Promoting the diversity of useful plants and animal breeds through marketing

The example of argan trees in Morocco

Ideally suited for an arid climate, the argan tree is a vital source of shade and provides conditions allowing other vegetation to grow. Photo: GTZ

The argan or ironwood tree (*Argania spinosa*) has grown for more than two million years in Morocco. It grows in no other location in the world than here, in the Arganeraie region on the slopes of the Atlas mountains. The tree's extensive root system allows it to thrive in this hot and arid area while at the same time permitting the little rainwater that falls to percolate into the soil. This makes it possible for cereals and fodder grass to grow in the shade of the argan trees, as well as numerous medicinal and aromatic plants collected by local people. Uses of the tree are highly diverse. The hard wood serves as firewood and building material and for charcoal-making, the leaves and shoots provide animal fodder, while the fruit contains a very hard nut with two to three seeds yielding highly valuable argan oil. The oil contains more than 80 percent unsaturated fatty acids and the Vitamins A and E. Argan oil is used traditionally as edible oil, as a treatment for the skin and hair and for wounds, and to alleviate rheumatism and arteriosclerosis.

Most of the present argan forests have belonged to the state and municipalities for about one hundred years. A use right introduced in 1925, however, gives the local population heritable individual or collective rights to graze the forests, to engage in arable farming, to harvest the fruits and to extract wood, stones and sand.

Argan tree stands have been at risk due to arable farming, land clearance for building purposes and infrastructure, private extraction of firewood and timber for various purposes, and imbalanced use of the trees for fodder. This has weakened the natural regenerative capacity of the dwindling stands, and the flora and fauna have become increasingly impoverished.

Today, some 8000 square kilometres of argan tree stands remain in south-western Morocco, an area about ten times the size of Berlin. Between 4,000 and 25,000 trees grow on one square kilometre. The argan forests play an important role in efforts to combat desertification in Morocco, and GTZ is supporting a nature conservation project to that end.

The roughly two million people living in the Arganeraie region are the direct and indirect beneficiaries of the trees.

Argan oil value chains

It is important to distinguish between two value chains on the basis of major differences in the type of oil extraction involved. One is the manual pressing chain, the other the mechanical pressing chain. The manual process, which yields less product, is used in rural areas where the nuts are collected, while the machine-aided process is used in urban areas.

Hand-pressed argan oil

Traditionally, the fruit of the argan tree is collected, dried and stored by families holding use rights. Some families collect up to six tons per season, others just a few hundred kilograms.

The first processing step is to remove the soft pulp, and then to crack the nut in such a way that the seeds (kernels) it contains suffer as little damage as possible. This is important in order to achieve a better price on the market. To improve the aroma, the kernels are then gently roasted and finally ground in a stone rotary quern. The resulting oily paste is constantly kneaded and lukewarm water added in order to drive out the oil. The remaining fruit pulp and oilcake are valued as high-grade livestock fodder; the nutshells are used as firing material to roast the kernels. The raw oil is filtered and filled into bottles. Some of this is used by the families themselves, but most of it is

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sold on local markets or directly to urban consumers and small traders at prices between three and eight euros per litre. The small traders, in turn, market the product as edible or cosmetic oil or themselves process it to make natural medicines. Urban customers as well as tourists are key customers of the traders, paying 50 € and more per litre of oil.

The manual production of argan oil is almost exclusively women's work. Production is organised either within a family or in cooperatives with 50 to 60 women. Such co-operatives were founded for the first time in the mid-1990s with GTZ support. Since then, most of the women's cooperatives have amalgamated to form associations such as the Union of Women's Cooperatives of the Arganeraie (UCFA: *Union des Coopératives des Femmes de l'Arganeraie*) which organise marketing. In contrast to the individual cooperatives, UCFA, with its modern filtering and filling facilities, is able to supply oil of higher quality that is standardised and packaged ready for the market, and can safeguard regular analyses and quality checks of larger batches. UCFA supplies national retail chains as well as individual traders, and is also an important exporter. Its local brand Tissaliwine fetches a price of about 20 € per litre, from which the individual cooperatives receive twelve euros immediately; moreover, they receive a share of the profits that are distributed at the end of the year. Since 2004 UCFA has had a German marketing company operating as its distribution partner for Europe. The hand-pressed oil is sold in Europe as an anti-cholesteremic product to health-conscious consumers, gourmets and upmarket restaurants with the "organic" label or with claims such as "functional" or "slow food".

