



POSSIBILITIES OF ESTABLISHING EXPORT INDUSTRIES IN THE ASSOCIATED AFRICAN AND MALAGASY STATES

CANNED AND OTHER TROPICAL FRUIT PRODUCTS

- *dates*
- *bananas*
- *citrus fruit and essential oils*
- *pineapples and canned pineapples in syrup*
- *cashew-nuts*
- *edible groundnuts*
- *other tropical fruit*

SUMMARY REPORT

FOREWORD

The aim of industrialisation has, in the course of time and through the development of the Association, not ceased to assume an increasing importance. The Yaoundé Convention II (1.1.1974 - 31.1.1975) considers the industrialisation of the Association of African States and Malagasy (AASM) to be one of the priority objectives of the Association, for the purpose of which a wide range of instruments for financial, technical and commercial cooperation has been made available.

As regards studies, the Commission of the European Communities had already taken the step as early as 1965 of having the possibilities explored of setting up in the AASM industries of a regional nature intended to substitute local production for imports of products for consumption and supply (1). It had been stressed from that time on that this was only one of the possible ways of industrialising the AASM and that this approach would be further completed by an analysis of the possibilities offered through exporting.

To prepare this new research work and by reason of the large number of theoretically eligible industrial activities, a pre-selection study (2) has been made with a view to eliminating from the field of research those manufacturing activities in respect of which the AASM do not enjoy any particular comparative advantage, and to giving consideration, by placing them in some sort of hierarchy, to the export industries which are at first sight regarded as viable.

A programme of studies on the possibilities for setting up a certain number of exporting manufacturing industries in the AASM has been carried out on this basis.

An initial sectorial study has been devoted to the possibilities for setting up exporting textile industries (3), assessing the possible outlets in Europe for a certain number of selected textile products and generally analysing production conditions in a certain number of AASM countries.

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- (1) "Possibilités d'industrialisation des EAMA" ("Possibilities for industrialisation of the AASM"); one summary volume and 16 volumes of reports and appendices - December 1966
 - (2) "Pré-sélection des industries d'exportation susceptibles d'être implantées dans les EAMA" ("Pre-selection of exporting industries which could be set up in the AASM"); 1 report volume and 3 volumes of appendices - July 1971
 - (3) "L'industrialisation textile d'exportation des EAMA" ("The export textile industrialisation of the AASM"); parts I and II, 2 volumes and one summary report, October 1972; part III, 2 volumes, March 1973.

The other sectorial studies relate to the following products or homogenous groups of products :

- Livestock products
 - . meat
 - . hides and skins, leather
 - . footwear
 - . articles of leather
- Electrical and electronic equipment
 - . electro-mechanical equipment
 - . electronic equipment
- Processing of wood and manufacture of articles of wood
 - . first stage of processing (sawing, peeling, slicing)
 - . second stage of processing (profiles, mouldings, plywood, panels)
 - . finished products (for building purposes and furniture)
- Iron and steel products
 - . pelletization of iron ore and electric steel making
 - . ferro-alloys (ferro-silicon, ferro-manganese and ferro-nickel)
- Preparation and or preserves of tropical fruits
(dates, bananas, citrus fruits and essential oils, pineapples and preserves in syrup, cashew nuts, groundnuts for direct consumption and various exotic fruits)
- Manufacture of cigars and cigarillos.

The same method was used for all these studies. It involved analysing both the possible markets for AASM manufactures in the industrialized countries (the Community in particular) and the specific conditions of production for the product or products in the AASM States best placed to produce and export them.

All the studies were carried out by independent experts. The Commission defined the aims of the studies and kept a constant check on progress but, since the experts acted quite independently, what they reported reflects their own finding only and the conclusions to be drawn from them.

The study on tropical fruit preserves and preparations was carried out by Monsieur DELANOE, Ingenieur-Agronome (agrinomic engineer), responsible for studies, under the direction of Monsieur FASSINOTTI, Director of the Department of Industrial Economics with SETEF (Paris).

SETEF thanks the Institut Français de Recherches Fruitières Outre-Mer (IFAC) in Paris for its close cooperation. Apart from the documentation centre placed at its disposal, the SETEF expert was able to work with specialists from IFAC both in Paris and during his mission in the AASM.

