

Environment, Natural Resources and Food



Underutilized Plant Species and Poverty Alleviation

International Workshop, 6–8 May 2003

inVent

Internationale Weiterbildung
und Entwicklung gGmbH

Capacity Building
International, Germany



Global
Facilitation
Unit
for Underutilized
Species

Moringa and other highly nutritious plant resources: Strategies, standards and markets for a better impact on nutrition in Africa. Accra, Ghana, November 16-18, 2006

International Workshop on Underutilized Plant Species
New City Hall, Leipzig, Federal Republic of Germany, 6 – 8 May, 2003

Senior Project Manager: Ms. Barbara Krause
Workshop moderation: Dr. Sabine Gündel

InWEnt
Capacity Building International, Germany
Division Natural Resources and Biodiversity
in Leipzig-Zschortau
Leipziger Strasse 15
04509 Zschortau/Germany

phone: +49(0)342 02 – 8457-00
fax: +49(0)342 02 – 8457-77
email: zschortau@inwent.org

Proceedings

Edited by Sabine Gündel, Irmgard Höschle-Zeledon,
Barbara Krause and Kirsten Probst

Concept & Design: EYES-OPEN, Berlin

Cover Photo: IPGRI

Leipzig/Germany 2003

Contents

Acknowledgement	IV
Summary	V
Introduction	1
Background	1
Objectives and focus of the workshop	3
Workshop process	4
Workshop Outputs	7
Definition of underutilized plant species	7
Approaches used for promotion	8
Contributions of underutilized plant species to poverty alleviation	13
Strategic elements for the promotion and sustainable utilization of underutilized plant species	21
Workshop Conclusions and Outlook	30
Conclusions	30
Actions required and potential actors	33
Future actions of the global facilitation unit	37
Appendix 1 – Statements from the High Table	41
Acronyms	48

Acknowledgement

This synthesis report is based on the outputs of an International Workshop on Underutilized Plant Species that was carried out by Capacity Building International (InWEnt), commissioned by the German Ministry of Economic Co-operation and Development (BMZ), and jointly organized by the German Agency for Technical Co-operation (GTZ) and the Global Facilitation Unit for Underutilized Species (GFU).

First of all we would like to thank the German Federal Ministry for Economic Co-operation and Development (BMZ), the International Fund for Agricultural Development (IFAD) and the Technical Centre for Agricultural and Rural Co-operation (CTA) for their financial support.

Furthermore, we would like to thank all the participants for their motivation and involvement, which they demonstrated during the three days of the workshop. Based on their discussions and expertise, we were able to develop the present document, which aims at synthesizing the main outcomes of the workshop.

Summary

The International Workshop on Underutilized Plant Species was carried out by Capacity Building International (InWEnt), commissioned by the German Ministry of Economic Co-operation and Development (BMZ) and jointly organized with the German Agency for Technical Cooperation (GTZ) and the Global Facilitation Unit for Underutilized Species (GFU) with financial support from the International Fund for Agricultural Development (IFAD) and the Technical Centre for Agricultural and Rural Co-operation (CTA).

The objectives of the workshop were to identify strategic elements for the promotion and sustainable utilization of underutilized plant species and to recommend next steps and potential actors for implementation.

Professionals came together from more than 30 countries and various backgrounds to discuss future possibilities for enhancing the use of underutilized plant species to improve the livelihoods of poor people. The workshop, therefore, had a clear development mission and the focus was on underutilized plant species within pro-poor development. This is reflected in the issues discussed and the aspects covered during the workshop.

- **Food security and health:** many underutilized plant species are nutritionally rich, they contribute to combat hidden hunger, have a direct impact on well-being and health, and are accessible resources for the urban and rural poor.
- **Income generation and local economies:** there is a general growing consumer demand for product diversity, which may offer new market opportunities and create employment at various levels. This contributes to the diversification of livelihood opportunities for poor people, especially vulnerable groups.
- **Non-material benefits:** the cultural identity of local communities is strongly related to the use of many traditional plant species and available indigenous knowledge. This represents an important asset for those local communities and society in general.

- **Biodiversity and environmental services:** underutilized plant species contribute to agro-ecosystem stability and, therefore, mitigate the effects of environmental changes. They are often adapted to marginal conditions.

This document is a synthesis report of the workshop aiming to inform a wider audience working on the promotion and development of underutilized plant species. The report starts with a brief overview of the workshop objectives and process. It then focuses on the main workshop outcomes based on the working group activities and presents the conclusions for future action.

The participants identified eight main intervention areas for the promotion and sustainable utilization of underutilized plant species. It is important to stress that the main intervention areas do not target underutilized plant species at plant genetic resource level. They mainly address policy issues (especially benefit-sharing and intellectual property rights legislation), information management and capacity building issues as well as awareness creation, lobbying and marketing. An important conclusion from the workshop is that underutilized plant species need to be mainstreamed in ongoing research and development initiatives in order to become more visible and attract more attention. In general, strategic elements for promotion should build on existing strengths of underutilized plant species and target identified opportunities. They are, therefore, context-specific and require detailed analysis.

All the papers presented during the workshop are on the enclosed CD.

Introduction

Background

The International Workshop on Underutilized Plant Species was carried out by Capacity Building International (InWEnt), commissioned by the German Ministry of Economic Co-operation and Development (BMZ) and jointly organized by the German Agency for Technical Co-operation (GTZ) and the Global Facilitation Unit for Underutilized Species (GFU) with financial support from the International Fund for Agricultural Development (IFAD) and the Technical Centre for Agricultural and Rural Co-operation (CTA).

The groundwork for this workshop was laid 7 years ago in June 1996, also in Leipzig, during the FAO-convened Fourth International Technical Conference on Plant Genetic Resources, where 150 countries formally adopted the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA). The Conference also adopted the Leipzig Declaration, which focuses attention on the importance of plant genetic resources for world food security and commits countries to implementing the GPA. The GPA is intended to be a framework, guide and catalyst for action at community, national, regional and international levels. It aims at creating an efficient system for the conservation and sustainable use of plant genetic resources through better co-operation, co-ordination, planning and capacity strengthening. It makes an essential contribution to the successful implementation of the Convention on Biological Diversity (CBD). The GPA pays special attention to:

- the conservation of plant genetic resources for food and agriculture as the basis of food security
- the sustainable utilization of plant genetic resources to foster development and to reduce hunger and poverty.

The latter point includes a large number of plant species, which are important for household food security while also having potential for wider use and which could contribute to agricultural diversification and income generation. The relevance of these so-called underutilized species to food security and poverty

alleviation is increasingly being recognized by researchers, policy-makers and development specialists. This is also reflected in the GPA, where they are addressed through priority activity no. 12 – “promoting the development of underutilized crops and species”. This activity aims at:

- identifying underutilized species
- developing sustainable management practices
- developing post-harvest and marketing methods
- promoting policies for the development and use of underutilized species.

Another milestone on the way to this workshop was the first Global Forum on Agricultural Research (GFAR) in May 2000, also held in Germany, in Dresden. A working group recommended the involvement of GFAR in future activities on underutilized species to give these valuable resources the international attention they deserve from all GFAR constituencies. The establishment of a global facilitation unit to support and facilitate the work that is done by the various stakeholders was also strongly encouraged.

Given the importance and the potential these species have for improving food security, particularly in developing countries, BMZ decided during the Dresden Forum to provide funds for research and development activities and to sponsor an international workshop on the topic. At a later stage, it committed itself to financing the initial costs for the establishment of the Global Facilitation Unit for Underutilized Species (GFU), which started operating one year ago under the umbrella of the GFAR. However, BMZ’s involvement in promoting and popularizing underutilized species dates back even further. During 1996 and 1997, a series of over 20 monographs on selected underutilized species was published jointly by the International Plant Genetic Resources Institute (IPGRI) and the Institute of Plant Genetics and Crop Plant Research (IPK) in Gatersleben, Germany, with financial support from BMZ.

Objectives and focus of the workshop

The objectives of this workshop were to identify strategic elements for the promotion and sustainable utilization of underutilized plant species and to recommend next steps and potential actors for implementation.

Although the immediate concern regarding underutilized species revolves around identifying the germplasm and preserving this material in gene banks (and through *in situ* conservation), sight of the ultimate goal should not be lost, namely to exploit in a sustainable manner their potential for contributing to the reduction of food problems, both in terms of quantity and quality, and to alleviate poverty. Conservation of these species for the future of humankind, although a laudable objective, holds little attraction to those who need to survive and develop. Conservation becomes attractive when there are tangible benefits to be derived from its sustainable exploitation.

The workshop, therefore, tackled issues along the entire chain from the genetic resources to the consumers, who may be local people collecting or planting these species or more remote consumers where these species are marketed and commercialized. The workshop aimed to cover nutrition and health issues, cultural implications, economic and development aspects as well as environmental issues, hence, it gathered participants from a range of different sectors.

