf files of the written documents and the feedback questionnaire.

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CTA

Rural Radio Resource Pack - 07/5

Indigenous Fruits

TECHNICAL INFORMATION

Introduction

Indigenous fruits are those which are native to Africa, where they have originated and evolved over centuries. These are different to exotic fruits, such as citrus and even mango, which have been imported from other continents, although they may now be quite commonly grown in many areas. Mango particularly is common across much of Africa but actually originated in southeast Asia. Indigenous trees, such as marula, baobab, African plum, are mostly found wild, although some are now planted, but they all evolved in the African environment.

Across sub-Saharan Africa, a wide variety of indigenous fruit trees are valuable to the diets and incomes of local communities, particularly during times of potential household insecurity. For example during the rainy season when crops are not yet ready for harvest and stored supplies have run low. Many indigenous fruit trees are able to withstand hot, dry conditions, when the fruits provide an essential food source. The baobab for example is found throughout Africa at low altitudes and during drought periods. The fruits provide a valued source of vitamins and minerals, but often they are underutilised.

Most indigenous fruit trees generally grow wild. The fruits are harvested and eaten at home, sold at the market or processed into jams and juices to add additional value. But many fruit trees are used for more than just their fruits. Trees grown on the homestead provide important shade for crops. Leaves may be used for fodder or as compost. Leaves, fruits and other tree parts may also be used for medicinal purposes. Bark is often used for fibre and the timber for furniture, house-building poles, fences or other constructions.

However, over recent decades large-scale deforestation projects and the extension of agricultural land have had a negative impact on indigenous fruit trees. Climate change is also now having an impact. Weather conditions are becoming more extreme, as we have seen recently with wide-scale flooding on the continent.

Most indigenous fruit trees are not yet domesticated so these species provide an important source of genetic diversity, which is vital for preserving characteristics that are well adapted to local conditions. If these trees are not protected, this important genetic information – and the indigenous knowledge that has been passed on for generations – will be lost.

If domesticated and planted on farms, scientists predict that indigenous fruit trees could save millions of lives by providing children and adults vulnerable to malnutrition with a nutritious source of food as well as valuable vitamins and minerals. Planting trees also helps to rehabilitate degraded environments and prevent further soil erosion or desertification. “Trees for Change”, for example, is the programme initiated by the World Agroforestry Centre (ICRAF) to encourage a shift from communities harvesting from the wild by promoting domesticated breeding programmes and planting fruit trees on farm.

The World Agroforestry Centre also offers training programmes for communities which want to set up their own nurseries, cultivating and domesticating indigenous fruit trees. There are many other programmes which train farmers in value addition and processing, so that

communities can make the most of indigenous fruits, both nutritionally and economically.

This resource pack

There are hundreds of fruit trees indigenous to Africa, and this pack cannot possibly cover them all. Instead, the purpose of this pack is to provide listeners with practical information about the best ways to prepare, gather and store the fruits to eat, and how to use the trees and their produce to maximise their economic and multi-purpose potential.

By offering advice on the domestication and cultivation of the trees, it is hoped that this information will help encourage the sustainability and protection of indigenous species. Nurseries are also covered, which act as training centres to teach others the skills of multiplication and care for trees, whilst also providing entrepreneurial skills to those interested in setting up a business to sell tree seeds or young seedlings.

Note that although many indigenous fruits also provide beneficial medicinal properties, these are not covered in this pack but some information can be found on this subject in the resource pack produced earlier this year entitled 'Medicinal Plants'.

Preservation and local knowledge

Despite the benefits reaped from indigenous fruit trees, their products are often undervalued or little known amongst urban and international communities. In rural areas across Africa, fruits, fodder, fuel wood and other essential products from indigenous fruit trees are greatly valued. An example is the dika nut, native to western Africa from Senegal to Angola and popular in local diets; in Nigeria and Gabon it is one of the most widely sold forest products. Yet the dika nut is little known on international markets.

Rural communities are often knowledgeable about the benefits of indigenous trees. But if information passed on over generations is not preserved, knowledge about traditional methods of preparing them as food for example will be lost. For example, the transformation of the shea nut into butter for skin protection is an ancient artisan craft.

Preserving the genetic diversity of indigenous fruits also means ensuring their sustainability. If trees are used and fruits are gathered and sold or utilised in other ways, then a supply must be ensured so that they are not over-exploited. In the southern province of Zambia for example, 'musuku' wine is made from the indigenous fruit *uapaca kirkiana*. A nursery producing the fruit has negotiated its sale with a local brewery, which provides transport for collection, and arranged collection times with the brewery. But demand is outstripping supply, and while economically this has benefited the local community, environmentally such a scheme is not sustainable. See: ***Preserving the past for the future.*** You might want to combine this interview with ***Domesticating, and cultivating fruit trees.***

Propagation

Propagation means multiplying more plants from a section of one particular plant. There are many different types of propagation, but grafting is one of the most effective. 'Grafting' means 'fusing' or mixing the tissue of one plant or tree with another. This is done to get the best characteristics out of two different types of tree or plant. For example, if one tree has desirable fruits such as the bush mango, but another tree is known for its strong roots, then together they will produce a tree which has both good fruits and strong roots.

There are a number of advantages in using the grafting technique. It is effective on small plots of land, and it can significantly reduce the time taken for the plant to mature and produce fruit. The method produces trees with high quality fruit, and farmers can select the size, taste or colour of fruit which they want to reproduce.

But there are disadvantages to the method as well. If one parent tree is used to cultivate many others, then there is no genetic diversity to prevent disease. If disease strikes, then it will

affect every tree that has been grafted with the parent material. So when cutting the branches to graft, it is essential to sterilise the knife you are using with a flame or some spirit to make sure that you cannot spread disease from one tree to another. See: ***Planting techniques for the best results***. Use this interview with ***One tree, many uses*** to discover how to maximise the potential of your newly grafted tree.

Multipurpose fruit trees

Fruits are the most obvious products of indigenous fruit trees. But they have many other uses as well. From the provision of construction materials to shade and fodder for livestock, the trees can be used in a variety of contexts, making them very economically efficient. They can also offer good income generating opportunities, making furniture frames from the bark for example, or selling compost from the nitrogen rich leaves. They can be planted to provide fencing to contain livestock or to protect the homestead, and the trees can provide firewood.

The fruit trees are also well adapted to local conditions - for example fig trees grow well in marsh lands, and baobab trees grow well in drought-prone areas. They are also rich in bio-diversity, which protects local tree species from diseases and pests. If the trees are lost, a significant barrier against disease will be lost with them, and many communities could be left without an important source of food when times are hard, during drought for example.

However despite these numerous advantages, many indigenous fruit trees are neglected. In order to help local communities preserve and make the most from them, it is essential that they are domesticated and cultivated close to the homestead. In addition, teaching communities about methods of storage or value addition can encourage their preservation, instead of their destruction for firewood for example.

See: ***One tree, many uses.*** You may want to use this interview with: ***Domesticating, and cultivating fruit trees***, because Mr Gondwe mentions that one of the best ways to encourage the preservation of the trees is to plant them in the homestead.

Nutrition

Often, indigenous fruits are branded as a ‘poor man’s food’, and their nutritional benefits are dismissed as ‘old wives tales’. The fruits are a vital source or fibre and vitamin C and can act as a ‘safety net’ when other fruits are scarce because the trees are well adapted to harsh conditions. Eating the fruits as part of a balanced diet is an effective way to tackle health problems such as malnutrition and vitamin deficiency; and the fruits, if gathered in the wild or grown at home, are free.

The nutritional benefits of specific fruits are not often widely known, and because of the strong oral tradition in Africa, traditional recipes have in many cases been lost over generations. Fast food and foreign eating habits have also changed traditional diets, and eroded the usage of traditional cooking preparations and ingredients.

In some places, indigenous fruits are still used to compliment a normal diet. Tamarind for example is used in its pulp form as a flavouring agent in porridge made from sorghum or maize flour. In Ghana, Tamarind pods are used to detoxify poisonous yams during cooking, and bush mangoes are often used to thicken soups and stews. The fruits are used as a supplement in traditional recipes, but knowledge about their nutritional benefits could be more encouraged. See: ***Fruits for nutritious benefits parts 1 and 2.*** You may want to use this interview together with ***Making the most from your fruit***, which suggest more ways in which fruits can be processed into popular juices or jams.

Domesticating, cultivating, and selecting

Domesticating fruit trees means taking them out of the wild, and planting them in your garden. This can give you and your community access to fruits which are free and easy to access, often throughout the year. The fruits can supplement your diet with foods rich in vitamins and minerals, and prevent dependency on only one or two staple crops. They are also

a valuable source of food given the accelerated and more frequent destruction of forest. However, it should be noted that there is an immense variety of indigenous trees to cultivate.