SETEF also thanks the Institut de Recherches pour les Huiles et Oléagineux (IRHO) in Paris, whose assistance was called upon for the study on "Edible groundnuts".

The study on the valorisation of tropical fruit covers a description of the supply of fruit production in the AASM. Now, it appeared that industrial development based on this supply would only be exceptionally possible ; it then became necessary to envisage, parallel with the establishment of an industry, the setting up of fruit plantations intended to provide supplies for processing. On account of this it was worth indicating, within the framework of this study and wherever informations was available, the future possibilities for the development of fruit crops.

These possibilities depend on the ecological suitability of the various possible sites of a country, and, particularly when it is a question of creating an industry, on the economic (energy availability, transport facilities...) and human (particularly labour-force availability) suitability of that country. An indepth knowledge of such conditions naturally called for agronomic, soil and climatic studies, as well as the "familiarity with the terrain", which emerged from the framework of this report.

As a result the experts have had to limit themselves to simply referring to such works, where undertaken for certain countries and certain fruit, and were unable to complete it for all the countries and fruits.

The experts' reports (which are only available in French) and the final reports (which are available in German, English, Italian and Dutch) can be obtained free of charge from the following address :

Commission of the European Communities
VIII/B/1
200, rue de la Loi
1040 Bruxelles (Belgique)

CANNED AND OTHER TROPICAL FRUIT PRODUCTS

This study covers a certain number of tropical fruits whose industrial prospects - from the simplest preparation to canned products manufacture as the case may be - have been analysed as fully as possible, particularly on the basis of the current or foreseeable short-term production situation (volume, qualities and other characteristics).

The fruits in question are as follows :

- dates
- bananas
- citrus fruit and essential oils
- pineapples
- cashews
- edible groundnuts
- other tropical fruit.

A. DATES

Apart from preparation and packaging dates do not, strictly speaking, give rise to true industrial operations. This fruit does, however, offer a real potential interest for certain of the least favoured Associated States, both from the point of view of food for the population and the relatively high income which may be derived from cultivating it.

World production of dates - some 1.9 million tons - is basically concentrated in fewer than ten or so developing countries of the Middle East and North Africa. Exports do not amount to more than 20 % of production and over 80 % of these exports are effected by Iraq. The countries of destination are similarly, by and large, developing countries in Asia and the Middle East.

Consumption of dates in industrialised countries is affected by the results of changes in eating habits, i.e. it comes up against competition in the form of fresh fruit consumption. Dates are, moreover, an energy food. These foods are subject to a certain disfavour for dietetic reasons. In the producer countries, on the other hand, this fruit constitutes one of the staple food items. However the inhabitants of "Phoenician" regions are consuming less dates than hitherto, partly because of the improvement in their purchasing power and partly on account of the organisation of the grain trade, which has developed consumption of wheat. Overall, an expansion in international bulk trade may be reckoned on by reason of the growing food requirements of importing developing countries.

In the AASM the growing of date palms is basically limited to the countries on the southern edge of the Sahara, namely Mauritania, Niger and Chad, whose total production amounts to 43 000 tons, or nearly 2 % of world production.

However, production possibilities are higher and, according to estimates made, stand at over 70 000 tons for these three countries. In fact, taken together, these countries offer favourable climatic conditions : water is relatively plentiful and easily utilised. The productivity of date palms under normal conditions is high and certain varieties of dates are of a quality similar to the common varieties of North Africa.

These positive aspects should not allow one to forget the precariousness of the present situation, which does present a certain number of unfavourable characteristics, for some of which at least a remedy must be found, before an extension of palm groves can be envisaged. Above all there is a poor or non-existent knowledge of cultivation techniques (excessively dense plantation, low percentage of productive trees, great heterogeneity due to unsuitable methods of propagation). To improve the yield of existing palm-groves it would therefore be a case very soon of :

- renovating existing plantations through thinning out, retaining only those palms yielding plentiful good quality crops (a programme which has been carried out since 1965 by Mauritania, but which should apparently be intensified) ;
- giving the trees the right care for their growth.

The extension of palm groves should be carried out with the help of advisors by :

- regular plantations with spacing suitable for individual palms ;
- generalised artificial pollination practices with a sufficient number of male palms ;
- regular pruning (removal of dry palms, uprooting superfluous shoots, etc.).