The participants came together to discuss the future possibilities for enhancing the use of underutilized plant species in improving the livelihoods of poor people. The workshop, therefore, had a clear development mission and the focus was on underutilized plant species within pro-poor development. This is reflected in the issues discussed and the aspects covered during the event.

The workshop focused particularly on four areas to which underutilized plant species can make valuable contributions.

- **Food security and health:** many of the underutilized plant species are nutritionally rich, can contribute to combat hidden hunger, have a direct impact on well-being and health, and are accessible resources for the urban and rural poor.

- **Income generation and local economies:** there is a general growing consumer demand for product diversity, which may offer new market opportunities and create employment at various levels. This contributes to the diversification of livelihood opportunities for poor people, especially vulnerable groups.
- **Non-material benefits:** the cultural identity of local communities is strongly related to the use of many traditional plant species and available indigenous knowledge. This represents an important asset for those local communities and society in general.
- **Biodiversity and environmental services:** underutilized plant species contribute to agro-ecosystem stability and, therefore, mitigate the effects of environmental changes. They are often adapted to marginal conditions.

Workshop process

Professionals from more than 30 countries attended the International Workshop on Underutilized Plant Species in Leipzig and shared their knowledge and expertise (a list of participants is on the CD).

The first day intended to update all participants on past and current work on underutilized plant species, existing terms to characterize these species and approaches employed for their promotion.

- An overview of past and ongoing initiatives with respect to the promotion and sustainable utilization of underutilized plant species was presented by Nazmul Haq from ICUC.
- This was followed by a presentation from Stefano Padulosi (IPGRI) who shared with the participants definitions and concepts of underutilized plant species.
- The first thematic session consisted of two presentations focusing on the approaches used for the promotion and sustainable utilization of underutilized plant species. A more theoretical framework was provided by Susan Kaaria (CIAT), followed by a case study from Cameroon by Dominic Fontem (University of Dschang).
- During the afternoon, four working groups analyzed in more detail

the strengths and weaknesses and the key elements of the different approaches presented and known from own experience.

On the second day, the contribution of underutilized plant species to poverty alleviation was at the forefront of discussions. Four plenary presentations set the scene for the working groups.

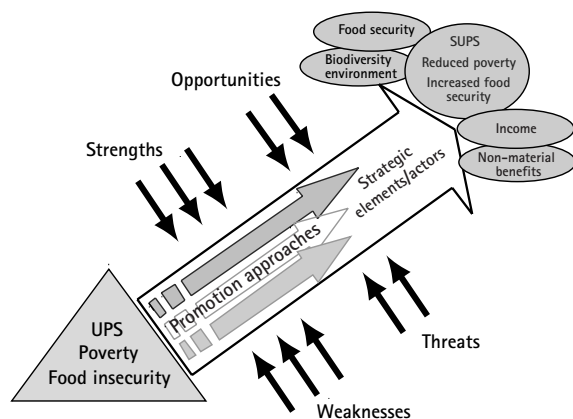
- The role of underutilized plant species with regard to increased food security and improved health of poor people was presented by Mario Tapia (IIAP).
- Denzil Phillips' presentation focused on the contribution of underutilized plant species to income generation and local economies.
- The value of the non-material benefits of underutilized plant species to the livelihoods of the poor was presented by Pablo Eyzaguirre (IPGRI).
- Jeff McNeely from IUCN focused on the importance of underutilized plant species for the conservation and sustainable use of biodiversity.

These four key topics were analyzed in more detail during the afternoon, where four working groups discussed useful clusters of underutilized plant species. A SWOT-analysis was used to further explore the strengths and weaknesses of underutilized plant species for contributing to these key areas and to understand better the existing opportunities for, and threats to their promotion.

Only by identifying the weaknesses and threats will we be able to understand why these plant species have remained underutilized. A better understanding of their strengths and opportunities will enable us to develop successful strategies to enhance their contributions for the benefit of the poor and to promote their sustainable utilization.

During the third day, participants looked at strategic elements and next steps for the promotion and sustainable utilization of underutilized plant species, consolidating the findings of the working groups. The workshop ended with statements from a high table, where representatives of different organizations

provided feedback on the conclusions and recommendations made by the workshop participants. The detailed workshop programme can be found on the enclosed CD.



UPS = Underutilized plant species
SUPS = Sustainable utilization of plant species

Figure 1 Rationale of workshop process

Workshop outputs

Definition of underutilized plant species

A wide range of terms are used for underutilised plant species, which include *minor, neglected, local, traditional, underexploited, underdeveloped, orphan, lost, new, niche, promising and alternative* (Padulosi¹). Each of these terms suggests a certain perspective with regard to underutilization, which is not always very clear. For example, *minor species* are *minor* in relation to what: volume/acreage of crop or value of traded product? *New species* are new in relation to what: in terms of geographical focus (country, region, agro-ecological system) or time? Other terms seem to carry a negative connotation within a certain cultural context, such as *neglected* or *orphan*. Others again are not explicit enough in terms of the potential of these species. For example, *lost species* places the emphasis on historic/cultural aspects rather than on current benefits that could be generated. Most accepted and most frequently used in the research and development (R&D) community is the term *underutilized*, which was also adopted during the workshop, bearing in mind the limitations of this term. We should be aware that *within the poor farming communities around the world, which depend on these species for their survival, they are often neither neglected nor underutilized*.

Table 1 Advantages and disadvantages of the term 'underutilized plant species'

Advantages	Disadvantages
<ul style="list-style-type: none"> • Best captures the concept of economic potential and other livelihood-related benefits • Not linked to a particular geographical area • Not limited necessarily to a specific market niche • Generally accepted by all cultural groups • Most widely used 	<ul style="list-style-type: none"> • Some confusion on boundary of term: are less used varieties of major crops also included? • Do not carry a visible message on loss of diversity and indigenous knowledge and poor attention by R&D • Issue of 'underutilized threshold'

¹Refer to the CD for full paper of this presentation.

The participants also agreed on a working definition of underutilized plant species, which was adopted throughout the workshop. However, it is important to stress that there were different opinions on the definition. Particular areas of controversy were the range of species to be included (e.g. traditional varieties of major crops, which remain underutilized) and the level of utilization to be characterized as *underutilized*. Clarification of these issues was beyond the scope of the workshop.

The agreed working definition for the duration of the workshop was:
 "underutilized plant species are those with a potential, not fully exploited, to contribute to food security and poverty alleviation. Promotion of their use should be done in a sustainable fashion".

Approaches used for promotion

Different approaches exist for the promotion of underutilized plant species. These approaches use different entry points, ranging from a focus on plant genetic resource to policy and legislation. Most of the past activities on the promotion of underutilized plant species have either focused on aspects at plant genetic resource level, such as plant characterization, selection and improvement, or on marketing aspects. During the workshop, a range of different approaches for the promotion of underutilized plant species were identified.

- The **commodity chain approach** strongly emphasizes the 'underutilized' market potential and often focuses on one specific commodity with high potential value. This might contribute to the conservation of a particular species by creating strong market opportunities. On the other hand, it might lead to overexploitation (particularly in the case of wild plants), or an underutilized plant species might become a commodity and drive out other species (see paper presented by Kaaria).
- The **livelihoods approach** defines 'underutilized' in terms of wider livelihood functions and stresses the importance of building on the existing assets of the poor (see paper presented by Kaaria).
- The **resource-to-consumption approach** highlights the gender concerns, sustainable natural resource management and the

development of local capacity for rural innovation (see paper presented by Kaaria).

- The **integrated natural resource management approach** or ecosystems approach focuses on the relationship of species within the overall ecosystem and reflects the recommendations of the CBD. It often adopts a regional perspective and promotes collaboration between farmers using a participatory approach.
- The **high-level influence on policy approach** recognizes that underutilized plant species are a public good, so policies are required to obtain the commitment of governments for the sustainable utilization of underutilized plant species, for equitable benefit-sharing, allocation of research funds, etc.
- **Participation and rights approaches** focus on the involvement of local people who manage underutilized plant species and emphasize the importance of property rights based on farmers' plant registers and indigenous knowledge.
- **Culture-based approaches** build on traditional and social networks within the community.

Table 2 summarizes the main approaches. It provides information on their objectives, the underlying assumptions and perspectives on why underutilized plant species are underutilized, and the future potential/function of underutilized plant species from the different perspectives.

Comparison of the different approaches shows marked differences in their particular objectives and perspectives with regard to the future contributions of underutilized plant species to poverty reduction. The approaches have their individual strengths and weaknesses, which suggests that no single approach can be successful: a combination of different approaches will be required, depending on the objective of the promotion, the type of species and the respective intervention context.