There are three methods of selection and propagation generally used to domesticate and propagate fruit trees. They are propagation by cutting, layering and grafting. See: ***Planting techniques for the best results***.

The first stage in domesticating fruit trees is selection. By selecting superior trees to multiply, you can get fast improvements in the quality of the fruits produced. And local communities can choose the kinds of fruit trees that they want to grow, depending on their preference for taste, or type of fruits. It is a good idea to select trees with a reduced time before first shooting or ripening. This is called 'precocity'. It means that once you have planted your tree, you will not have to wait a long time before it begins to fruit.

Other things to bear in mind when domesticating fruit trees are things like the size of your land. How big is the tree that you are going to domesticate going to grow? Will it be too big for your plot? Trees with large fruits and high pulp content should also be taken into consideration, if you want to make the fruits into juice when they are ripe. When planting your trees, consider practical elements of looking after them. For example, is there a water source nearby which will be available when you need it? See: ***Domesticating and cultivating fruit trees.*** This interview could be used together with ***Nurseries and training 1 and 2.***

Gathering

Indigenous fruit trees are usually scattered throughout the forest at a distance from the homestead. Generally, it is children who gather fruits, when they are herding cattle and helping with other duties on the farm. Women also gather the fruits which are ripe and have fallen to the ground when collecting firewood, while men are usually engaged in other activities and rarely play a role in collecting fruits.

While most fruit trees are wild and provide a 'free' source of food, there may be important considerations to take into account in order to access the fruit. The issue of land rights for example, may be a cause for conflict when gathering the fruits. Communal land may be open to everyone in one community for example, but not to neighbouring communities. It is therefore important to discover who owns land where fruits are gathered to prevent conflict.

And in many places, collecting indigenous fruits is restricted to seasons, often for cultural and religious reasons. Restrictions may apply to unripe fruit, and some forests may be sacred, so harvesting fruits is strictly banned. In other places permission to gather fruits has to be obtained by others in the community. The Ekwar Forest in Kenya for example, is strictly managed by the elders of the Turkana people. In this case the fruits are only used as a last resort. You may want to combine this interview dealing with the subject, ***Gathering and collecting fruit trees,*** with ***Fruits for nutritious benefits parts 1 and 2,*** for some good ideas about how to prepare and cook fruits once they have been collected.

Storing fruits

As the seasons change more often than they have done in the past, storing fruits is a skill worth having. Whether storing fruits to sell at the market or eat at home, preserving fruits is one way of ensuring that they last all year round. Some fruits such as baobab can be stored in the form of a powder, which can then be turned into a soup with the addition of water, or added to porridge. Or, sun-drying fruit, such as figs, can offer a good source of vitamins and minerals all year round.

Something to bear in mind when preparing storage facilities is safety, both from animals, potential thieves and pests. Bags made from jute provide good protection from rodents such as rats. They must also be stored somewhere with plenty of space, so that the air can circulate and they do not become infected by disease or fungus.

Some methods of storing fruits are covered in the interview ***Storing Fruits***. You can link this interview with the interview ***Making the most from your fruit*** because making juice or jam from the fruits is another effective method of storing them so that they can be enjoyed for longer.

Value addition

The process of adding value to fruits is important for a number of reasons. First of all, processing fruits into jam and juice is a good way of storing them, and retaining them as a source of vitamins and minerals for longer. Also, adding value to the produce of trees means that local communities are more likely to nurture them for their benefits, rather than destroying them for their timber for example.

But as well as this, adding value to raw fruits means that farmers, and especially women, can make a profit. For example in Burkina Faso, making shea nut into butter instead of selling the raw nuts can result in double the profits at certain times of the year. The activity provides many women with an income which they are at liberty to spend themselves, offering them empowering opportunities.

Many fruits can be used in a wide range of products and manufactured goods, from biscuits to yoghurts and cakes. By using local produce, businesses can be developed and demand created for certain produce. In this way, communities can add value not only to their own fruits, but also to the wider community in the form of business partnerships. Value addition is covered in the interview ***Making the most from your fruit.*** The interview ***Getting bigger - commercialization*** could be used together with this interview, to illustrate the next scale of operating a business.

Nurseries and Training

In many parts of Africa, nurseries have been set up to domesticate and cultivate their own fruit tree seeds. They also provide a local source of seed, so that the farmer does not have to travel long distances. Nurseries can provide advice about where to grow trees, and which varieties are the most productive for the locality. Once seedlings have been nurtured in a nursery, they are often removed and established in community plots or individual farms, depending on the arrangement with the local community.

Nurseries can also offer a centre for training in cultivation and multiplication of trees, including indigenous fruits. Key farmer trainers will spread information within communities through demonstrations such as ‘road shows’, where trainers will travel around a district and demonstrate cultivation methods.

There are many things to consider when setting up a nursery, such as how to source funds and how to allocate decisions about how the nursery should be run. There are also the practical considerations: how big the plot of land is, where to store seeds, where to plant seeds before they are cultivated on farms or in larger fields when they are established. Things to consider when setting up nurseries are covered in the interview ***Nurseries and Training 1 and 2***.

Marketing, commercialisation and pricing

In many parts of Africa, marketing is mostly done by women at village level. At commercial level however, it is mostly done by men. Only the minority of indigenous fruits are exported and marketing systems and links are often poorly developed. Bad infrastructure and bad roads can mean the produce does not reach market places in a condition that will fetch reasonable prices, and weather conditions such as heavy rains can aggravate the situation.

However, indigenous fruits can offer a very good source of income, especially if they are processed, and made into oil for export for example. The key to selling your produce is having access to a market place, and meeting demand. Farmers should be able to produce what customers want, and at a reasonable price, so market research is essential when investing

in a business.

When selling to supermarkets or to shops which are a long distance away, it is essential to invest in good packaging facilities so that produce can be kept fresh, and protected on long journeys. Another advantage of packaging is that goods can look more appealing to customers, and legal obligations such as an expiry date can also be met.

This topic is covered in the interview ***Getting bigger – commercialisation***. You may also want to refer to ***Fruits for nutritious benefits parts 1 and 2*** for examples of some fruits such as marula which can be very valuable when processed into oil and the alcoholic drink Amarula.

Using this Rural Radio Resource Pack

Preserving the past for the future

The scientific community can assist farmers in preserving genetic diversity by analysing tree and fruit characteristics. For example, some trees produce fruit which produce plenty of juice; which can then be processed into juice products. Others may not produce much juice at all but may be useful in other ways. Such information will help farmers to decide which varieties of tree they would like to plant. But often farmers already know important characteristics and qualities about trees, because knowledge has been passed down over generations. In this interview, Eric Kadenge speaks to Alice Muchugi of the World Agroforestry Centre in Kenya, to ask her what can be done to preserve local knowledge and genetic diversity. Do your listeners know of any fruit trees that were around when they were young, but now seem to have disappeared?

Planting techniques for the best results

Multiplying plants and cultivating them on the farm requires knowledge of various propagation techniques. In this interview, Martha Chindong speaks to Ebenezar Asaah of the World Agroforestry Centre in Cameroon about grafting; one of the best propagation techniques. He describes the process in detail and talks about the advantages, but also disadvantages of grafting. In addition, he gives tips about what equipment is best to use. If you are able to visit a research centre or nursery near you, perhaps you can interview a farmer while he is in the process of grafting a plant. This will give your listeners a better idea of what to expect when grafting, and advice about techniques and equipment best suited to your area.

One tree, many uses

Valued for many things other than just their fruits, indigenous fruit trees are a valuable asset to the African landscape and to communities. In this interview, Excello Zidana speaks to France Gondwe of the World Agroforesty Centre (ICRAF) in Malawi about the many ways in which indigenous fruit trees can provide materials from compost to fodder for livestock. You may want to pick a popular indigenous fruit in your area, and ask your listeners to call in to the station to discuss what they use the fruit for. How many uses can you come up with for baobab for example, and what are the most unusual ones? Are there songs dedicated to indigenous fruit trees that you can play?

Fruits for nutritious benefits parts 1 and 2

While many fruits are used as nutritious supplements rich in vitamins and minerals, more could be done to encourage and preserve traditional recipes and food preparation methods. In these two interviews from Zimbabwe, two indigenous fruits are explored in terms of their various benefits and potential uses. In the first interview, Busani Bafana speaks to Tholakele Khumalo, a government nutritionist, about the numerous benefits of baobab. She gives advice on the best way to prepare baobab powder in a porridge or soup, and why. In the second interview, Sylvia Jiyane speaks to Dr Paul Desmond from the Multi Help Trust. He is enthusiastic about the potential of Marula for juice and as oil. Do your listeners have a favourite recipe from an indigenous fruit? On what occasions do they cook it? Every family has a favourite dish, or one that symbolises a certain event. What can your listeners suggest?

