

## Country Profile

Burkina Faso is a continental country situated in the middle of West Africa between the latitudes 9°20" and 15°05" North. Its neighboring countries are Mali, Niger, Benin, Togo, Ivory Coast and Ghana. Because of this geographical position, its climate is dry and tropical, characterized by two alternating seasons: the rainy season (May to October) and the longer Dry season (November to April). The economy of the country is based essentially on agriculture, especially on fruit products and market gardening.

### General Information on Burkina Faso:

Capital	Ouagadougou	Time Zone	GMT-2h00
Population	12,603,185	ISO Code	BF
Area	274,200 sq km	Dialing Code	+226
Languages	French (official), native African languages belonging to Sudanic family spoken by 90% of the population	Continent	Africa
Currency	Communaute Financiere Africaine franc (XOF)	Internet Domain	.bf
Major towns	-	GDP	\$12.8 billion
Exports	cotton, animal products, gold	Export partners	Venezuela 14.7%, Benelux 12.2%, Italy 9.6%, France 7.0% (2000)
Imports	capital goods, food products, petroleum	Import partners	Cote d'Ivoire 25.1%, Venezuela 23.4%, France 17.0% (2000)

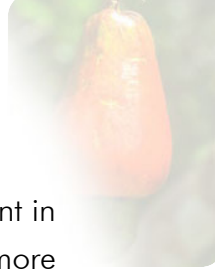
### Cashew Industry at Burkina Faso

Cashew has been cultivated since many decades, but it's only in **1981** that the Government initiated a development plan for cashew nut. The objectives pursued are protection of the environment, diversification of fruit products and revenue sources of the rural world. The most important outcomes of this plan from 1981 to 1989 are:

- ❖ Utilization of more than **1500 hectares** industrial plantations;
- ❖ Encouragement for nearly **400 hectares** of individual plantations per year
- ❖ **Introduction of shelling of nuts** with pincers in the cottage industry at the production sites
- ❖ **Training for roasting the kernels** at the cottage industry level
- ❖ **Collection and commercialization** of existing productions (1250-2000 tons/year)

However the plan did not imply or prepare any appropriate structures regarding the taking up of the day-to-day work after the project. Thus, the competence transfers could not be done according to the workflow. In spite of these inadequacies, the extension services of the agricultural ministry continue to encourage this crop **by spreading awareness** and **distributing seeds**, although without providing the farmers with a suitable **counseling support**. Today, cashew production has become a very common practice, because it brings back substantial revenue to the farmers.





In the new strategies of long-term agriculture of Burkina Faso, cashew has been taken into account in the **Oleaginous Action Plan**, one of whose objectives is to make the outsourcing of its sale more professional.

## Uses of cashew products

### Composition

The average phytochemical composition of the fruit is shown in table I. This composition varies according to the variety and its ecological evolution.

**Table I: average physico-chemical composition**

Different parts	Proportion in fruit's weight	Composition (% of the weight of the part)
Cashew apple	90%	-Carbohydrate: 7 to 13, -Protein: 0.7 to 0.9, -Lipid: 0.1, -Mineral salts: 0.2, -Vitamin C: 9 times more than in orange, -Other vitamins (B1, B2, PP etc.)
Kernel	20 to 25 %	-Lipid: 45 to 48, -Protein: 19.4 to 21, -Carbohydrate: 26, -water: 5.5, -mineral salts: 2.5, - vitamins: A-B1-B2 -B6- PP- E, D

Cashew products have many different uses: as foodstuffs, in the industry, for making ornaments, medicines. They have social uses too. The examples given below do not cover all the uses:

## 1 Nutritive and medicinal use

### The cashew apple

The cashew apple or the accessory fruit is composed of a fleshy, aromatic, sweet mass. It has the following uses:

- ❖ Enrichment of food items: It is rich in carbohydrates and proteins and contains easily digestible ascorbic acid
- ❖ Manufacture of vinegar and alcoholic drinks (from 4 to 5 degree wine)
- ❖ Manufacture of jam with the pulp
- ❖ Manufacture of cattle feed with the dried cashew apple

### The cashew kernel:

It has a low-grade content of unsaturated fat. The main uses are:

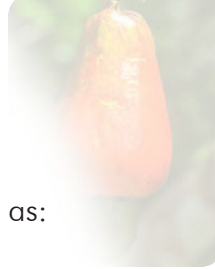
- ❖ Use for "fun eating": roasted nuts, salted or not, is the most common form of use
- ❖ Manufacture of oil or Cashew Nut Kernel Oil (CNKO) for human or animal consumption. This oil has great biological value and is comparable to olive or soya oil.
- ❖ Possibility of manufacture of cashew butter
- ❖ Various medicinal uses

## 2 Industrial uses:

### -The mesocarp (pulp)

One can extract the Cashew Nut Shell Liquid (CNSL). This extracted oil is thick, viscous and rich in





phenol matters. After polymerization, it allows various industrial and cottage industrial uses such as:

- ❖ Varnish
- ❖ Metal protectors
- ❖ Electrical insulating
- ❖ Brake fittings
- ❖ Pesticides
- ❖ Emulsion remover
- ❖ Solvents

#### ❖ **The bark**

It contains tannin (4 to 9 %). It allows:

Tanning, Preparation of indelible ink, manufacture of solders for welding thanks to its cashew nut shell liquid and anacardic acid content.

#### ❖ **The wood**

The dry wood of the cashew nut tree can be used in the manufacture of packing cases.

#### ❖ **The gum**

It has properties that can be used in the preparation of adhesives.

### 3 Social uses

The tree makes a dark shadow for a rest. The potassium content of its ashes can be used for enrichment of the soil.

All this potentials of cashew products allow the cashew producing countries in the South to provide the industrialized countries with semi finished products of high commercial value in order to contribute to their fight against poverty.

### Different parts of a cashew nut tree

The cashew nut tree (*Anacardium occidentale*) of the annacardiaceae family seems to have its origin in Brazil. It is an arborescent plant with laterally spread strong roots. At a mature age, its height reaches 10 to 15 meters, depending on the type of soil. The diameter of its trunk varies between 8 and 25 cm. The big (2 to 7 cm), thick leaves contribute to its adaptability in unfavorable rainy conditions.

#### a) **Ecology of the plant**

Widely different types of soil and climatic conditions are favorable for the cultivation of cashew. It can grow on acidic soils to low-grade soils. It accepts refill crops, which allows a reduction of maintenance costs. Well-drained, loose, deep soil is suitable for the plant. From chemical point of view, soils that are rich in calcium and have low potassium content are desirable.

Cashew nut plants grow between 0 and 100 meters altitude, under an annual rainfall of 500 to 1800



mm over 4 to 8 months. It needs, for the carpophore, a sun scalp on its crown, quite a long dry season (4 to 6 months) and a low humidity in the air (less than 80%). This is why, of all the operations to be undertaken, the thinning and the sizing of the branches are the most important ones. The tropical semiarid climate suits it best. Fruit production begins after 3 to 5 years starting from the date of sowing of the crop and goes on till the age of 30 to 40 years. The productivity varies in condition from 500 to 900 kg cashew kernel/hectare.

### b) The production technology

In Burkina Faso, the density is 100 plants/hectare. However, the production not being supervised, one can find gaps of 5 m x 10 m in a density of 150 plants/hectare. In some countries, where the conditions are more favorable, this density is brought well up to 92 plants /hectare. Cashew cultivation is done by direct sowing of the seed at the rate of two seeds per bunch. In order to accelerate the germination, the seeds are soaked for 24 hours just before sowing. One can find the practice of plantation too, but after a bad raining, the death rate of plants can reach up to 40 to 50%. The beds for planting are 60 cm deep with a 50 cm diameter. In unsupervised areas, the depth varies between 35 and 40 cm and from 25 to 40 cm on the width. The fertilizer used in this operation is 100 kg NPK/ hectare or 200 kg organic matter per hectare. In the countryside, farmers rarely get fertilizers. Crop rotation is the most common practice. In the countryside plantations, thinning is not done very regularly and this reduces the productivity of the plants. The maintenance cost is in the range of 20,000 CFA franc/ hectare in countryside plantations and nearly 35,000 CFA franc on the industrial sites. The plantation can be exposed to bushfire because of bad or no cleaning up activities.

From the phytosanitary angle, the recorded deaths of mature plants are probably caused by eelworms.

### c) Advantages and limitations

The producing region covers the south and the south west of the country (see map 1). Peasants, with a growing profit sharing of women and young people, constitute the main workforce. Similarly, the salaried workers acknowledge a renewed interest for the cashew production.