During the workshop, the participants established the following key characteristics required within an approach to successfully target and benefit poor people in the promotion of underutilized plant species and to minimize the identified risks and weaknesses (see Table 2):

Table 2 Approaches to the promotion of underutilized plant species

	Commodity/value chain	Livelihood approach/ resource-to-consumption	Cultural approach (co-evolution)	Ecosystem/integrated natural resource management
Objectives	Adding value to underutilized plant species (UPS): (i) to increase income (and thereby reduce poverty) (ii) to increase the incentive to maintain these plant species	Enhance the use of UPS for wider livelihood functions and to increase local peoples capacity to confront and minimize risks	Maintain cultural diversity and values as a way of maintaining genetic diversity (maintaining evolutionary processes) Empower local people and their social networks (independence)	Maintain biodiversity to secure well-being in the long term (including the capacity to adapt to changes in climate, human preferences, etc.) Ecosystem services are as important as ecosystem products for humankind
Assumptions about the reasons for underutilization of UPS	UPS are underutilized by industry because they are unknown, unwanted/disliked, rare/difficult to grow, illegal, unstable supply source, too expensive to process or to transport, too dangerous, too political, etc. (Phillips)	UPS may be underutilized due to limited access, replacement/domination by other plants, etc., or their potential use is not yet fully known/exploited by local people	Loss of knowledge and cultural identity directly affects genetic diversity and utilization of UPS Underutilization primarily occurs because of changes in culture/lifestyle	Many plant species are overutilized rather than underutilized (especially wild species) Use is often not sustainable
Underlying perspective	Focus on market potential/products Focus on economic potential/monetary value, quality, etc.	Empower local people and build on existing resources (independence) UPS are an important asset for diversified livelihood strategies	Co-evolutionary perspective Lack of cultural identity as one aspect of poverty	Relationship between plants and different organisms Plants have other wider functions than direct use values
Role/functions of UPS	Respond to market demand, provide income to various stakeholders along the commodity chain	Importance of multiple uses of UPS to fulfil diverse livelihood functions	Importance of food culture, spiritual and religious uses Importance of multiple uses	Importance of local endemic and wild species, endangered species (CITES)
Key strengths of approaches	Adding value to UPS and creating incentives to further promote their use Brings income for cultural investment Leads to intercultural appreciation	Promotes livelihood options for vulnerable groups by building on existing resources	Reinforces cultures and conserves and passes on values and identity/indigenous knowledge	Recognizes the links and relationships between plant species and the wider environment

Table 2 cont.

	Commodity/value chain	Livelihood approach/ resource-to-consumption	Cultural approach (co-evolution)	Ecosystem/integrated natural resource management
Risks/key weaknesses of approaches	Loss of identity of origin once value adding and marketing are established Narrowing genetic base (where domestication and same quality is needed) Non-sustainable use of the ecosystem; market trends and fashions can change Loss of indigenous knowledge Simplification of uses Risk of overexploitation Narrowing of genetic diversity through restriction to few species	Danger of taking place in isolation without involvement at policy level	Difficult to promote in isolation, as economic incentives are very powerful Culturally bounded	Often too conservation oriented, neglecting local peoples needs

- recognition of underutilized plant species as public goods to ensure the continued availability and accessibility of the plant genetic resources to present and future generations
- fair and equitable sharing of benefits derived from the use of underutilized plant species for sustainable agriculture and food security
- strengthening the capacity of marginalized people in negotiations with the private sector and government
- access to information for all stakeholders to ensure equal positioning in decision-making
- participatory and multi-stakeholder-oriented approaches to provide for inclusion and consideration of different interests and needs.

The consideration of such characteristics within a promotion approach will help to achieve social acceptability, cultural empowerment and self-determination.

These points (though probably far from complete) provide a useful checklist to monitor and evaluate ongoing and past initiatives in order to assess the appropriateness of the approaches used and to guide future initiatives in the selection of pro-poor promotion approaches.

Contributions of underutilized plant species to poverty alleviation

The overall objective of promoting underutilized plant species is to reduce poverty and to achieve the sustainable use of a wide range of plant species. Underutilized plant species can make a contribution to poverty alleviation in four major areas: food security and health, income generation, non-material benefits and biodiversity and environmental services.²

Underutilized plant species represent an enormous range of different plants with different attributes and potential to contribute to poverty alleviation. Whereas some of them are more important for food security, others will have a greater potential for income generation, for non-material benefits or for environmental services relevant to the poor.

² For further information on these contributions refer to the plenary papers prepared by Tapia, Phillip, Eyzaguirre and McNeely on the CD.

Table 3 Contributions of underutilized plant species to poverty alleviation and their promotion

	Food security and health	Income generation	Non-material benefits	Biodiversity and environmental services
Objectives of promotion	Poor people have permanent access to sufficient food of adequate quality, that is socially and culturally acceptable, for an active and healthy life	UPS are used to generate cash economic benefits to poor people (especially vulnerable groups) in the form of additional incomes	Maintain their values, to ensure their appreciation and contribute to the passing on from present to future generations	Poor people are able to diversify the basis of their livelihood, through better conservation and sustainable use of biodiversity
Groups of UPS with key common characteristics	Adaptability to different agro-ecological zones Level of skills and knowledge available among different stakeholders related to the management and utilization of UPS (e.g. no skills and knowledge available, low level of skills and knowledge available, etc.)	The added value at various levels leads to four sub groups: (i) no identified added value at local level; (ii) identified added value at local level (iii) identified added value at national level; (iv) identified added value at global level	Type of available knowledge in relation to plant species: common knowledge, specific knowledge, scientific knowledge, intermediate knowledge Level of cultivation: cultivated, non-cultivated (wild), managed Functions of UPS: spiritual, food culture, educational, social/institutional and cultural landscape	Domestication status (domesticated, semi-domesticated with potential for full exploitation, semi-domesticated as good enough, wild plants or more simplified cultivated, managed, non-cultivated) and the status of the species (local endemic, invasive, threatened/endangered, widespread)
Strengths	Locally available and accessible Local knowledge available on management and use Adapted to the local environment Multi-purpose Specific nutrition and health value	Locally available and accessible Local knowledge available on management and use Adapted to the local environment Multi-purpose	Locally available and accessible Local knowledge available on management and use Adapted to the local environment Multi-purpose	Adapted to the local environment Wide genetic diversity
Opportunities	Low requirement for external inputs Marketable Easy promotion (socially acceptable) Technology available to enhance production; future exploitation of nutritional and medicinal properties	Availability of markets and market infrastructure, conducive political/legal framework Availability of technology potential for adding value, job creation; future exploitation of marketable properties	Strengthen cultural identity Empowerment of local communities; people in the centre of activities Leads to intercultural appreciation Promotes innovation and new information	Increased options in response to environmental changes; increased resilience of communities; future exploitation of genetic diversity Increased marketing provide incentives for conservation Leverage with natural resource lobby Payment for environmental services

Table 3 cont.

Weaknesses	Low productivity, post-harvest problems	Low price, low productivity, post-harvest problems	Knowledge of management and use confined to small group of people (special knowledge)	Biodiversity and environmental services are not provided by single species but by the complexity of the ecosystem
			Negative plant properties (e.g. regeneration capacity, growing habits, etc.)	
Threats	Stigmatized as 'old fashioned'	Short lived markets	Less important in 'modern' life	Conservation without considering human needs
	Dietary transition	Financial investment required	Breaking the link between culture and UPS means they become a commodity and can be taken to other production sites	Narrowing genetic base (where domestication and same quality is needed)
	Biopiracy	Competition by big industry	Biopiracy	Displacement of other species
	Poor seed systems	Non-tariff trade barriers		Non-sustainable use of the ecosystem
	Loss of local knowledge	Unequitable benefit-sharing		
	Overestimation of potential	Biopiracy		
	Lack of policy support			

Due to the diversity of underutilized plant species, it is important to identify groups of species which share key common characteristics with regard to their contribution to poverty alleviation. This is not for the purpose of prioritizing plant species at an early stage, but rather to be able to develop more targeted promotion strategies based on the strengths, weaknesses, opportunities and threats identified for each of these groups. Table 3³ outlines the different contributions of underutilized plant species, the specific objectives for their promotion, and the different groups of species sharing key characteristics identified by workshop participants. Furthermore, the table lists important strengths, opportunities, weaknesses and threats for their future promotion.

Food security and health

The objective of promoting underutilized plant species for improved food security and health is that poor people have permanent access to sufficient food of adequate quality that is socially and culturally acceptable, for an active and healthy life.

Underutilized plant species that are relevant for food security and health can be grouped according to their suitability for different agro-ecological zones. The immediate and short-term focus should be on underutilized plant species that are well adapted and available in a specific location, instead of trying to introduce underutilized plant species from other agro-ecological zones.