Domesticating and cultivating fruit trees

It is best to get the practical advice of an expert when domesticating and cultivating fruit trees. When selecting plants to domesticate, it is a good idea to visit a local nursery or seed bank, to find out more about the qualities of trees you want to plant. In this interview from Zambia, Chris Kakunta speaks to Ferdinand Mushinge from the Southern Africa Development Community, SADC. He gives advice and practical information for people who want to domesticate trees near their homesteads, including the amount of land that you have, the climate and the soil type in your area. Is there someone from a local nursery who can come to the station to give your listeners advice about which are the best trees to plant in you area? What kind of equipment will be needed? Where can your listeners obtain seed for suitable trees?

Gathering and collecting fruit trees

The gathering and collection of fruits often falls under the duties of children, as they are on their way home from school for example. But there are many things to consider when gathering fruits, such as local land rights and securing the permission of others in the community. Perhaps you can ask your listeners if they know of nearby community forests where indigenous fruits can be found and picked. Have listeners experienced conflict in collecting wild fruits, and if they have, how did they resolve the problem? Are there sacred forests in your district, and if there are, what are the rules regarding gathering?

Storing fruits

Although fresh fruits may not be available throughout the year, if they are stored properly, then they can be preserved and enjoyed when they are not in season. Some fruits can be preserved in the form of powder, others can be dried. In this interview, forest officer Wyson Banda speaks to Excello Zidana in Malawi, about these two methods of preserving fruits. Can your listeners provide some traditional methods of storing one popular local fruit in your area? Do you have storage facilities or a private business near you which offers storage space at a price?

Making the most from your fruit

In this interview with the juice processing company GAM juice in Gambia, Ismaila Senghore speaks to Isaac Thomas about what is involved. While it may cost some capital to invest in a business, the process of adding value to fruits can undoubtedly make a profit. Whether your listeners are making juice to store fruits in the home or to sell to local companies, you could ask them to share their stories. What are the views of your listeners on local markets and the entrepreneurial skills required to set up your own business? Are there enough people in your area investing in such ventures and producing local foods? Can your listeners suggest any examples if there are? You could invite local entrepreneurs on to your programme, to ask them how they have succeeded, and to give other listeners business advice.

Nurseries and training 1 and 2

Establishing a local nursery is a wonderful thing for a community to attempt, but it must be considered very carefully. Equipment, land and water availability are all important. In these two interviews, the options for small-scale farmers and communities are explored and detailed. In the first interview, Jonathan Muriuki from World Agroforestry Centre (ICRAF), explains why training is important. Speaking to Eric Kadenge in Kenya, he says that with over 1,800 kinds of indigenous fruit trees in the country, training is necessary for farmers to appreciate the true value of the trees they are working with. In the second interview with Martha Chindong in Camerooon, Ebenezar Asaah mentions some of the practical materials and access to resources that farmers will need to consider in setting up a nursery. Are there any nurseries near you that you could visit? Perhaps you could record your own interview about raising fruit tree seedlings with a nursery owner and discover which types sell best.

Getting bigger - commercialisation

Making a business work can be tough, but indigenous fruits do have good earning potential, especially when value is added, as covered in the interview ***Making the most from your fruit.*** Are any of your listeners entrepreneurs who have started their own business from processing or selling indigenous fruits? Can you have a look around their factory, and conduct an interview with the owner? Do any of your listeners have an idea about a business that they would like to start, using indigenous fruits to their advantage? You could also visit a local market and ask traders whether they sell more or less indigenous fruits than they have done in the past, and which are the most popular?

Other aspects of indigenous fruits not covered in this pack

Medicinal benefits of indigenous fruits

This pack does not focus on the medicinal benefits of indigenous fruits because this topic has been covered in a previous series. But indigenous fruits are often valued by local communities for their medicinal properties, such as baobab leaves which help to protect food from bacteria.

Seed systems

Although domestication and cultivation of indigenous fruits is covered in this pack, specific information about multiplying and nurturing seedlings is not. Preparing seedlings for cultivation in nurseries for example is a topic that could be covered in detail as a separate issue.

Intellectual property rights

Because of the importance of indigenous planting material and fruits for local communities, many people may be reluctant to reveal their knowledge about usage and benefits of indigenous fruits. This pack does not touch on intellectual property rights, and problems that may occur with sharing community knowledge about fruits, or the scientific preservation of genetic information in the public sphere.

Local restrictions and law

This pack does not cover legal aspects of collecting and growing indigenous fruits, though these should be explored. Some fruit trees are legally protected species for their preservation. Some communities are not allowed to domesticate certain wild fruits without the permission of elders for example. And, in some communities, gathering fruits is restricted to particular seasons.

Credit and inputs

For farmers who want to set up a nursery or multiply their own indigenous fruit seeds and plants, credit will be needed to kick-start the business. This pack does not cover credit or inputs needed, though equipment is often mentioned and described. Credit information and access may be necessary for farmers who wish to start their own business or nursery cultivating indigenous fruits.

The issue of gender and youth

The subject of gender is mentioned in this pack, in the topic referring to gathering fruits. The gathering of indigenous fruits is mostly done by women when they collect firewood. But other gender issues could also be investigated, for example in the usage of the fruits and marketing. The issue of youth is also mentioned under the topic of gathering. However, the role that children play in collecting and gathering fruits could be further explored.

Further information

Useful websites, online articles and fact sheets available:

Making Africa more fruitful
http://www.worldagroforestrycentre.org/Downloads/TQ420053.pdf

Edible fruits in Botswana
http://www.pjbs.org/pjnonline/fin222.pdf

IPGRI report on fruit trees
http://www.bioversityinternational.org/Networks/saforgen/AFREA-IPGRI%20IFTs%20Consultation%20Report%202006.pdf

CIFOR publications
http://www.cifor.cgiar.org/Publications/Detail?pid=1993

New Agriculturist – Cultivating Cinderella trees
http://www.new-ag.info/01-3/develop/dev01.html

New Agriculturist – Making the juices flow
http://www.new-ag.info/00-4/focuson/focuson2.html

New Agriculturist – Baobab is branching out
http://www.new-ag.info/03-6/focuson/focuson3.html

Women enjoy the fruits of their labour
http://www.worldagroforestrycentre.org/backup/ar2004/tf_story02.asp

The Wikipedia website has some explanations and basic information about fruits, as well as specific indigenous fruits globally. It is also a good source of links to further information not covered in this pack: ***http://en.wikipedia.org/wiki/Fruits***

Books

The storage of food grains and seeds, 152pp, ISBN 0 333 44827 8, Available from CTA, 10 credit points.
http://cta.trafika.co.uk/cgi-bin/pubs.pl?action=display&bookID=39

Non-CTA titles:

Indigenous Fruit Trees in the Tropics Domestication, Utilisation and Commercialization
464pp, ISBN 9781845931100, Available from CABI.
http://www.cabi.org/bk_BookDisplay.asp?SubjectArea=&Subject=&PID=2065

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Rural Radio Resource Pack – 2007/5

Indigenous fruits

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Gathering and collecting fruits Things to consider when you are collecting wild fruits.	**2'51"**
Storing fruits The best ways of storing fruits so they last for longer.	**1'40"**
Making the most from your fruits Adding value to indigenous fruits and how to make a profit.	**4'36"**
Nurseries and training 1 What to consider when setting up your own nursery.	**3'48"**
Nurseries and training 2 How to make the most of your nursery.	**2'40"**
Getting bigger - commercialisation How to expand the market for your indigenous fruits.	**4'50"**

Indigenous fruits

Preserving the past for the future

Cue:
Throughout Africa there are indigenous fruits – for which there are lots of uses – that have not really got the attention or protection they deserve. The dika nut in Nigeria and Gabon, the amarula in Kenya: these are all indigenous tree products that are now being recognized as well worth investing in. Are there other indigenous fruits that are not getting the attention or protection that they deserve?

Alice Muchugi of the World Agro Forestry in Kenya has been studying the variety of indigenous trees in Kenya. Her work has been a hunt for the sweetest, the juiciest and the highest value fruits to be found. As she explained to Eric Kadenge, for some trees there is a race against time.

IN: "The fruits are normally harvested from the forests…
OUT: …because they can see the benefit."
DUR'N: 3'25"

BACK ANNOUNCEMENT: Alice Muchugi of the World Agro Forestry Centre in Kenya speaking about the importance of our indigenous trees, and the best ways to preserve them. The interview comes from a resource pack produced by CTA.