Mechanically-pressed argan oil

Mechanised argan oil production began about ten years ago. Today there are already at least 16 private oil mills, which take over a large proportion of the time-consuming manual labour with their peeling systems, roasting units and mechanised presses. With support from abroad, operations in ten women's cooperatives have also been semi-mechanised. Young women and men with professional training work in the oil mills. The private mills and the semi-mechanised cooperatives are not located in the actual production areas, but in urban areas and on the main tourism routes – close to the consumers.

The private mills and the semi-mechanised cooperatives have led to the emergence of two new markets: one for kernels to supply the mills, and a further for dried fruit to supply the semi-mechanised cooperatives. The rural families continue to perform the gathering, drying and storage of fruit, and, in the case of the kernel market, the cracking of the nuts. The latter is performed by specialised co-

Like manual processing, which is done almost exclusively by women, pressing by machine offers employment for women. Photo: GTZ

operatives (*Coopératives de Concassage*) which have formed since 2004 all over the Arganeraie region upon the initiative of Ibn-Al-Bheitar, a non-governmental organisation, the aim being to retain as many processing stages as possible – and the associated income – in the rural regions.

The mechanical production process extracts edible oil from roasted kernels, and oil for cosmetics and food supplements from unroasted kernels. Mechanical pressing yields greater quantities of oil and the oil keeps better. This makes it easier to export it as edible oil. Monitoring nut quality is more difficult than in the manual production process, as origins are more difficult to trace. Mechanically-produced oil is basically cheaper than its hand-pressed counterpart.

In addition to edible oil, the large private mills also produce cosmetic products and natural remedies. It is estimated that the private entrepreneurs market twice as much oil, via the formal Moroccan market, as the co-operatives; they supply large retail and hotel chains, individual dealers, duty-free shops and airlines. Both the private oil mills and the cooperatives make an important contribution to generating employment and income.

Measures to promote production and marketing

National and international research institutes have been studying the argan tree since the 1970s: Its physiology and production biology are now known, as are the composition and properties of the oil. The research findings, however, have mainly served scientific purposes alone and have led to national researchers patenting constituent substances. The population has benefited little from the findings.

There are 2-3 kernels inside the hard shell of the argan nut which contain valuable oil. Much effort is required to extract this oil.
Photos: GTZ

Since the early 1990s, various international donors such as GTZ or the EU, as well as NGOs such as the Mohammed V Foundation and Oxfam, have been promoting the production and marketing of argan oil – so, too, has the Moroccan government.

The *Projet de Conservation et de Développement de l'Arganeraie* (PCDA), carried out by GTZ from 1995 to 2002, developed a framework plan for recognition of the region as a UNESCO Biosphere Reserve, which was granted in 1998. The implementation plan supported the production of hand-pressed argan oil because of the reduction of environmental and resource pressures that this entails. The establishment of village development associations involving both men and women was supported, as was the formation of women's cooperatives. The latter received further support from an EU project, from the Mohammed V Foundation and from various non-governmental organisations and state bodies.

Three types of women's cooperatives have emerged:

- Cooperatives located in the main collection areas; these produce hand-pressed argan oil themselves from the material harvested by their members.
- 'Semi-mechanised cooperatives' in the wider urban setting; these produce mechanically-pressed argan oil, procuring the fruit or kernels both from their members and from peeling cooperatives (*Coopératives de Concassage*).
- Peeling cooperatives; these are women's cooperatives in the main collection areas which remove the pulp from the nuts supplied by their members, crack the nuts and supply the kernels extracted from the nuts to the semi-mechanised cooperatives.

The members of the these various cooperatives have received literacy courses, organisational and business management training, and practically oriented courses on technical topics such as the planting and management of trees, low-impact harvesting, product quality, quality and hygiene standards, and workflow organisation. It has been critical to the success of these training activities that the courses fitted into the women's daily schedule and were carried out by local female trainers. The hand-pressing women's cooperatives received containers, sacks and small materials on a grant basis, while the semi-mechanised cooperatives received peeling and roasting machines, presses, filters and filling equipment.