Furthermore, underutilized plant species can be divided into different categories depending upon the degree and available knowledge on their management and use. Whilst local knowledge on management and use for some species is widely available, this may not be the case for others. The same applies to the availability of scientific information. An important constraint on the promotion of many underutilized plant species for increasing food security and health is the lack of information on plant properties (e.g. toxins, anti-nutritional factors, medicinal properties, etc.). A resulting threat is that the potential contributions of these underutilized plant species to food security and health are difficult to estimate. On the other hand, there is a wide range of underutilized plant species

³ Table 3 provides a synthesis of the SWOT-analysis carried out by the four working groups. It is, therefore, not complete and needs to be further developed for each specific plant species in its own local context.

with well known nutritional and medicinal properties, which have the potential for further promotion as they are locally known, culturally accepted and often a well established component of farming systems and diet. This category of underutilized plant species may have other constraints, such as low productivity, poor seed systems or post-harvest problems.

Income generation and local economies

The aim of promoting underutilized plant species for income generation is to increase the direct economic benefits to poor people and vulnerable groups, by providing additional cash income. Underutilized plant species with a potential for income generation can be divided into those with 'identified' or 'not identified' potential and also into those with a market potential at local, national or global level. Each of these four groups have different characteristics, which shape promotion strategies. The opportunities for value-adding at different levels determine their income generation potential. In the past, the main focus for promotion has been on plant species with value-adding potential at global level, neglecting the potential at local and/or national level. Local markets may offer the most realistic and direct potential for contributing to income generation for poor people, as they do not require a large infrastructure, processing technology or capital to reach them. However, past and current extension methods focusing on improved and introduced species, consumer preferences for 'modern' or 'imported' food, etc., have limited the realization of this potential. The marketing of wild plants offers a good opportunity for poor people as they do not require land and other physical assets, but runs the risk of overexploitation and consequently of loss. Their collection is labour-intensive, which could be seen as an advantage for poor people not owning land.

On the other hand, local markets tend to be small with a limited demand for products because many people are self-sufficient in certain local products or have no financial resources to purchase them from the market, whereas national and global markets offer a greater potential in terms of demand and prices. However, the promotion of underutilized plant species for national and global markets requires a detailed understanding of the supply chain and the potential trickle-down effect to benefit the poor. Adding value at the growers end is a major challenge and does not happen in many cases. The average distribution

of profits is approximately 5% for growers and 60% for retailers (Denzil⁴). This could be a major setback to enhancing income opportunities for poor people unless some kind of value-adding takes place at the farm or small community level.

Another effect is that as underutilized plant species become commodities, the traits and varieties that made them valuable to the resource-poor may be replaced or the production sites will be moved into areas more favoured by producers with capital, technology and management expertise. Here the risks are increased competition and loss of the genetic resource base.

A general risk for underutilized plant species in all subgroups is unrealistic expectations of market potential. Very often markets for 'new' products are relatively short-lived and vulnerable to substitution with other products once an economic interested demand is established. Non-tariff trade barriers might represent additional hurdles to entering international markets (e.g. the EU Novel Food Regulation).

Non-material benefits

The main objective of promoting underutilized plant species for non-material benefits is to maintain their value, ensure their appreciation and contribute to the handing down from present to future generations to safeguard the plants' survival and to prevent them from further neglect.

From this perspective underutilized plant species can be grouped according to the type of knowledge available for the plant species, which includes common/indigenous knowledge, specific knowledge, scientific knowledge and intermediate knowledge. Furthermore, they can be grouped according to their main functions, i.e. spiritual, food culture, educational, social/institutional and cultural landscape.

Indigenous knowledge is important in order to appreciate and enhance the non-material benefits of underutilized plant species. The recognition of local

⁴ Refer to the CD for full paper of this presentation.

criteria such as taste, easiness to prepare, importance for cultural and spiritual functions, etc., is crucial. One of the main strengths of underutilized plant species is the different and multiple functions these plant species fulfil in poor people's livelihoods. Scientific knowledge focuses too often only on the major functions without taking into account the range of secondary livelihood functions. Therefore, the relevance of scientific knowledge with regard to these functions is not necessarily the best departure point for developing underutilized plant species. On the other hand, the value and cultural/spiritual functions of certain plant species are only known and managed by a specific group of people within the community, which may be a negative factor for promotion and enhanced use.

The promotion of non-material benefits of underutilized plant species offers the opportunity to place poor people in the centre of activities, as the main focus is on the assets available to them and their complex livelihood contributions. This is an important step towards strengthening local communities. However, the establishment and recognition of traditional resource rights and intellectual property rights are very important for benefit-sharing because, once a underutilized plant species becomes a commodity, it can be taken anywhere and past experiences have shown that this usually leads to loss of ownership and control by the poor.

Biodiversity and environmental benefits

The objective of promoting underutilized plant species for biodiversity and environmental benefits is to enable poor people to diversify and stabilize the basis of their livelihood, through better conservation and sustainable use of biodiversity.

Useful criteria to group underutilized plant species from this perspective are their domestication status (i.e. domesticated, semi-domesticated with potential for full exploitation, semi-domesticated as good enough, wild plants or more simplified cultivated, managed, non-cultivated) and the status of the species (i.e. local endemic, invasive, threatened/endangered, widespread).

One of the main opportunities for promoting the use of underutilized plant species is to expand the options available to poor farmers to enable them

to respond to environmental and climatic changes and so contribute to the resilience of farming communities. Genetic diversity is a key component in achieving this. Underutilized plant species within the category of semi-domesticated and wild plants offer a greater potential in terms of genetic diversity as they have not yet been manipulated by modern techniques and farming styles. Similarly, local endemic species are important for genetic diversity. However, the promotion of underutilized plant species within these categories bears the risk that these species will become overexploited and genetic diversity will be lost. Furthermore, legal obstacles and opposition from conservationists could be an additional threat to the promotion of underutilized plant species in these categories.

On the other hand, it is important to recognize that an enhanced use of underutilized plant species will provide further reasons to maintain and conserve these species, because people understand that their survival and livelihoods depend on them.

Strategic elements for the promotion and sustainable utilization of underutilized plant species

In the previous sections we analyzed the different contributions of underutilized plant species to food security and health, income generation, non-material benefits and biodiversity and environmental services and the related opportunities and threats. Furthermore, we introduced different groups or categories of underutilized plant species with key common characteristics that will require different promotion strategies to meet the overall objectives outlined in Table 3. This section presents a range of strategic elements, which were identified during the workshop as being relevant to the promotion and sustainable utilization of underutilized plant species. These are summarized in Table 4 below and are grouped into the following areas of intervention (presented in no particular order), which were established by the working group participants.

- Conservation, improvement and access
- Post-harvest handling and processing
- Policy and legislation
- Awareness creation and lobbying

- Marketing
- Capacity building
- Information generation and management
- Inter-sectoral interventions

It is important to emphasize again that the contribution underutilized plant species can make to poverty alleviation depends on the respective causes of poverty and not all underutilized plant species have the same potential for contributing to poverty alleviation in the same way. There are different categories of underutilized plant species with different potential in different contexts. Therefore, the intervention areas and more importantly, the strategic elements identified under each intervention area, are not relevant for all underutilized plant species. They can only offer guidance to present and future actors involved in the promotion of underutilized plant species in identifying intervention strategies.

The following decision steps should be considered in the situation analysis and for developing an appropriate strategy for the promotion and development of underutilized plant species. For each step, a selection of key questions is provided, which need to be further adapted to the specific situation.

1. What do we want to achieve by enhancing the sustainable use of underutilized plant species?

- Food security and health
- Income generation
- Safeguarding non-material benefits
- Conservation of biodiversity and environmental services

2. What are the characteristics of the underutilized plant species available in the local context?

- What skills and knowledge are available regarding the species (indigenous, common, specific, scientific, intermediate)?
- What is the domestication status of these species (domesticated, semi-domesticated, wild)?
- Are the species endemic, invasive, endangered or widespread?
- What are the functions of these species (spiritual, food culture,

educational, social, institutional, cultural landscape)?

- Do they have an identified added value at local, national or global level?
- To what extent are they adapted to different agro-ecological zones?

3. What are the inherent strengths and weaknesses of the respective plant species within the area of contribution?

- Are these species locally available and accessible?
- Are their seed systems established?
- Does local knowledge about their management, use and post-harvesting exist?
- Are these species adapted to the local environment?
- Do the species possess multiple uses?
- Do the species have marketable traits and image?
- Do these species have a wide genetic diversity?

4. What are the main opportunities for, and threats to their promotion in regard to the objectives?

(i) Food security and health

- Do these species require external inputs?
- Is there an identified market potential?
- Are their nutritional and medicinal properties known?
- Are research, education and extension services knowledgeable and in place?

(ii) Income generation

- Is there a market potential (niches, windows) identified and on what level?
- Is the necessary market infrastructure (i.e. information, processing, packaging, distribution channels, etc.) available and accessible?
- Is there access to credit or economic incentives?
- Is there a conducive political and legal framework for marketing in place?
- Are the technology and relevant knowledge

for value adding available?