Transcript

Muchugi The fruits are normally harvested from the forest. We no longer have all those vast forests that we were having. We have the forest degradation, so one main problem is that in future, they will not be common, and that is where we try to say that the future of the forest is on the farm itself. For the farmer to plant, there must be a reason why the farmer is planting, it is not just for the local consumption, but if there is a value addition to these fruits, in one way or the other, like for processing or making it more marketable it will have more economic value to the farmer and they are going to plant them more.

Kadenge *And the information that you are gathering are you also trying to find a way of delivering or providing this information to these farmers?*

Muchugi We look at how the plants vary from one region to the other because there are differences. Some may be sweeter, others may be growing faster, and different characteristics of the fruit, maybe others produce a lot of juice for those which may be going under processing and all that. But we want to know whether this is linked to genetic differences. So when we carry out genetic analysis, which is very important when it comes to conservation, because this is the material, when you take it to the farm, which will persist in future. So what we find out now we link up with our counterparts. We are getting now to the farmers or to the research institutes, where they are carrying out the work.

Kadenge *Now other than the scientific knowledge that you are gathering from these trees, do you also incorporate any local knowledge on the same?*

Muchugi Yes when we go out on the collections we do talk to the indigenous people, the locals. Actually we know the importance of this from the locals themselves because they will tell you 'we do this we do that' and of course you will first notice from the importance they put on that tree and it is by

talking to them that we know this is important, they use it for this and that, because they themselves they will tell us and of course we have to try and see, maybe there is an aspect these people know that we can utilise and use it further from a scientific perspective. Some of the differences these farmers see may be linked up to the genetic differences. The sweetness, they grow faster, the shape of the fruits and all that. So that is a good thing that they do help us out. We link up with what we have and what we are analysing and try to up-grade or use it too for their benefit.

Kadenge *What are the benefits of some of these fruit trees like the baobab or the ones you have mentioned?*

Muchugi The Indigenous fruits are also very rich in nutrients, especially vitamins. The tamarindus we have is quite rich in proteins and carbohydrates, and it is also rich in minerals like calcium phosphorous, iron. But if the farmers can now plant on the farms themselves they have a cheaper source of the nutrients.

Kadenge *Do we have some of these indigenous fruit trees on people's farms here in Kenya for example?*

Muchugi Tamarindus used to occur naturally, you find it on the farmer's fields.

Kadenge *And when you talk about the local communities, how can they preserve the diversity of the indigenous fruits?*

Muchugi The local communities themselves, for conservation is of course now in the collection of the material from the wild, and bringing them on the farm, in other words called domestication because you are bringing it from the forest and putting it on the farm. And that is one of the major ways of conservation. Because the tree will be there, the farmer is benefiting, they are not cutting it because they can see the benefit. *End of track.*

Indigenous fruits

Planting techniques for the best results

Cue:
An indigenous fruit tree that produces lots of fruits for which there is good demand is a valuable asset. Farmers may wish to grow more of them. But selecting and planting seeds and nurturing these young seedlings until they mature, flower and fruit, can take many years.

However, there is a short cut for producing - or propagating- young trees. It is called vegetative propagation. Simply put, this means multiplying a plant from one part of the mother plant. Exotic fruit trees like mangoes, avocadoes and oranges are propagated vegetatively to multiply the best varieties. Now the same techniques are being used with indigenous fruit trees.

Ebenezar Asaah of the World Agroforestry Centre in Cameroon has been working with farmers in Cameroon to vegetatively propagate their favourite trees such as bitter kola. When he met with Martha Chindong he was very happy to explain the basics.

IN: "We use a vegetative propagation technique…"
OUT: …time should be ready to plant."
DUR'N: 5'55"

BACK ANNOUNCEMENT: Just like a surgeon doesn't learn to operate on people by listening to the radio – so it is a tricky skill to master the technique of grafting. So it's a good idea to learn from someone locally. The interview comes from a resource pack produced by CTA.

Transcript

Asaah We use a vegetative propagation technique which simply put is multiplying a plant from a part of that plant. It is a technique which has been used generally for the multiplication of some adapted exotic species like mangoes, like oranges, like avocadoes or pears, but today we have gone a step further to adapt it to our local species and I might just want to give two examples. I could take bitter kola, which is an indigenous fruit tree, or we can think about the kola fruit. So if we identify either a bitter kola tree or a kola nut tree, that has fruits of desirable characteristics. It might be in terms of the taste, or size or colour; it depends on the choice of the farmer. We can get a young branch or a twig from that tree and that is what we will take and graft onto a young seedling. And so that shoot grows down into an entire tree, and it is going to have the same characteristics as the tree the twig came from.

Chindong *Let's be very practical. Which part of that mature tree do you take to graft on the young one?*

Asaah You have to get a corresponding young branch on a tree that is already fruiting, and bearing fruits of desirable characteristics. Now you get such a branch. The bud that develops into leaves is just at the verge of opening and getting into leaves, it is quite young. So when you get such a branch that is what you take out. Scientifically you call that part a 'scion'. You do a cut into the stem of the young plant at about ten centimetres above the soil level on the polythene bag. And you try to do a similar cut on the twig or the 'scion' which you brought from the tree of desirable characteristics as you are going to insert this tree into the grove that you have created in the young shoot. So

once you bring the two together, and then you have to get a plastic band to tie, a plastic band can be made out of polythene, any polythene sheet, which you cut a small band. So you tie the two together, to form that, to bind and force that union. Once you have that union then you get a transparent polythene bag which you put over the scion which has been attached onto the young seedling. In about two weeks time, you have to be watching whether that scion remains alive. The sign of you identifying if this scion remains alive is the scion remains green in colour. And when it stays green you will find shoots start coming out. And as soon as you find the leaves develop further here, you finally cut off the initial shoot of this tree and let the new shoot develop. In that way you know your grafting is successful.

Chindong *Before we even go onto the advantages, I want to know whether you can take another species of tree and graft it on another species of tree and you will succeed?*

Asaah Actually grafting is successful for plants of the same family. So long as it is of the same family, there is no problem.

Chindong *Can grafting go with any tree or it goes with specific species of indigenous trees?*

Asaah The grafting technique goes for most species.

Chindong *So what are the advantages of grafting over other methods of propagation?*

Asaah The first advantage is that the young plant, the grafted material will give you fruits that resemble and have the same characteristics with those of the mother tree. The second advantage is that it cuts down drastically the time the young plant is supposed to take to mature. However there could be some disadvantages in grafting. Because it is vegetative propagation it means you are using just a particular plant to multiply. So if we have for instance a very good kola tree. And everybody wants to do grafting of kola, and everybody goes and obtains scions from that one tree, they stand a danger that if any disease comes that is capable of attacking that tree, it is going to attack every other plant that the scion was obtained from. So what we advise farmers to do, and what we encourage farmers to do is that identify as many trees of desirable characteristics within your community. We advise the farmers to function with a minimum of ten different best trees of their choice, if they want to use vegetative propagation techniques.

Chindong *With this grafting are there specific equipments used in carrying out the grafting or you can use any type of a knife?*

Asaah The equipment which you generally use is a very sharp knife. The knife is very, very sharp because you have to cut through the plant tissues, and it must be a smooth cut. Because it is just like conducting an operation, a surgical operation. The important thing is the knife should be a sharp one. And another danger is, the knife should be sterilised regularly as you move from one plant to the other. Because if there is a disease problem on one scion for instance, you can transmit to the other ones. We don't want to carry disease from one plant to the other. You just run it over a flame, and wait for it to cool down a little and you continue your grafting process. Then you are in business you can start grafting and your grafted material in six months time should be ready to plant. *End of track.*

Indigenous fruits

One tree, many uses

Cue:
The most obvious advantage of indigenous fruit trees is their delicious fruit. There is the sweet juicy mango, or the tasty fig. But when talking to France Gondwe of ICRAF in Malawi, Excello Zidana discovered that the list of uses for indigenous fruit trees goes on, and on and on.

He mentions some of the many things that fruit trees can provide, but he also talks about the vulnerable status of many of the fruit trees indigenous to Africa. With the introduction of more and more exotic fruit trees, they may not be so common place in the future. So why try to preserve them?

IN: "Apart from fruits which can be eaten…"
OUT: …about the use of indigenous trees."
DUR'N: 5'23"

BACK ANNOUNCEMENT: That was France Gondwe of ICRAF in Malawi encouraging us to plant and cultivate our indigenous fruit trees by spreading the word about their uses. The interview comes from a resource pack produced by CTA.