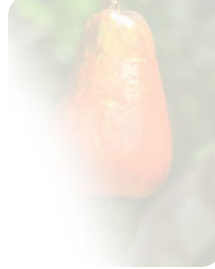
Without the follow up statistics, it is difficult to give an estimation of the area of production, which is growing exponentially each year. Cashew farmers form groups in the villages. Preference for cultivating cashew is growing because, preservation of cashew kernels is easier than that of mangoes.

Cashew planting has become a habit of the population, but without a technical support for appropriate methods of cultivation.

The constraints of quality production are:

- ❖ Absence of a counseling support for the planters (staking out, techniques for planting or sowing, choice of good seeds, maintenance, picking and drying. These functions determine the quality of the nuts.)
- ❖ Difficulties for women and young people to get good access to financing for the basic investment (land clearing, fertilizing, getting quality seeds, materials for making beds).





## Conversion of cashew products

Cashew is produced essentially for marketing raw kernels, on an informal market. However, the roasted nuts have acquired a renewed interest as its local consumption is gradually growing. Cottage industry workshops have been established for shelling in the producing region.

The major constraints in the conversion of cashew are characterized by a lack of appropriate equipments and also of a technical know-how. So it is necessary to introduce a technical know-how in order to improve not only the product's market value but also the population's standard of living.

## Collection and marketing of cashew products

At present, only the cashew kernel is in use. The farmers collect the kernels, long time after their fall, when they have time after the usual day's work. This affects the quality and the loss of harvest goes up as the wild and the domestic animals eat up these nuts. The collected nuts are more or less dried before being stocked till some occasional tradesmen come for its purchase. The women intervene more and more in the operations of collection and marketing preparation for the nuts. This is an important source of revenue for them.

Burkina Faso exports nuts to Ivory Coast, Togo, Ghana and France. For the lack of infrastructures for collection and marketing, the purchasers come down from the neighboring countries because the producing region is close to the border. This is why most of the production escapes the statistics maintained by the customs.

The purchase price of the nuts (from the farmers) was 1250 CFA francs per kg in 1989. This price varies today from 2250 to 3500 CFA francs per tin (20 litres), in 2 or 3 yearly changes. At the same time the shelled and roasted nuts cost 2500 to 3000 CFA francs, sometimes even 4000 CFA francs per kg, at the times of shortage. In spite of this very low purchase price, some farmers draw revenues from 250000 to 300000 CFA francs per year.

Fortunately, a group of supervisors are employed in the fields of collection, conversion and marketing. The constraints of these supervisors are in the organization of the collection network, inadequacy of working capital and especially in the lack of knowledge about the export market. The lack of appropriate equipments for conversion adds to these constraints.

The standard of quality used is that of the purchasing countries, notably the European clients. The analyses are normally conducted in their preferred laboratories. The parameters to be considered are:

- ❖ The weight number of the seeds
- ❖ The percentage of mildewed, rotten and immature products

The state of things shows that it is imperative to structure the collection and the marketing of cashew products and to make the personnel professional. On the account of globalisation of barter transactions,





it is necessary to develop the conversion, to introduce in the market various quality products of high market value.

The personnel should be trained for the primary notions of quality assurance (harvest, drying, sorting, grading, conditioning, and mechanised shelling).

### **Potential of the support structures for the personnel**

The practice of outsourcing necessitates that the multidisciplinary groups are formed out of different existing support services. The main support services are:

#### **❖ The Institute Research in Applied Sciences and Technology (IRSAT):**

This institute will ensure, through the Departments of Mechanization (DM) and Food Technology (DTA), studies and transfer of a technical know-how regarding equipments and procedures of conversion. It should be noted that the ONUDI, with the help of the ministry of commerce, has recently made available a laboratory for quality control, to the operators of agro-business conversion, in the production region. This laboratory would be able to conduct a certain number of analyses for export.

#### **❖ The National Centre of Forest Seeds**

This centre will make available appropriate seeds, the technical plugs necessary for the production techniques. It will contribute in the improvement of variety and productivity of the seeds.

#### **❖ The Institute of Environment and Agricultural Researches (INERA)**

It can intervene in the system of crops associated with cashew cultivation.