- Is there potential for replacement by synthetic products?
- The Are mechanisms in place to avoid overexploitation?

(iii) Non-material benefits

- Do these species contribute to the cultural identity and empowerment of local communities?
- Who holds the knowledge about management practices and use?
- Are these species multi-purpose or are they limited to a specific purpose?

(iv) Biodiversity and environmental services

- Are the species likely to increase future options for responding to environmental change?
- Are these species of a known wide genetic diversity?
- Have they been subject to breeding and improvement activities?
- Is their use protected by national/international laws?
- Are the species endangered or invasive
- Do the species provide certain environmental services and fit into diversified production systems?

5. What are the main intervention areas to build on the strengths and opportunities, and to overcome the weaknesses and threats?

- Conservation, crop improvement and access to genetic resources
- Post-harvest handling and processing
- Policy and legislation
- Awareness creation and lobbying
- Marketing
- Capacity building
- Information generation and management
- Inter-sectoral interventions

6. Which of the following strategic elements have to be implemented within the selected intervention areas?

(i) Conservation, improvement and access

- Promotion of *in situ* conservation

- Crop improvement
- Selection and evaluation of cultivars
- Improvement of seed supply systems
- Development of appropriate technologies
- Conservation of germplasm
- Targeted collection of new germplasm
- Farmer experimentation and innovation
- Support to gene banks to expand collection efforts

(ii) Post-harvest handling and processing

- Improved storage technologies
- Promotion of existing technologies
- Promotion of value adding
- Scaling-up of existing technologies
- Validation/improvement of processing and storage technologies
- Technical advice on product development
- Funding for primary processing facilities at rural level

(iii) Policy and legislation

- Establishment of international property rights legislation for underutilized plant species
- Establishment of links to existing conventions/treaties
- Establishment of community registers
- Link to food safety aspects/novel food regulation
- Establishment of policy working groups and local policy dialogue fora
- Integration of cultural values into extension programmes
- Requirement for (agro)biodiversity impact evaluation for new projects and assessment of existing projects
- Survey of existing legal and institutional regimes and recommendations for changes to eliminate obstacles
- Positive policies promoting underutilized plant species integrated into international development policies/programmes
- Regulatory framework for equitable benefit-sharing
- Ratification of International Treaty on Plant Genetic Resources (ITPGR)

(iv) Awareness creation and lobbying

- Lobbying with conservationists and potential investors
- Integration into national development agendas
- Conduct food security and health needs assessment
- Increase public awareness through recipes for food preparation
- Promote cultural/local products
- Broaden the clientele (restaurants, shops, etc.)
- Cultural festivals and fairs
- Inform communities about rights and policies
- Social mobilization through stakeholder analysis and institutional mapping
- Develop clear extension messages in local languages for farmers
- Optimum use of mass media (rural radio, fairs, folk songs, etc.)

(v) Marketing

- Certification of products
- Introduction of quality standards
- Changes in market regime to encourage sustainable use
- Optimize market potential through value adding at different levels
- Promote access to credit
- Develop new products
- Promote producers associations
- Establish information systems on markets, prices, etc.
- Explore national and international markets
- Changes in market regime to avoid overexploitation and to assure equitable sharing of benefits

(vi) Capacity building

- Assess institutional capacities to deal with underutilized plant species
- Promote professional associations
- Strengthen small businesses
- Enhance capacities of producers and clients
- Training of intermediary organizations (CBOs, NGOs, government organizations, private sector)
- Provide training modules based on underutilized plant species;

International Agricultural Research Centres (IARCs) were mentioned as actors that can provide these modules

- R&D-based NGOs network building in poor regions
- Training for farmers (CBOs) on technical and organizational aspects
- Include underutilized plant species in training curricula of schools and universities
- Link local and scientific knowledge
- Education of younger generations (community level)
- Local leadership capacity building

(vii) Information generation and management

- Documentation/synthesis of existing information and success stories
- Links with databases of the Environmental Convention/Convention on Biological Diversity, etc.
- Identification of focal point for information sharing
- Information generation on nutritious value of underutilized plant species
- Documentation of indigenous knowledge on nutritional and medicinal properties
- Identification and documentation of species (community biodiversity register)
- Knowledge generation through farmer experimentation and innovation
- Development of information tools and decision support systems

(viii) Inter-sectoral interventions

- Mainstreaming underutilized plant species in other sector initiatives
- Networking through inter-agency working groups
- Linking to educational and cultural programmes
- Promoting vertical integration
- Linking to UNESCO programmes
- Linking to credit facilities

Table 4 Actors involved in the implementation of strategic elements – example from the working group on 'biodiversity and environmental benefits'

Key areas of intervention	UN organizations (FAO, UNIDO, etc.)			Producer co-operations		
	Lending organizations (World Bank, IFAD, etc.)	Donors (bilateral)	International Agricultural Research Centres	National governments	NGOs/CBOs	Private sector
Synthesis of existing information and targeted collection of new information and germplasm		GFU	<ul style="list-style-type: none"> • Create functional databases on UPS • Link with databases of the Environmental Convention/CBD, etc. • Create information resources in translation of multiple media 	<ul style="list-style-type: none"> • Collect and store germplasm • Support gene banks to expand information base • Conduct surveys of indigenous knowledge to fill in information gaps • Study different eco-zones with regard to UPS 	<ul style="list-style-type: none"> • Assess the status of existing information on UPS at national levels 	
Awareness creation and information dissemination			<ul style="list-style-type: none"> • Establish information exchange 	<ul style="list-style-type: none"> • Devise priority list of resources and sources 	<ul style="list-style-type: none"> • Develop clear extension messages in local languages for farmers • Optimum use of mass media (rural radio, fairs, folk songs, etc) 	
Changes in legal and institutional regimes	Survey existing, and recommend new legal regimes and eliminate obstacles		Support governments on international treaties, conventions, etc.		<ul style="list-style-type: none"> • Develop national policies on PGR • Ratify the ITPGR • Regulatory framework for equitable benefit-sharing 	<ul style="list-style-type: none"> • Policy dialogue on genetic material; access to CBOs/farmers
Policy and lobbying	Require (agro)biodiversity evaluation for new projects and assessment of existing projects			Pro-UPS policies integrated into national development policies/programmes		
Capacity building	Human resources development programme for UPS promotion and development		Provide training modules based on UPS		<ul style="list-style-type: none"> • R&D-based NGOs network building in poor regions • Training for farmers (CBOs) on technical, marketing and organizational aspects • Training farmers/CBOs on seed production and marketing aspects 	
Changes in market regime		Train/exposure to intermediary organizations (CBOs, NGOs, government organizations, private sector)		Regulatory incentives for investors in UPS	Advocacy on equitable sharing of benefits	<ul style="list-style-type: none"> • Develop marketable products • Certify organically grown

7. Which stakeholders/actors need to be involved in the implementation of these strategic elements?

This decision step is very much dependent on the specific intervention context and needs to be elaborated for each individual situation. Table 4 on page 28 provides an example of stakeholder involvement at different levels from the working group on 'biodiversity and environmental benefits'. In the following section, recommendations are made for the involvement of different potential actors in the implementation of the strategic elements identified during the workshop.

Workshop Conclusions and Outlook

The identification of strategic elements for the promotion and sustainable utilization of underutilized plant species for poverty alleviation was the main output from the workshop. In this section we present the main conclusions before we provide further details on the potential actors for implementing the strategic elements identified.

Conclusions

Definition of underutilized plant species

There is no commonly agreed definition/terminology for underutilized plant species, which makes it difficult to focus discussions. It is important to establish a clear definition of underutilized plant species that contains selection criteria for plant species and shows the links to other related terms such as plant genetic resources, (agro)biodiversity, etc. However, some key features of underutilized plant species could be agreed including: their status is context and value-specific, they are public goods, assets of poor people, have local or regional importance, etc.

Recognition of diversity of underutilized plant species

The analysis of promotion strategies for underutilized plant species recognized the complexity of the issue and the need for context-specific interventions. The workshop participants were able to define clusters of underutilized plant species with key common characteristics, which need to be considered when underutilized plant species are promoted with different objectives.

Pro-poor development focus

A main conclusion from the workshop discussions was that the rural poor should be placed at the centre of the debate and their needs should be considered at all levels. It is important, therefore, to establish a clear development focus for the promotion of underutilized plant species, as other examples have shown that the promotion can easily bypass the poor. The participants agreed that institutional and policy mechanisms need to be established to effectively target and benefit the poor.