Transcript

Gondwe Apart from fruits which can be eaten for a snack or even for a meal, indigenous trees can also be used as shade trees. They can be planted along homesteads for shade trees, and also for ornamental. We have small hardwood indigenous trees from light construction, like in sheds of tobacco. They can also be used for long term construction, like palm tress, they are used for bridges. There are fig trees which can be used for canoe digging. There are a lot of purposes – conservation of water shed, for fodder for livestock, fruit processing. There are a lot of purposes, or a lot of benefits.

Zidana *And do you believe that these fruit trees have any economic importance that one can actually buy a car?*

Gondwe Yes. A car? In the African context we talk of a cow, or cattle! Because indigenous fruit trees can be processed into fruit juices for example. Somebody can make a lot of money within a short time from processing our indigenous fruit trees like baobab, like tamarindus. So it is very easy to make a lot of income from indigenous fruit trees.

Zidana *Can farmers improve the soil fertility in their gardens by planting indigenous fruit trees?*

Gondwe Yes they can do that. There are some fruit trees which have a bearing on the improvement of the soil. It can help in soil conservation, so that will automatically improve the soil. The leaves which are falling can be used for, especially these fruit trees which have high nitrogen content in their leaves.

Zidana *Let's talk of a palm tree, what can a farmer get from the palm tree?*

Gondwe I can only talk of the common palm tree which is at my home for example, which gives a lot of pulp which we as children used to take the nut, you can eat the nut, but the leaves of the palm tree are also used for weaving and the

wood of the palm tree is also used for construction of the houses, the roofs and those are long term constructions. The whole palm or half of the palm can be put as a bridge on a footpath.

Zidana *And of all these trees you have mentioned, which ones are the most adaptable to the regions?*

Gondwe All the indigenous fruit trees are adaptable to the region. If you say they are indigenous then they are adaptable because they have been there for all the years. So what we should be differentiating is, where are these adaptable? So we have fig tree, adapted to wetter parts or along the rivers. But there are also trees which are adapted to the dry areas like baobab and like tamarindus. If they are planted in the right areas they will be adapted to the whole region.

Zidana *During problems like droughts, when you look at the two species, the exotic one and the indigenous fruit trees, do you see any difference in terms of performance, production, when there is drought?*

Gondwe Yes, the indigenous fruit trees will perform better when there is drought. Most of these exotic fruit trees rely on high water injections, but indigenous fruit trees will do very well even if there is a drought. Of course they will also do much better when there is good moisture.

Zidana *There is a general fear that these trees may go for good because many people use firewood for cooking in their homes. What do you think should be done to make sure that these species are maintained and preserved?*

Gondwe Farmers who have already seen the value of indigenous fruit trees should start planting these trees. Because the problem will be extinction of these indigenous fruit trees and then the countries are over-run by the exotic ones. But ones a problem comes, like a pest or like a disease, then we have a problem that exotic ones might be extinct within a short time.

Zidana *Do you see any improvement on soil fertility improvement, as well as the environment in general when people start planting indigenous fruit trees in their homes?*

Gondwe Yes at ICRAF we would encourage farmers to plant indigenous fruit trees. For soil fertility yes, but also for the environment in general. We have tamarindus which is a fertility improving tree, so that can be planted within the farm, by dispersing it within the farm or along the boundaries, around the contours. But we also encourage planting trees in contours or along places where degradation is happening. Fruit trees can be used to preserve the environment or to improve the soil in a lot of ways. We have talked about shade, ornamental, construction, and a lot of economic benefits. Therefore I would encourage all of us to start planting indigenous fruits, to start conserving indigenous fruits and to start training each other or giving information to other about the use of indigenous trees. *End of track.*

Indigenous fruits

Fruits for nutritional benefit 1

Cue:
Indigenous fruits are free in most rural communities, and they can be easy to access, growing wild not far from the homestead. But despite this advantage, and even because of it, fruits from such trees are often called 'poor man's food'. Their nutritional benefits are sometimes dismissed as 'old wives tales' and traditional recipes or preparation methods are being lost over time.

In this next interview, Busani Bafana speaks to Tholakele Khumalo, a Government nutritionist based in Zimbabwe. She is in no doubt that the fruits from the baobab tree have many nutritious qualities. Listen to her recipes for preparing baobab fruit. It could be helpful for more than just soothing your hunger.

IN: "The baobab tree, it is already prepared as food…
OUT: …vitamins which will work as antioxidants."
DUR'N: 4'52"

BACK ANNOUNCEMENT: That was Busani Bafana speaking to government nutritionist Tholakele Khumalo. Baobab is a good source of anti-oxidants, which protect cells from the damaging effects of aging. Did you know that baobab had such powerful qualities? The interview comes from a resource pack produced by CTA.

Transcript

Khumalo The baobab tree, it is already prepared as food. Because if you leave it to dry, inside the pulp becomes a powder. That powder you can keep for use in future or at the time you are just receiving it. If you have done that, that powder you can now mix it with water and make a sour drink. You can also use this sour drink to make porridge. The porridge is very good. The germs are destroyed because germs do not want to multiply in an acid condition. So when it is sour the germs cannot easily multiply. We like to use sour foods to prepare the porridge for infants so that when we are working in our fields the children can eat that porridge which will not have had germs or bacteria multiplying easily because of the sour situation. So that is why we like to use the baobab tree.

Bafana *What then are actually the nutritional benefits of this particular fruit?*

Khumalo I can say one, it is rich in vitamin C. Vitamin C is good for the bones to grow. So the vitamin C which is there works with other nutrients to strengthen the bones of our young people and ourselves especially the aged and the children.

Bafana *Is the baobab fruit readily available throughout the year or is it a seasonal fruit?*

Khumalo Although baobab fruit is seasonal as long as it is not opened it can be kept throughout the year so that you can have the use of the baobab fruit throughout the year.

Bafana *I know the baobab fruit has a hard core, how could you tell when it is ripe?*

Khumalo It becomes dry. Once it is ripe it becomes dry and you can pick it and go and keep it within the home so that it can be used at any time so that it can strengthen our bodies working with these other nutrients to strengthen our

systems.

Bafana *You mentioned in fact two recipes that you could prepare food from. You mentioned the porridge and you also mentioned the drink. Are recipes for the preparation of this fruit written down or most of the time you can rely on memory?*

Khumalo Generally as you know we Africans do not usually write about our things, we talk about them. We demonstrate by cooking and so the family is going to learn. I have tried to write some of these recipes down.

Bafana *Where you have farmers near a remote location who may not have access to maybe a project like yours where you are writing down the recipe, can the recipe be retained by memory and if so what are the really the hooks to remembering it?*

Khumalo The recipes I have talked about here are very simple. One, you pound the white stuff of the pulp inside, not the seed but the pulp. When that pulp you have made it into a powder you can mix it with water, it is very easy and you drink or you can make your porridge. When the porridge is ready you can pour your white powder there and mix it. It is your choice of how you want to make the porridge sour. If you want to prevent the germs you have to cook it together with the porridge so that it is already mixed. Do not mix it when you are eating because if you are mixing when you are eating the bacteria will have already multiplied. But if you mix it when it was hot the sourness of my porridge, the acidity of my porridge will prevent the multiplication of germs. You should not cook and leave the porridge sour and put to stand for a long time. Always put it when it is hot so that there is no multiplication of bacteria. So you know it is safe.

Bafana *Given the nutritional benefits of wild fruit such as the baobab that you have talked about can wild fruit then be promoted as an alternative to the usual fruits?*

Khumalo Oh yes, you know especially in these days when the situation of HIV/AIDS needs what we usually call antioxidant, you need vitamin C, vitamin A and other vitamins which will work as antioxidants. *End of track.*

Indigenous fruits

Fruits for nutritional benefit 2

Cue:
Another indigenous fruits with plenty of potential is Marula. It is high in fat, and it is a good source of oil for skin care. But as Sylvia Jiyane discovers by talking to Dr Paul Desmond from the Multi Help Trust in Zimbabwe, the marula nut has the potential to be used in a far more tempting way. And, it can be much, much more than just a 'poor man's food'.

IN: "Marula traditionally is turned into…
OUT: …which should be developed."
DUR'N: 2'17"

BACK ANNOUNCEMENT: That was Sylvia Jiyane talking to Dr Paul Desmond from the Multi Help Trust in Zimbabwe. Marula can be made into oil and used for the skin or to mix with fudge or chocolate, for a product which could sell like wild fire. The interview comes from a resource pack produced by CTA.

Transcript

Desmond Marula traditionally is turned into an alcoholic beverage and it is said to be very, very tasty. You have got the famous Amarula liquor. Again we would rather see the fruit pulp being turned into fresh drinks and seed which is very hard to extract but it is very, very food for us. And the oil can be expressed and sent overseas. When I was young my father used to trade in this and send marula seed over to America where it was used in confectionary. If you have ever made fudge with nuts, you cannot beat fudge made with marula nuts. It is fantastic. And even our chocolate bars that people are making with the various nuts, if we added marula into that, you would see that they would go like wild fire.