Five years after UCFA – the first amalgamation of cooperatives – was established, the National Association of Women's Cooperatives in the Arganeraie (ANCA: *Association Nationale des Coopératives d'Arganeraie*) was launched as an umbrella association in 2004. ANCA represents the interests of its member cooperatives at national level. Not all cooperatives have yet joined, however.

In addition to supporting the cooperatives, the projects have also provided assistance to the state bodies concerned with argan oil production, national marketing and export. These bodies were advised on the elaboration of a product standard for argan oil, on the formulation of laws concerning protected designations of geographical origin, and on organic production standards (EC Organic Farming Ordinance).

Results achieved by the measures

The framework plan for establishment of the Arganeraie Biosphere Reserve led to the designation of state argan tree stands in a process involving the local population. Both state-run and private tree nurseries now offer a considerably larger volume of argan seedlings, which indicates increased demand for young trees and more extensive new plantings.

The number of women's cooperatives concerned with argan oil production and the number of their members is rising steadily. At present some 70 cooperatives are recognised; in addition to UCFA, three further associations of cooperatives have formed. These associations have gained political influence and are involved in the process of developing product standards for protected designations of origin.

The quantity of oil produced has risen considerably. While in 2002 the 13 cooperatives organised within UCFA produced 500 litres per month, that figure had already risen to 3000 three years later. More than 90 percent of this oil is exported to Europe under the terms of a company partnership. Within Morocco, the cooperatives can market their edible oil at 20 to 40 euros per litre,

Argan oil can be used in many different ways: as a cooking or cosmetic oil, as a dietary supplement or as a medicine. Photo: GTZ

while oil from the private mills fetches a lower price, as it is less sought after than the hand-pressed variety. The increased market value has led to higher returns, thus improving the income of cooperatives and their members.

At household level, argan oil production secures a workflow that is distributed evenly throughout the year and assures a regular income. It is estimated that rural households in the remote collection areas derive up to 60 percent of their income from argan oil production. For women, this is often the only source of income. When the kernels are pressed by hand and the oil is marketed by the women themselves, they retain a larger proportion of the value created. As this proportion remains in rural areas, it makes an important contribution to reducing poverty. A further result of the increased economic interest in argan trees is that fewer trees are felled or, where this happens, new trees are planted to replace them.

While this integration into the market clearly has many benefits, its further intensification presents a risk that the cultural development services rendered by traditional producers of argan oil will not be rewarded sufficiently. Products based on argan oil are increasingly being traded as innovations by individual marketers, who seek to protect them under patent law and charge licence fees. The local population has no share in the benefits thus gained. This does not meet the standards of international agreements such as the Convention on Biological Diversity (CBD) or the International Treaty on Plant Genetic Resources for Food and Agriculture adopted in 2001. Both treaties call for a fair and equitable sharing of the benefits arising from the use of genetic resources. Practical implementation of these agreements has been insufficient until now, as illustrated once again by this example. It will be important in future to take care that benefits are shared equitably among all stakeholders (*see also the issue paper on the "International Treaty on Plant Genetic Resources for Food and Agriculture", GTZ 2004*).

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- stimulate an interest in the conservation and sustainable use of biological diversity,
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We look forward to your suggestions and experiences so as to enable us to improve this series.

Further information:

Charrouf, Zoubida (2001): Valorisation de l'arganier: Résultats et perspectives. In: 5e colloque, Produits naturels d'origine végétale, Québec 5-9 Août 2001 (www.argan-oil.de/PDF/actes_de_Qu_bec_2001.pdf).

GTZ and **GFU** (2006): Value Chains for the Conservation of Biological Diversity for Food and Agriculture. Potatoes in the Andes, Ethiopian Coffee, Argan Oil from Morocco and Grasscutters in West Africa.

Nouaim, Rachida (2005): L'Arganier au Maroc – entre Mythes et Réalités – une civilisation née d'un arbre, L'Harmattan 2005. (http://www.harmattan.fr/index.asp?navig=catalogue&obj=livre&no=19528).

http://www.secheresse.info/article.php3?id_article=228.

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