Promotion approaches

A crucial issue in terms of successful promotion approaches is the need for partnerships and a common understanding of the challenges. The participants emphasized the importance of mainstreaming the work into ongoing initiatives. A common problem is the fragmentation of efforts and researchers, farmers and other stakeholders need to work more closely together. Furthermore, there is a need to define the exact role of research, as many of the identified weaknesses and threats are not clearly research related. The participants pointed out the importance of multi-stakeholder processes, which include all stakeholders. A particular focus should be on gender integration and cultural diversity, as this is crucial for the sustainable management of underutilized plant species. It was concluded that a combination of approaches would be required to successfully target the poor. The participants established the key elements of an effective promotion approach.

Private sector involvement

Strong emphasis was placed on the importance of involving the private sector in future promotion strategies. Underutilized plant species will remain underutilized until and unless markets are found for them and the private sector has a role to play in identifying and establishing these markets. However, past and current experience shows that in many cases the private sector has not become involved in commercializing underutilized plant species. This is because it is extremely costly to invest in unknown and untested products. There is a huge risk because it is not known how well these products will sell. Product development costs are high and marketing is difficult due to consumers lack of knowledge about the products. This stresses the relevance of providing information and awareness creation. If rural producers are to benefit from the commercialization of underutilized plant species, the capacity of the private sector must be increased and it must be encouraged through incentives associated with specific underutilized plant species. Linkages with NGOs and donors should be established to encourage the private sector to commercialize underutilized plant species in private-public partnerships.

Establishment of communities of practice

The participants identified the need for establishing communities of practice, which can exchange and build on existing experiences. Specific topics for these communities are impact assessment and development of indicators to allow for monitoring and evaluation of underutilized plant species initiatives and to maintain a pro-poor focus. The community of practice could contribute to the systematization of experiences gained from different approaches and their respective impacts. Furthermore, they could focus on an analysis of the relevance of underutilized plant species to poverty alleviation compared to the main staple crops. This information is necessary to provide evidence of positive impact to donors and others who do not fully recognize the importance of underutilized plant species. Furthermore, it will help to improve the approaches taken to optimize impact.

Intervention areas and strategic elements

It is important to stress that the main identified intervention areas do not target underutilized plant species at plant genetic resource level (such as species improvement, management practices, etc.). They mainly address policy issues (especially those concerned with benefit-sharing and intellectual property rights legislation), information management and capacity building issues as well as awareness creation, lobbying and marketing. An important conclusion from the workshop was that underutilized plant species need to be mainstreamed in ongoing research and development initiatives, in order to become more visible and attract more attention. In general, strategic elements for promotion should build on the existing strengths of underutilized plant species and target the identified opportunities. They are, therefore, context-specific and require a detailed analysis as outlined above.

Actions required and potential actors

Various actors were identified who should be mobilized to contribute to the implementation of the strategic elements at different levels (local, national or international) depending on the intervention area. We present a synthesis of these recommendations below. Furthermore, we provide an indication of how far the workshop outputs and recommendations will be followed up by the Global Facilitation Unit.

Plant species conservation/improvement and access

At the international level, the involvement of the International Agricultural Research Centres (IARCs) is required. At the national level, it is the responsibility of the National Agricultural Research Systems (NARS) to collect, conserve, characterize, evaluate, domesticate and improve existing germplasm as well as to develop and adapt production technologies. At the local level, conservation and improvement has to be undertaken by the farmers themselves and the CBOs through farmers' research and community biodiversity registries. Poor seed systems are often a problem for increasing the use of underutilized species. The IARCs and NARS need to improve access to seeds for farmers at national level and to strengthen farmers' informal seed systems.

Post-harvest handling and processing

The primary tasks of the private sector in this area are product development and the development of processing technologies. The private sector is also requested to establish production units at community level and to ensure sustainable harvesting of the species to be processed and marketed. NGOs and NARS should develop and adapt appropriate processing technologies for rural households including the improvement of storage facilities at household level to allow storage of seasonal mass production.

Policy and legislation

Underutilized plant species should be closely linked to the CBD and the International Treaty. Key actors at the international level are the IARCs, the national focal points of the CBD and the Treaty, but also international donors and NGOs such as IUCN and WWF. A review of the existing international treaties is necessary and this should be initiated by the CGIAR, UN organizations such as FAO and other international organizations such as the World Intellectual Property Organization (WIPO). Farmers' Unions, local development NGOs and cross-community networks should initiate and lead local policy dialogue fora with the aim of influencing the inclusion of underutilized species in national agricultural and development policies. The relevant national ministries have to ensure that national laws are revised in such a way that the intellectual property rights are guaranteed for the rural communities.

Awareness creation and lobbying

The traditional authorities, village councils and chiefs are also important in creating awareness on the intellectual property rights that people possess. National information centres and extension agencies can play a role in lobbying at national level to include underutilized plant species and their cultural values in agricultural extension programmes. The private sector is important and should be responsible for creating awareness of the economic value of underutilized species among consumers and producers.

Marketing

As mentioned above, it is crucial that the role of the private sector is increased. At the national level, the private sector has to explore markets, develop marketable products and organize value-adding activities, such as organic certification and processing. The task of the NGOs is to advocate on equitable benefit-sharing along the supply chain. NGOs should assist the rural private sector with business training. National governments must put in place regulatory incentives for investors in underutilized species. They should set up an attractive credit system for farmers and small entrepreneurs who want to invest in underutilized species. Governments, in co-operation with the private sector and inter-governmental organizations, have to establish internationally recognized product standards, which can be achieved by producers and local industry. Governments should protect the local industry during the start-up phase. At the international level, governments should abolish non-tariff trade barriers that hinder products from developing countries entering their markets (e.g. EU Novel Food Regulation).

Capacity building

At the local level, the traditional authorities, village committees, spiritual leaders, innovative farmers and individual households are responsible for the education of the younger generation and the transfer of knowledge about underutilized species to them. At the national level, it is the responsibility of the respective ministries (education, culture, community development) to make sure that underutilized species are included in the curricula of schools and other education programmes. A vital role should be played by NGOs in providing training to farmers and CBOs on technical, marketing and organizational aspects in participatory research and farmers' seed production. Training institutions such as InWEnt also have an important role to play in targeting researchers, development agents, etc. Lending institutions, UN organizations such as FAO and UNIDO, and bilateral donors should provide resources and organize human resources development programmes on underutilized species at an international level.

Information generation and management

At the international level, the IARCs should support national gene banks to expand the information collected. They should conduct surveys of indigenous knowledge to complete existing information and to fill in gaps. A study of different agro-ecological zones with regard to their suitability for specific underutilized species would be most useful. National governments have to undertake an assessment of existing information at national levels. In co-operation with national NGOs, governments have to develop and appropriately disseminate clear extension messages in local languages for farmers. The existing local knowledge has to be linked to scientific knowledge to improve genetic material, to exploit further uses of the species and to enhance production; this is a task for the NARS and local NGOs. Information exchange workshops at local and regional level are a good way of stimulating this exchange. The traditional authorities and the CBOs have to be more active in local information flows. Cross-community visits to inform indigenous people about similar situations in other communities should be regularly organized by local leaders. They should also organize cultural festivals and fairs to present the underutilized species and the existing knowledge about them to other communities.

Inter-sectoral interventions

For the future promotion of underutilized plant species, it is crucial that underutilized plant species are integrated into existing programmes and initiatives. For example, FAO could have an important role by including underutilized plant species explicitly in their inter-departmental working group on biodiversity. This would raise the profile of the topic across FAO and its partners. Another example would be to create a strong link to UNESCO. Underutilized species are part of humankind's cultural heritage. A close link to UNESCO's cultural programmes should be established. UNESCO should participate in a review of the relevant international treaties on biodiversity to ensure that the importance of underutilized species beyond agriculture and food issues is highlighted. At the national level, the underutilized species have to be mainstreamed in all sectors to which they are relevant (i.e. agriculture, rural development, health, culture education). Local NGOs and development organizations should bring this issue to the attention of governments.

Future actions of the global facilitation unit

The workshop report will be made available to all potentially interested stakeholders. A small brochure listing the key elements of a successful approach for promoting and developing underutilized species with the aim of benefiting poor people will be developed. It will also contain the major areas of intervention elaborated during the workshop and the decision steps necessary to select the strategic elements that enhance the contribution of underutilized plant species to the various intervention areas. This brochure will provide a quick guide for all organizations planning projects or already involved in activities on underutilized species to choose the most appropriate approach and to include all strategic elements required for success in a particular intervention area. This will finally lead to the institutionalization of the workshop results.

Based on the workshop conclusions, there are several areas of actions where the GFU will take an active role.

Definition of underutilized plant species

The GFU will initiate a discussion among stakeholders aiming to clarify existing terms and to achieve a common understanding. In the meantime, we should accept the definition agreed upon during the workshop and currently used by the GFU (see page 8). This definition targets species, which show some of the following key features: low external inputs for production, suitable for cultivation on marginal land (low soil fertility, etc.), suitable for stabilizing fragile ecosystems, able to fit into smallholders' farming systems, easy to store and process by resource-poor communities, market opportunities available, high nutritional and/or medicinal value, and offer multipurpose uses. These selection criteria will also be revised in a stakeholder consultation and general agreement for prioritization of species will be sought.