Jiyane *There is more consumption of the indigenous fruit trees in the rural areas, and in the urban areas these fruit trees are basically regarded as poor man's food. What is your comment on that?*

Desmond Yes it certainly is a poor man's food. But it should also be a rich man's food as well. What is happening is in the rural areas the fruit is there and that is what the rural people can afford to get because they gather it, and in the urban areas, people grow up, some of them not even knowing what it is. Obviously the people who introduce bananas and apples and some of the more expensive fruit, are going to push their product. Whereas there is no body to push our indigenous product. There is an association in Zimbabwe right now that are changing the scenario and bringing the value of our fruits up to show people how good our fruits are. And there are some very wonderful properties in our fruit which should be developed. *End of track.*

Indigenous fruits

Domesticating and cultivating fruit trees

Cue:
You would think that if something is special it is safe. But with indigenous or local fruit trees that is not the case. Trees that have been used and enjoyed by our people for generations are at risk. Some are dying out.

Ferdinand Mushinge is the technical officer for Southern Africa Development Community, SADC. He encourages us to identify our favorites and to domesticate these wild trees by raising on our farms. A collection of fruit tree varieties – and all their characteristics – is a gene bank where the diversity is preserved.

As he explained to Chris Kakunta, the trees on your land need to be nurtured just as tenderly as any other crop, or foreign, exotic trees. If not, then they will not thrive and the genetic treasure they hold could be lost forever.

IN: "We have been involved…
OUT: … they will have a regular harvest."
DUR'N: 4'21"

BACK ANNOUNCEMENT: The things you will need to get the best from your domesticated fruit trees were explained to Chris Kakunta by Ferdinand Mushinge, the technical officer for Southern Africa Development Community, SADC. The interview comes from a resource pack produced by CTA.

Transcript

Mushinge We have been involved in indigenous fruit trees because some were being heavily harvested for firewood. So genetic erosion was slowly creeping in. Future generation might not have such fruits in the future. So far I can say so good, these trees can be domesticated. That is what is initially required is, farmers can set up what we call community seed banks. The seed can be collected, processed and then planted out in what we call small nurseries and then re-grown in strategic areas. But one thing you should know when you talk about domestication. The trees should be grown in their natural ecological sites.

Kakunta *When you talk of ecological sites what exactly do you mean?*

Mushinge What I am trying to say when I say ecological sites, tree species, can only establish properly, they only flower and fruit properly in particular geographical areas which are adapted to certain climatic conditions which are conducive for them to flower and fruit.

Kakunta *If the farmers have to choose an indigenous tree which they can domesticate, what factors do they have to follow?*

Mushinge The factors which farmers have to follow if they have to domesticate a particular indigenous fruit tree is one the climatic factor, two the rainfall pattern, three the species of that wild fruit tree. Soil conditions are also important. For example I will give you a very common fruit tree which is very vital in agriculture, you will find it commonly in the markets but unfortunately it is slowly phasing out, you find that a lot of the trees have been cut. The example I am talking about is Uapaca Kirkiana which is

commonly known as masuku. Very nice, very tasty but can be successfully grown.

Kakunta *Wonderful, so what about in terms of the period under which the farmer can grow the tree and be able to get the fruits, don't you think it matters as well?*

Mushinge That is a very important point. If you talk about such trees like mango which is exotic, mango normally will flower and fruit after 3 to 4 years. And from there one aspect you have to consider is biennial bearing. Sometimes the fruit might not be too well because of maybe climatic factors, if the rainfall has not dropped very well the fruit might not flower and fruit very well. But a point in fact is if it is properly cultivated, that is such factors like proper fertilisation in fact even irrigate in terms of scarce rainfall periods you can even put in some water. As a matter of fact when you plant out these trees like the masuku you only need to establish it in the first year. In the next years or so you let nature run its course.

Kakunta *Could you just tell us some steps towards cultivation of this particular tree?*

Mushinge One, what is most important is tillage. For example the trees, when you plant them out in the field they have to be 4 by 4 metres apart. Two, they have to irrigated at least once per week. When I say irrigate them, irrigate them once per week with 15 to 20 litres of water, make sure that you apply some fertiliser, that is X or D compound and then you really should be applying it once per year as and when the need arises.

Kakunta *Now in the absence of these chemical fertilisers would you recommend farmers to use manure for instance?*

Mushinge That is a very good question. Manure behaves like fertiliser. The most important aspect one should consider is that it should properly decompose. Make sure that it decomposes properly but it is an excellent alternative to inorganic fertilisers.

Kakunta *So once the farmer follows this procedure are they assured that these indigenous fruit trees can grow just like the exotic ones?*

Mushinge When these plants follow out the proper agronomic procedures which I have stipulated after 3, 4 and 5 years depending on the species in question they will definitely have a continuous yield but a point in fact is management is very important. Exotic fruit trees need to be managed same as indigenous fruit trees, they can be domesticated, managed and they will have a regular harvest. *End of track*

Indigenous fruits

Gathering and collecting fruits

Cue:
Wild fruits are a great source of vitamins. But just because they are wild it does not mean that they can be harvested without restriction. It's not just a question of how much fruit is taken but also how it is taken. Beating or breaking the branches can cause damage which reduces next year's fruit harvest. There are examples in Africa where wild trees have been used unwisely - or unsustainably – and now the trees are in danger of dying out altogether.

Parnwell Simitu of ICRAF, the World Agroforestry Centre in Kenya has been spreading the message that communities can and should make plans to use the indigenous fruit trees on their communal lands wisely. Talking about how to do this with Winnie Onyimbo, Parnwell Simitu explains that caring for the wild trees involves everyone in the community – from the old – to the young.

IN: "The chief gatherers of these fruits are children..."
OUT: … then you will use it quite well."
DUR'N: 2'51"

BACK ANNOUNCEMENT: That was Parnwell Simitu of ICRAF, the World Agroforestry Centre in Kenya explaining how we can make sure that our indigenous fruit trees are there for future generations to enjoy. The interview comes from a resource pack produced by CTA.

Transcript

Simitu The chief gatherers of these fruits are children, and then secondly women, and then thirdly men. They are children because children are the ones who go herding cattle, looking after cattle, so if they are tasked in the activities of finding the cattle they will gather these fruits. Women come second because they will find these fruits when they are collecting firewood, when they are doing that. Men come thirdly and the last because simply they do not so much herd cattle and they also do not go to collect firewood so that is the scenario. Even if when you look at the consumption patterns of these fruits you find that children consume a lot more grams per day per person more than the other age groups.

Onyimbo *So what are the restrictions on gathering: who is to gather, how many should they gather, what should they gather.*

Simitu This basically depends on how many fruits are there and how many people are to gather. Even the local people they can sit down and know these are our resources that we have, and we have these people who are using these resources, so how do we divide amongst ourselves so that there is no resource conflict use?

Onyimbo *What measures are put in place so that gatherers get what they are supposed to gather, especially in the communal land?*

Simitu Sometimes these measures are not mostly there and that is why there is what we call extinction of some species. For example you might find some places where there was tamarindus. It has been depleted so much that probably it cannot cope. Although some kind of measures are there but they are normally not so much enforced because people normally assume indigenous fruit trees are from the wild and so they assume they should not have any control, that is

where the resource conflict comes in. After some time they realise they have depleted the resources and they have nowhere to go then that means they have to go very far to get these species.

Onyimbo *Ekwar forest is an example of a forest in Kenya managed by elders of the Turkana community. How is ICRAF helping these people?*

Simitu Not ICRAF only but even the government and other agencies are there to see these resources are preserved. By preservation we mean, we are not saying 'these people should not use the resources' but what we are saying is, we are telling them 'use this resource wisely so that tomorrow is there and the day after'. We are giving them information to know how they can use these resources very wisely so that tomorrow it is there, and the other day it is there.

Onyimbo *What are the lessons that communities can learn about access to fruits for example.*

Simitu One thing they can do they can use their resources wisely that is in the foods and they can also domesticate these trees, they can plant on their farms and then they will also have easy access and then they will have conserved their resources.

Onyimbo *Local solutions are often more effective than government rules. Do you agree with this?*

Simitu Yes I can agree because, for example with indigenous fruits, because you never know it will not always be there but if you know yourself and you take responsibility as a local person, and know 'I have to use this wisely because I need it tomorrow and the other day', then you will use it quite well. *End of track.*

Indigenous fruits

Storing fruits

Cue:
While fruits taste great and are easiest to eat when they are ripe, it's not always possible to eat fruits throughout the year. When there is drought for example, some fruit trees will not blossom. But there are ways of preserving the fruits so that during the dry season they can still be enjoyed. In this interview forest office Wyson Banda speaks to Excello Zidana in Malawi. Mr Banda explains how communities can make sure that they have delicious fruit all year round.