#### **❖ The Regional Managements for Agriculture:**

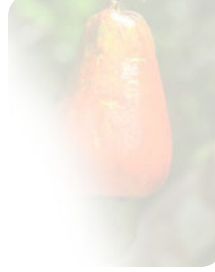
Their mission is to provide support for spreading awareness, organizing farmers, in the transfer of production techniques and launching activities.

#### **❖ The National office of External Market**

Its contribution will be in the promotion of export.

In conclusion, it appears that, in spite of the existing potentials, the **production chain is neither stable, nor organized**. It is characterized by a **lack of professionalism** of the personnel. However, the products and the by products of cashew abound in commercial potentials for contributing in improving the standard of living of the most vulnerable social class.

Keeping in view the above constraints and in order to promote cashew and its products the practice of outsourcing seems appropriate. This includes cultivation, harvest, collection, post harvest treatments, conversion and marketing. In these different operations, emphasis should lie on the transfer of technical know-how, appropriate equipments, working capitals and the aftermath of the evolution of the international market. However, the importance given to these operations depends on the ground



reality of each country.

The objective of the future interventions should be assistance to the personnel for a long lasting promotion of the production chain. The general strategy of intervention should function around the philosophy of participation and contract employment of the staff.

The organisational structuring, at the national level, should reach the top from bottom, in order to favour a better application of direct employees. The indirect employees (support service providers, money lenders) should have the mission of temporary assistance.

The groups of action (3 to 5 countries) could be brought together in order to accelerate transfer of competencies in technical know-how and equipments and to reduce moonlighting.

The research activity should accompany on one hand, the transfer of competencies in technical know-how and equipments, and on the other conduct a progressive research on the diseases and the variety selection.

Nevertheless, at the inter regional, continental level, practice of exchange and concert should be found to develop knowledge circulation, market follow up and defending commercial interests of the personnel. Communication should evolve between the partner countries.

### **Evolution and backgrounds of local conversion**

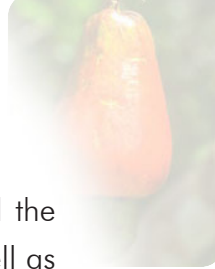
There is no data, neither studies nor surveys to demonstrate the standard of local production of derived products and its evolution over the last ten years. It can, however, be stated that there has been a positive evolution for some kinds of products, whereas, for the rest, because of the technological level, there has not been any significant progress.

The country has major potentials in the field of conversion of cashew. After the armed conflict of 1998, followed by the instability of international prices of cashew nuts, many entrepreneurs are showing a growing interest in the field of conversion.

The nut conversion has undergone an interesting evolution. Till 1994, there was no unit for cashew nut conversion in the country in spite of the fact that in the eighties, the entrepreneur MANDINGA implanted a modern industrial unit in the country. This unit never functioned thanks to its advanced technology that was imported from Italy. The failure of this first unit worked as a discouraging agent for all those who had thought about creating conversion units.

In 1994, the project TIPS/USAID imported from Brazil some technologies for semi-industrial and cottage industrial uses. This project, with the encouragement from the small entrepreneurs' positive reaction towards the new technology, stimulated the local production of some equipment and other promotional activities in this direction. In the framework of this promotional spree, and in order to add





more momentum to the divulgence and transfer of these technologies, the TIPS/USAID created the Training Centre of Quinhamel. This center gives training courses for management dealings as well as for the production of equipments (stoves, tables, trays). Till today, this center has already trained, since 1997, hundreds of nationals as well as people from the neighboring countries like Senegal, Guinea/Conakry and Gambia. In general, these people are interested in opening their own conversion units.

Training and technology transfer is not a fixed procedure. The center has sent some of its team members to neighboring countries for giving training courses. In 2001, for example, in south Senegal, at Ziguinchor, training courses have been given to a very high number of people.

The results of this technology transfer are: future perspectives of an increase in production through conversion, employment, growth of the country's revenue and an improvement of standard of living of the target populations.

At this rhythm, a reasonable increase in number of units can be envisaged. At present, there are barely 18 small conversion units, having an average capacity of production of 1.82 kg per day. Nonetheless, installation of many other conversion units should take place this year.

This motivation for creation of new units is essentially due to the price fall of cashew nuts on the international market. The guarantee of investments will come mainly from big tradesmen and exporters. This means, the units that are supposed to be implanted would be of bigger dimensions compared to the existing units. One example is the unit installed by the Construções Limitada at Bissau.

*The End*