Intervention areas and strategic elements

- (i) The GFU will assist interested stakeholders in developing project proposals and critically revise them according to the approach chosen and the inclusion of the strategic elements for optimum success in the targeted

intervention area. The GFU can then recommend the proposal to the respective donors emphasizing that the proposal considers all relevant issues identified and agreed upon during a multi-stakeholder workshop. This could, together with the sensitization of donors to the importance of underutilized species, increase the likelihood of receiving funding.

- (ii) In the area of information management, which includes information generation, compilation, documentation and distribution, the workshop participants identified an important task for the GFU. This is in line with the mandate given to the GFU by its initiators. The GFU web portal offers an ideal opportunity for the exchange and dissemination of information about underutilized species. It will allow its visitors to place information. The portal provides links to databases of other stakeholders involved in work on underutilized species. On the other hand, the GFU is already collecting information relevant to stakeholders. A database is currently being created – 'Who is doing What', which will be accessible through the internet. This database will allow interested parties to retrieve information about organizations and their projects, working areas, the species with which they are dealing and it will provide a list of experts in different fields or on different species. This database will facilitate contact and collaboration between stakeholders. Stakeholders can also submit information to the GFU, which will then be distributed to a wider community.

The workshop revealed clearly that the market potential of many underutilized species is most attractive to farmers and rural dwellers. It is an additional incentive for the conservation of these species and can represent an important source of income. However, most communities do not have up-to-date market information and contacts to potential buyers of their products, particularly in foreign markets. The GFU will, therefore, conduct a survey in Europe and the USA amongst importers of exotic food and other products with the emphasis on fair trade companies. The purpose of the survey will be to receive information from these companies on their interest and preparedness to buy and market products derived from underutilized species. It will provide an overview of the most requested product groups and the preferred countries of origin. It will also provide a list of companies, which can be contacted by the local producers' organizations or exporters for further negotiations.

The GFU will also provide information on trade regulations and policies affecting the marketing of underutilized species.

- (iii) In the area of awareness creation and lobbying, the GFU has already participated with an information stand at an international agricultural fair in Germany. It also funded the participation of a South American NGO at the same fair to demonstrate local products made from underutilized species. The GFU in future will support the participation of organizations at local or regional fairs and cultural events where awareness of the importance of underutilized species in poor peoples' lives can be raised. The GFU can facilitate and support campaigns on local and international radio and other mass media. Interested stakeholders are invited to contact the GFU.

A meeting with donor and development agencies will be organized to draw their attention to underutilized plant species. This will eventually influence national policy-makers to integrate these species into development policies/programmes.

- (iv) Policies and legislation: one of the major constraints to underutilized species not being used to a wider extent is the lack of enabling policies. In only a few countries do development policies take into account the huge potential of underutilized species. Therefore, almost no funds are allocated to research on these species. They play no role in the curricula of schools or the agenda of extension services. Influencing political decision-making in such a way that underutilized species will play a more prominent role in national development policies will be a challenging task for the GFU. As a follow-up to this workshop, a meeting with a strong focus on political decision-makers has to be organized.

In a joint effort with other GTZ projects and the CIP, we are analysing the implications of the EU Novel Food Regulation on imports into the EU. Based on this analysis, we will intensify the dialogue which has been already initiated with the relevant bodies in the European Commission to achieve a revision of the regulation that considers the interests and needs of developing countries as far as possible. We will also support on request the active participation of developing countries in these negotiations.

- (v) Capacity building: as mentioned before, marketing of underutilized species products is very attractive to producers. Most countries and communities interested in commercialization lack the capacity to assess the real market potential of these species, to obtain and up-date information on markets, to create the necessary physical infrastructure and to develop support strategies. Capacity building at different levels is a prerequisite for sustainable exploitation of these species, strengthening human resources being the most essential step in this direction. The GFU is, therefore, organizing an expert meeting to discuss how best this capacity building can be achieved. The objectives of the meeting will be:
- by using case studies, to analyze examples of successful marketing of underutilized species, which have led to the improvement of the livelihoods of poor rural or forest communities through sustainable development oriented interventions
 - to identify those areas that will play the most strategic role in the sustainable commercialization of these species (e.g. market analysis, market promotion, organization of the production-to-use chain, policy and legal aspects, national agricultural framework, etc.)
 - to elaborate a human resources development action plan around priority areas aimed at strengthening the capacities of various stakeholder groups (i.e. producers, NGOs, researchers, private sector, extension workers, etc.) around priority areas. For the implementation of this action plan, collaboration with, and the support of training organizations will be sought.

Appendix 1

Statements from the High Table

The objective of this session was for the panelists to express their points of view in relation to the workshop outcomes focusing on two issues: (i) where they saw a role or responsibility for their organizations to contribute to the implementation of the suggested strategic elements; (ii) any new insights they had gained from the workshop that were relevant to their organizations.

Mercy Karanja, Kenyan National Farmers' Union, representing the International Federation of Agricultural Producers

The International Federation of Agricultural Producers (IFAP) is committed to the World Food Summit goals. It works at community, national, regional, international and thematic levels. One of the biggest threats to farmers in developing countries is the weakness of their institutions. These are often not taken into account by governments when policies are formulated. Therefore, strengthening these organizations is the major role of IFAP. Producers are at the centre of reducing the number of hungry people. The organization is committed to achieving this through advocacy and lobbying. It will:

- campaign and raise awareness of the role of underutilized plant species in reducing the world's hungry
- lobby for policy change
- encourage vertical and horizontal networks at national and international level.

A constraint is the fragmentation of efforts in the field of underutilized plant species. Researchers and farmers need to work more closely together.

New opportunities for underutilized plant species are:

- to make the producers partners in this initiative (i.e. the promotion and development of underutilized plant species)
- to mainstream underutilized plant species in the farmers-to-farmers approach which the organization is conducting
- to promote the topic to other members of IFAP worldwide
- to strengthen the availability of information on underutilized plant species.

Eric Kueneman, Food and Agriculture Organization of the United Nations

It is important to understand that the Food and Agriculture Organization of the United Nations (FAO) is an inter-governmental technical agency and that its programme of work is determined largely by the priorities of the member governments. Consequently, new activities on the development of underutilized plant species must be integrated into goals and programmes approved by governing bodies. Also, while FAO is fully involved with assisting member governments realize the Global Plan of Action on Plant Genetic Resources for both *conservation* and *sustainable use*, FAO's first priority is addressing food security and poverty alleviation of the rural poor. In this regard, we include, *inter alia*, the promotion of crop diversification. The use of underutilized plant species is among the possible choices for farmers, but we believe that farmers must have access to all possible good options, not just neglected, underutilized crops. Our programme of work is consequently on *alternative crops*, which means considering any new, highpotential crop not used by farmers in a region. FAO can clearly emphasize harnessing the potential of underutilized plant species by appropriate 'mainstreaming' of them in diverse country and regional projects as in the following examples:

- (i) Educational materials and demonstrations on underutilized plant species could be developed for the new school garden initiative of FAO and the World Food Programme (WFP), including the school gardens and farmer field schools of the Special Programme for Food Security, which is now functioning in more than 80 countries. Many colleagues and partner institutions present at this meeting could contribute to such activities.
- (ii) Underutilized plant species options could be elements of the pilot field projects of the new SARD Initiative emerging from the Global Summit on Sustainable Development. This initiative is facilitated by FAO, but is largely designed by members of a coalition of civil society and NGO focal-point organizations. Here FAO might also facilitate multi-stakeholder dialogues at the country level to pilot test promotion of new local alliances to develop new crops coupled to village-level processing and secure market channels.
- (iii) Perhaps some community-based action for enhancing local household food security that includes underutilized plant species could be supported by small TeleFood grants from FAO.

- (iv) FAO's work on the promotion of agro-biodiversity could increase awareness raising at all levels on the harnessing of underutilized plant species as part of the solution.
- (v) FAO's new work on protocol development for smallholder farmer implementation of good agricultural practices could consider underutilized plant species, for example, when looking at guidelines for leafy vegetables.
- (vi) FAO could promote the application of genomic research toward characterization, trait-identification and the use of molecular markers in breeding underutilized plant species.
- (vii) FAO will continue to improve and promote various key information and decision support tools that also address underutilized plant species, such as ECO-CROP and ECO-PORT; other databases such as Hortivar and Pasture Crops may also be useful.
- (viii) FAO will continue to work closely with all partners and engage in guiding and facilitating the work of the GFU to function as a meta information clearinghouse on underutilized plant species.