IN: "There are so many advantages…
OUT: …Very much so."
DUR'N: 1'40"

BACK ANNOUNCEMENT: That was Excello Zidana in Malawi talking to forest officer Wyson Banda. Why not try drying the fruits in the sun, or preserving them in a powdered form and adding water later? The interview comes from a resource pack produced by CTA.

Transcript

Banda There are so many advantages because you see people enjoy fruit in Malawi, fruits are just very common here, like masuku; marula. Usually what they do is to dry or season some of the fruits, they dry them, there is time when they also go out of season. Then during off-season, what they do is to soak them in the water, then enjoy the water by putting porridge, they still enjoy the fruits during that time.

Zidana *What containers do they use to store what you have just talked about?*

Banda The containers are just locally found their villages, like baskets.

Zidana *Now let's go to the actual extraction of the juice that is to be stored. How do they do it locally?*

Banda What they do is they pound them in the mortar, the traditional mortars, after pounding them they dry them in the sun. Then the day after they store them while dry. But when they want to use it, when those things are off-season, they just soak them in water, or cook porridge from that water.

Zidana *When they are trying to store fruits, they pound them. Do they keep them in the powder form or what?*

Banda Some are kept in powder from but some are just dried as they are, then when soaked, they just extract water from them.

Zidana *And you have an idea that people enjoy indigenous fruit trees?*

Banda Yes for sure yes, they are really enjoying the indigenous fruits.

Zidana *Are they nutritious?*

Banda Very much so. *End of track.*

Indigenous fruits

Making the most from your fruits

Cue:
We all have our favourite wild fruit fresh from the tree. The seasons may not last long, but there are plenty of ways that farmers can preserve and add value to their indigenous tree crops by making delicious jams, jellies and juices for sale.

Ismaila Senghore was lucky enough to follow the wild fruits of the Gambia to the factory just outside Banjul, the capital, where they are processed into a range of tasty juices. Gamjuice is the business. Isaac Thomas is the owner. He has been juicing fruits for more than 10 years.

Having seen the squeezing, mixing and brightly-labelled bottles - and of course, enjoying a taste or two! Ismaila learns that that juices are not just good to drink. They are also good for the local economy. Can you talk with a processor or trader to find out what they do, and how they keep the fruits in good condition.

IN: "Yes, we have about ten people…
OUT: …not me alone but any juice maker."
DUR'N: 4'36"

BACK ANNOUNCEMENT: So when it comes to juices, the message seems to be 'Drink local!' for your own health and that of the local economy. Gambian juicer Isaac Thomas was talking with Ismaila Senghore. The interview comes from a resource pack produced by CTA.

Transcript

Thomas We have about ten people on our staff and we have ladies because you know ladies too they are good at mixing and preparing the juice and this juice is like home made, it is not all the chemicals been added to it so they are good in preparing. Although they are trained, but they have their female touches and the like.

Senghore *You are not only producing for the local market but also for the international consumer market.*

Thomas Yes that is what we are doing. We are exporting, although a bit small, but we are exporting to our neighbour countries.

Senghore *Can you estimate the number of bottles that you export or consume locally here?*

Thomas I can say it is a small production factory and it is home made so we take our time.

Senghore *In other words they would be happy just to have a taster of what Gambian juice is like? These are the people you target?*

Thomas Those people that would admire our juice: hotels and restaurants.

Senghore *We see that you have a variety of juices that you make. Now can you itemise them?*

Thomas Yes we do all the local juices in the Gambia like Baobab juice, we do ginger, we do tamarind, and we do mango. So all our juices are foods that are available in the Gambia. And available in large quantities – you just go to the

market. And that will help the farmers. We are showing Gambians or showing the world that we can too, we can aim to do our own bottling, everything that has been produced and preserving it.

Senghore *Now as your name implies GAMJUICE, you are into the promotion of locally produced juices, as you just mentioned, by processing the raw materials to add value to them. How do you collect the baobab fruit?*

Thomas The baobab fruit, we just go to the market, and sometimes the villages will bring and sell it to us so we just buy it from them.

Senghore *Let us now come to the production of baobab juice. If you really want to go into baobab juice as you do it here, how do you start and how do you end. What do you do step by step to get the product that you require?*

Thomas Although there are some secrets in it but you have to extract the juice and you have to soak it, leave it for a while so that the fruit will be separated from the seed. And then you have to process it, heat it, so that the germs are eradicated and the like.

Senghore *To pasteurise it. When you get the pasteurised juice what do you add to it? Do you add anything to flavour it, sugar?*

Thomas No we just add sugar only because these are natural juice, they all have the flavours and the colour. It is more healthy than adding all these flavours and the like.

Senghore *You may also want to have labels on it for marketing purpose and so forth. Make it attractive for the market.*

Thomas Yes we do have that, we do have expiry dates which you can see on the labels.

Senghore *To start such a business, expense, that go into it, would it be very capital intensive?*

Thomas Yes it is a bit capital intensive. I started long years ago. I started as a small scale and now I am not in the large scale but in the medium scale. Bottles, the capping machine, they are expensive, labels are. So you need small capital.

Senghore *What about individuals who may want to go into such a venture. Would it be easy for them and what kind of capital would you for-see?*

Thomas The individual can go in for it. The only thing is that you know then you have to buy a lot of other machineries to enable you to do that. People should keep drinking local, healthy juices. They prevent you from a lot of diseases. It is natural, so it prevents you, it is a fact. So when you drink it you are healthier.

Senghore *Well I have just tasted your juice, the carbonated one and it tasted really, really nice, maybe you would want to tell people to also consume our local made products because it is a way of getting our independence from the multi-laterals that dominate the market – isn't it?*

Thomas Yes definitely I think that people should consume our local products. Because number one, it will help farmers over there so they are able to sell their products. And that will add to their health also. It is not like buying it but it is adding to your health. So that is what I would encourage the Gambians to go in and definitely patronise us the juice makers – not me alone but any juice maker. *End of track.*

Indigenous fruits

Nurseries and training 1

Cue:
Tree nurseries are wonderful places. Especially if they are full of young indigenous or local fruit trees with all that potential to provide nutritious fruits as well as additional income to farming families. But if the nurseries are far away from where farmers live there is little hope that they will get the chance to buy good seedlings for planting. This is why the World Agroforestry Centre – known as ICRAF – is recruiting and encouraging farmers to set up tree nurseries in their communities.

In Kenya, Jonathan Muriuki from ICRAF has been training these nursery farmers to cultivate local varieties of tamarind, for example. Eric Kadenge went to meet him to find out how to make a successful business of a community tree nursery. And, most importantly, to ask how much of a market there is these days for seedlings of local trees?

IN: "Unlike crops people don't buy seeds of trees...
OUT: …depending on your nursery entirely."
DUR'N: 3'48"

BACK ANNOUNCEMENT: Suggested **BACK ANNOUNCEMENT:** Sounds like there is money to be made in tree seedlings, not to mention the income from sales of the fruits/nuts of the mature trees. Jonathan Muriuki was talking with Eric Kadenge. The interview comes from a resource pack produced by CTA.

Transcript

Muriuki Unlike crops people don't buy seeds of trees. They normally want to buy seedlings because their planting programmes are smaller, especially for the small-scale farmers. And the nearer the nursery is to the farmer the better. We would rather farmers have their own nurseries where farmers can easily come and buy from the nurseries that are close to them. That is the purpose of setting up these nurseries.

Kadenge *So you believe that is better of them to have and to own and to run these nurseries?*

Muriuki Yes that is the best thing to do because farmers are not going to go a long distance to get seedlings and when the rains come farmers are busy doing very many things. So the nearer the nursery, then the better for them to plant trees.

Kadenge *When it comes to decision making about issues regarding a nursery, do they do it on their own, or are you involved in that?*

Muriuki Farmers make decisions on their own in setting up their nurseries. But however sometimes other organisations like the Ministry of Agriculture, Kenya Forest Service, they sometimes consult with farmers and guide them on what to do

Kadenge *When you talk about what to do I take that to be training?*

Muriuki Yes that is training because, if I give an example of this country we have got about 1800 tree species that are indigenous in this country, that means that farmers need to learn a lot of things about every individual tree species that is important to them, so scientists and extensionists have to come and train them

on some of these techniques.

Kadenge *What are some of the common trees that you are training them on how to build nurseries for?*

Muriuki Some of the common trees that we have trained them on how to do nurseries for are most of them are exotic but for the indigenous pieces we have trees like mangoes.