I met many new colleagues and identified opportunities for possible collaborative actions on underutilized plant species. It became clear to me that most work on underutilized plant species must be done in the local context, but that both bottom-up and top-down knowledge-sharing should be promoted. A new idea occurred to me during the meeting, i.e. the inclusion of education materials and demonstrations on underutilized plant species in school garden and farmer field schools curricula. Also, CBOs seeking to enhance food security could include the use of local, neglected vegetables in programmes for TeleFood support. Lastly, it became clear that plant breeding will often be required for the improved domestication of many underutilized plant species. The decision on which species to focus the limited resources should be analyzed in a series of specialized workshops on crop clusters with common opportunities, for example, a workshop on leafy vegetables, another on grains, another on root crops, another on pasture/range, etc. These workshops should have inputs from experienced breeders, relevant ethno-botanists, molecular geneticists, and specialist plant marketing experts.

Caroline de Kock, Specialty Foods of Africa Pvt. Ltd, Zimbabwe

The role of the private sector in the field of underutilized plant species is:

- product development including the development of technologies and formulae for processing
- marketing and sales of processed products locally and internationally
- awareness creation of underutilized plant species and their benefits to consumers and producers
- transfer of business skills to rural producers where appropriate
- establishment of community level production units for the benefit of producers and the private sector
- ensuring sustainable harvesting of underutilized plant species.

Through the commercialization of underutilized plant species rural producers stand to gain in several ways:

- increased and alternative incomes
- conservation of valuable and traditional underutilized plant species
- conservation of culture associated with underutilized plant species
- food security and sources of income for future generations
- knowledge gained through training in primary or even secondary processing and business skills
- outside recognition of the importance of underutilized plant species and related traditions.

All stakeholders must recognize that underutilized plant species will remain underutilized until, and unless markets are found for them. The private sector has a role to play in identifying and establishing markets for underutilized plant species. However, the lack of private sector representation at the meeting shows that it is either unwilling or unable to become involved in commercializing these species. This is because it is extremely costly to invest in unknown and untested products. There is a huge risk because it is not known how well these products will sell. Product development costs are high and marketing is difficult due to consumers lack of knowledge about the products. If rural producers are to benefit from underutilized plant species commercialization, the capacity of the private sector must be increased and it must be encouraged through incentives associated with specific underutilized plant species. Linkages with NGOs and

donors should be established to encourage the private sector to commercialize underutilized plant species. These incentives should include:

- favourable credit facilities
- sharing of research and development
- technical advice on product development
- funding for the primary processing facilities at rural level.

NGOs, donors and others should stop viewing the private sector with suspicion, as a sector which is there merely to exploit and maximize profits to the detriment of rural producers. Without the private sector there will be little chance of effective and sustainable commercialization of underutilized plant species.

Hubert Omont, Global Forum on Agricultural Research

New insights include:

- complexity of underutilized plant species issues, need to promote partnership among various stakeholder to reach a common understanding of problems, challenges and ways to approach them
- importance of putting the rural poor at the centre of the debate, need to strengthen their organizations
- a requirement to consider the problems and needs of the rural poor at all levels from local to global
- need for the rural poor to become active stakeholders in underutilized plant species
- there is a need to be precise about the exact role of research in the promotion of underutilized plant species although they are seen as under-researched, however, in this workshop this issue did not come up as a weakness or threat.

Jochen de Haas, German Ministry of Economic Co-operation and Development

The role of the German Ministry of Economic Co-operation and Development (BMZ) will be:

- to communicate the workshop experience to the regional departments within BMZ, to EIARD, the EU and other relevant institutions involved in international development.

New insights gained include:

- there is a lot of knowledge on a range of crops/species for food, health, income and biodiversity
- the complexity of the issue is a challenge with which to work
- networking is important to exchange experiences, know-how, tools for production
- there is a need for information exchange between practitioners, researchers and political decision-makers
- with regard to the Millennium Development Goals, there are many ways to go, underutilized plant species can and will play a role in achieving these goals, we need to increase the relevant knowledge/information at the top level, underutilized plant species are one tool for reaching the Millennium Development Goals, but they may be the tool on a regional/national or district level
- we have learnt a lot.

There should be a follow-up meeting with a strong focus on political decision-makers. BMZ funding for the GFU will continue until 2005.

Lyndsey Withers, International Plant Genetic Resources Institute

International Plant Genetic Resources Institute (IPGRI) credentials are:

- 30 years in plant genetic resources (PGR) work; 15 years on neglected and underutilized species (NUS), GFU host
- Germany is a valued partner in NUS work, the partnership is very important in regard to IPGRI's way of working in terms of collaboration, facilitation and capacity building
- IPGRI's partnership network is wide and includes a number of players present or involved in the meeting, i.e. FAO, ICUC, UNEP, UNDP, IFAD, other CGIAR centres
- note IPGRI's convening role for CGIAR SGRP, and representation, for example, at WSSD
- IPGRI's institutional network is wide – over 25 locations.

Roles and responsibilities

- Continue to develop NUS work as planned.
- Take opportunities to use NUS examples in work where there are various options.
- Use contacts and skills to raise awareness of NUS.
- Use genebank linkages to foster *ex situ* and *in situ* links through complementary conservation approaches.
- Use information sharing and information capacity building skills for the benefit of NUS.
- Use experience in taking a multidisciplinary approach to tackle the complexity of NUS work.
- Intend to pursue research interests on food diversity and quality, nutrition, health link – many new partnership options.
- Will take a fusion of the commodity chain and sustainable livelihoods approaches and thereby look after the interests of the custodians of NUS germplasm and of biodiversity at the same time as trying to develop crops commercially.
- Use networking to develop both communities of practice on NUS and bring new partners into the NUS arena (analogy with *Musa* Genomics Consortium).

Lessons/insights/reinforcements of position

- Fortunate to have a donor/policy champion like Germany; this is essential.
- IPGRI will endeavour to work even more closely with the GFU and explore complementarities and collaborative opportunities.
- Should not be afraid of the complexity and specificity of NUS work – that is the challenge that has to be met strategically.
- NUS is an ideal arena for pursuing people-centred 'pro-poor research'.
- Proactivity is needed, for example, towards the private sector
- IPGRI is committed to impact assessment work and development of indicators for monitoring and evaluation of NUS work to help articulate the success of activities and point ways to further improve the approaches taken for optimum impact.

Acronyms

BMZ	Ministry of Economic Co-operation and Development
CBD	Convention on Biological Diversity
CBOs	Community-Based Organization
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Centre for Tropical Agriculture
CIP	International Potato Center
CITES	Convention on International Trade in Endangered Species
CTA	Technical Centre for Agricultural and Rural Co-operation
EIARD	European Initiative for Agricultural Research for Development
FAO	Food and Agriculture Organization of the United Nations
GFAR	Global Forum on Agricultural Research
GFU	Global Facilitation Unit for Underutilized Species
GPA	Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture
GTZ	German Agency for Technical Co-operation
IARC	International Agricultural Research Centre
ICUC	International Centre for Underutilized Crops
IFAD	International Fund for Agricultural Development
IIAP	International Federation of Agricultural Producers
InWEnt	Capacity Building International
IPGRI	International Plant Genetic Resources Institute
IPK	Institute of Plant Genetics and Crop Plant Research
ITPGR	International Treaty on Plant Genetic Resources
IUCN	World Conservation Union
NARS	National Agricultural Research Systems
NGOs	Non-Governmental Organization
PGR	Plant Genetic Resources
SUPS	Sustainable Utilization of Plant Species
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UPS	Underutilized Plant Species
WFP	World Food Programme
WIPO	World Intellectual Property Organization
WWF	WorldWide Fund for Nature

InWEnt – Capacity Building International, Germany

InWEnt – Capacity Building International, Germany – is engaged in organisational development and institutional strengthening. Its shareholders are the German Government, the German Federal States and private sector constituencies.

InWEnt enables people to initiate and shape sustainable development in their nations, economies and civil societies – by high-ranking policy dialogue events, practice-oriented advanced training as well as intercultural learning experiences.

Principal clients include besides the German Government and Federal States, the European Union, multilateral bodies such as the World Bank, the International Monetary Fund, the World Trade Organisation and the United Nations, as well as private foundations and companies.

With offices in more than 35 locations in Germany and abroad, InWEnt's 900 staff members are dedicated to train annually more than 35,000 programme participants worldwide.

InWEnt
Capacity Building International, Germany
Department 5 – Environment, Natural Resources and Food
Division Natural Resources and Biodiversity in Leipzig-Zschortau
Leipziger Strasse 15
04509 Zschortau
Germany

phone: +49 (0) 342 02 – 8457-00
fax: +49 (0) 342 02 – 8457-77
email: zschortau@inwent.org



inWEnt

Internationale Weiterbildung
und Entwicklung gGmbH

Capacity Building
International, Germany