Kadenge *What advice would you give to somebody who is listening to this programme, for example through radio on how to set up their own nursery?*

Muriuki One, it is very important that you have a permanent source of water. That can be a permanent river or it can be a tap, piped water or anything but as long as you are going to set up a nursery water is going to be very critical, it as going to be a day to day affair. We have seen many nurseries that have shut down because they could have water to sustain them. Unfortunately for most of the areas, water becomes scarce when the nursery needs it most, so having a permanent source of water is very important. It is also very important to know where you can be able get a rich soil. That is rich in organic matter because that is what the seedling is going to be depending on for the next three, four or six months that it is going to be in the nursery. So if you are near a forest then you can collect the soil from the forest, if you are not near a forest then you can collect organic matter from elsewhere and make compost, which then is going to mixed up in the soil that you have. It is also good to ensure that you have about a quarter of an acre to half and acre where you are going to set up your own nursery, because you need structures in there: a place where you will be having a shed for the seedlings, and a place where you will move them out of the shed, a place where you are going to store your tools that you are working with in the nursery, and a place whereby when people come to buy seedlings or to collect seedlings from you they can stay there because you do not want people moving around your nursery and messing up the seedlings that are there. And also, the hardening. Hardening is moving how you prepare the seeding from coming out of the nursery to the field conditions where it is going to be harsh and it is going to experience conditions that are not as it was in the nursery. So at least a quarter of an acre is important for you. And above all things it should be on a sloping land because some of the water that you will be pouring there should not stall, because if it stores then your seedlings are going to be sick. All the water is supposed to drain.

Kadenge *Is this something that they could also do and earn some extra shilling from?*

Muriuki Yes as long as you have demand for seedlings. We have done our research and we have seen that farmers can make a lot of money from nurseries. Actually we have seen farmers that are in the cities or in the peri-urban areas of the city, who are completely and entirely relying on the money that comes from nurseries. For the common prices of seedlings that we see, about half of it is profit, that is if you inject faming labour into your nursery. Therefore you can make money on it depending on your nursery entirely. *End of track.*

Indigenous fruits

Nurseries and training 2

Cue:
When transport is bad and the rains are heavy, travelling long distances to get seeds for indigenous fruit trees is not a nice prospect. In this interview with Ebenezar Asaah of the World Agroforestry Centre in Cameroon, Martha Chindong asks what practical steps communities can follow to set up a nursery of their own, closer to home.

IN: "Well a few simple steps that...
OUT: …and meet such an order."
DUR'N: 2'40"

BACK ANNOUNCEMENT: Martha Chindong speaking to Ebenezar Asaah of the World Agroforestry Centre in Cameroon. If you want to set up your own nursery, make sure you have a clear idea of what purpose you want it to serve, and enough space for all the stores you will need to set up. The interview comes from a resource pack produced by CTA.

Transcript

Asaah Well a few simple steps that a community could use to set up a community nursery. The first thing is they have to have a very clear objective of what they want to do about setting a nursery, because a nursery, it should be like a long term venture, it should not just be a short one-off thing. That is the first thing, so you have to define it. They could think about producing plants and others could come and buy. So you have to do some prospection have a long-term view of what you want to do, having a clear objective. The next thing, the community should be willing to participate materially and equally in kind, because this is very important for the ownership of that nursery. If the community can spare their land, they come in and work with you, and what they don't have that is what you bring in. You find that there is a win-win situation. The next thing is that you have to identify an ideal site. The most suitable site should be where you have a permanent water source. And the area or the site should be secure. Then there are other issues like constructing the shed house of the nursery, especially if you are going to carry out vegetative propagation you will need propagators. We are going to have areas to germinate seed so you have germinations beds, you are going to have weaning sheds after your plants start getting mature before you plant them into the field you need to wean them gradually. And then of course you need a store, a secured store where you can store your small equipment which you use like the wheel barrows, the spades.

Chindong *So who takes the decisions, who makes the decision as regards to what type of fruit trees we are going to plant in the nursery when it comes to a community nursery?*

Asaah In a community nursery the decision rests on the community. You find that the choice of the species is often guided by the farmers and the market forces of the products. It has to fulfil his nutritional benefits first and it is the excess that he is now thinking of selling. Those that want to develop a long term nursery they have to run it as a farmer enterprise. And in that way they have to have a clear vision of what they want, that is why we talk of clear objectives. And so that is why we give them that training to develop their business plans, we support them to have knowledge on book keeping so that

they could record the plans they produce, and now from the business plan they can actually predict what they are going to produce and respect if there is a command, somebody places an order of plants, they can actually respect and meet such an order. *End of track.*

Indigenous fruits

Getting bigger - commercialisation

Cue:
Many of our African fruit trees are back in fashion. They are becoming a good source of income for those who grow them or harvest them from the wild. These days we have a lot of specialists working with our indigenous fruit tree crops. But who best to help us see both the opportunities and the problems in trading wild fruits, than someone who knows the fruit trade inside-out. Kofi Adu Domfeh went along to the Crop Research Institute in Kumasi, Ghana, to speak to Daniel Kwabena Yeboah, who has been in charge of nursing citrus planting material.

IN: "These are very valuable fruits…
OUT: … on the consumption of our local fruits?"
DUR'N: 4'50"

BACK ANNOUNCEMENT: That was Daniel Kwabena Yeboah talking with Domfeh Adu with plenty of advice there for farmers to make the most from the 'fruits of their labour'! The interview comes from a resource pack produced by CTA.

Transcript

Yeboah These are very valuable fruits which will improve your dietary condition and so make you very healthy.

Domfeh *In your observation would you say that producers are able to meet the demands in the market?*

Yeboah Not exactly, not exactly.

Domfeh *Is there the need to increase the marketability of indigenous fruits?*

Yeboah Oh there is the need because at least fruit sizes must be graded, you get big ones, you get medium ones, you get smaller ones. And then, the quality too should be improved and then the shelf life should also be enhanced so that fruits that are produced do not deteriorate within a shorter period of time because most fruits are perishable. I think there is a very important need for us to preserve these fruits or change them into another form that can last. For instance you produce oranges, the oranges are rotten but if we have a processing machine to change the primary produce to say orange juice, the juice stays longer and the marketability of it is also prolonged.

Domfeh *How essential is packaging to such produce?*

Yeboah Oh packaging is very essential because apart from increasing the shelf life of the plant it makes them very appealing. The product itself if it is well packaged becomes attractive and because that is also a good advert. Once you package a product well you will be able to sell it at a higher price.

Domfeh *How best do you think they can transport their produce to the markets?*

Yeboah You know transportation is a bigger problem. Apart from the road networks, the vehicles that transport most of these things take a lot of money, and that affects the price of the commodities on the market. Sometimes because of the poor network, because of the way they package these things during transportation, most of the fruits arrive at the market centres bruised. When they are bruised it means the appeal, the value of the thing goes down. So

transportation I think is very, very vital. There is a saying that you can produce anything, but you must always try to produce what people want, because if you want to be profit–oriented, then you must always produce what people are prepared to take. And not that because you think you are farmer you can grow anything, then you grow whatever plant that comes your way. But if we start to be very selective in the way we produce, then we will always take advantage of the market at any particular time, because most fruits are produced at where they are not eaten. You go to the villages, avocadoes come, pears come, and then they are harvested and they go to waste. But there must be moved from the point from where they are not needed to where they are needed so that the farmers can make enough profit.

Domfeh *Is there anything that the farmer can do to actually improve their bargaining power and be protected from exploitation?*

Yeboah The only thing they can do is to group themselves and form farmer associations. But the problem we have with cooperatives in the system is that because of the individualistic tendencies, most cooperative organizations fail. Because whatever belongs to the community does not belong to the individual, and once we also group ourselves and we do not share the responsibilities together, it is always a problem.

Domfeh *Beyond the individual farmers are there legislations to protect their interest as farmers?*

Yeboah I don't think that legislations are effective, if even there are, they are not very effective. It takes a lot of time for these things to be regulated. It is very important that legislations are made to protect the farmers, but they are non-existent, and even when they exist, their enforcement is not logically concluded. So most often the farmers they are very vulnerable because they are not protected.

Domfeh *How can we really ensure that we get the fruits from the farmers to the markets and they are purchased at a price that will favour the farmer?*

Yeboah Basically everything depends on the economy. Once the economy is vibrant, once the economy has taken off, it is growing, it will affect all these levels of fruit production in the system. Because if the road network is improved, the vehicles can move to and from the hinterlands to the market areas; if packaging facilities are available, if the shelf of fruits can be prolonged, and if the consumer is well educated to take advantage of the importance of fruits in their diets, now everything goes well. So why can't we insist on the consumption of our local fruits? *End of track.*