These activities for the extension, and even the renovation, of the palm groves will be difficult to carry out on quite a few counts because of the problem of labour-force availability, due to various reasons (low wages in Mauritania, depopulation of the "Phoenician" regions of Djado-Kaouar in Niger, inadequate land system in Chad). A sufficient labour-force will thus only be found if the peasants are assured of a higher income. The cultivation of dates offers a valorisation forty times greater than that of sorghum (millet) and thus enables a wage-earning agricultural labour-force to be employed. Apart from this, date palms allow other fruit-tree or grain crops to be grown jointly with them, and in this way the soil is utilised rationally, with increased returns for the people.

This requirement necessitates not only the improvement of methods of cultivation but also that of methods of packaging and presentation, which would enable the dates to be sold outside the producing region, both throughout the national territory and for export. Here too it is a case of introducing the peasants to several simple processing operations for fresh fruit (grading, drying, insect removal) so that it can undergo transportation for a certain length of time in good condition.

Already the growth in production due to the renovation of palm groves alone should enable the requirements of local people to be met, imports to be reduced, and export movements (to Nigeria, Senegal and Guinea) to be maintained and developed. It is difficult to envisage exports to Europe bearing in mind that this is a limited market, calling for very high quality fruit, the medium-term consumption prospects of which are hardly favourable.

With regard to the processed date products, the investment to be carried out (on the production, commercialisation and marketing level) are out of proportion to the quantities which the AASM are likely to market, all the more so since these products seem more adapted to national, rather than European, markets.

B. BANANAS

The world banana market is characterised by an expanding supply of fresh fruit but static demand.

In this context, the price offered to the producer leaves marginal plantations scarcely any opportunities and the search for an optimum production cost structure becomes imperative, particularly in the case of the AASM, the reconversion of which was carried out with some delay after the banana crisis. At the present time this is still reflected in a high agricultural cost price, with the possible exception of Somaliland.

From the point of view of industrialisation, this agricultural situation, bearing in mind the fact that the demand for processed banana products is low, variable and only involves a few industrialised countries, precludes the establishment of a large banana industry being envisaged.

The establishment of an export-orientated banana processing industry should be envisaged as follows :

Basically, the valorisation of ripened bananas. The products obtained from green bananas in fact represent above all a source of starch. There is practically no market for these products and they cannot compete with grain-based products.

Moreover, the processing of ripened bananas would appear to be possible in Africa, inasmuch as ripening, which is often a problem in a tropical environment, is now controlled through the use of a new product - ethrel - which should obviate the necessity for large industrial ripening centres.

The establishment of small industrial units (workshops) for reasons relating to both the restricted size of the markets for the processed product and the limited volume and irregularity of supplies. It should be stressed that following the banana crisis the efforts made to rationalise the packing of the fresh fruit improved the conditions of supply for potential processing units. Thus sorting premises are no longer scattered over each plantation but on the contrary are concentrated in supply centres.

The most advantageous processing appears to be the manufacture of stabilised pulp. This manufacture requires neither very great investment nor complex equipment.

This pulp could be marketed to European food groups for incorporation into major consumer products, such as yoghurts, baby-foods and pastries...

This offers the advantage of reducing promotion costs, or even cutting them out altogether ; it does, however, require low cost prices and therefore a relatively low cost for the supply of the fresh fruit.

Finally, other products of a more limited economic importance could also be envisaged, such as chips, fruit spread, fruit juices and, for the African market, meal for the feeding of livestock.

Taken as a whole, the banana processing industry could scarcely be said to have any influence upon the improvement of the trade balance of the AASM in question. It should rather be regarded as valorisation of a raw material which would otherwise be lost and which ought only to be developed to the extent that its profitability is assured at world market prices. This means that the Ivory Coast, Cameroon and Malagasy need to pursue the rationalisation of their fresh fruit production so as to produce at competitive prices on the world market. The tariff preferences granted to those countries by France should be used to accelerate this rationalisation and also the diversification of sales on the markets of industrialised countries.

C. PRODUCTION OF CITRUS FRUIT FOR ESSENCES

The essential oils market is developing slowly on the whole, although the growth rate has accelerated during the last five years. The production of synthetic essential oils gives rise to uncertainty as regards the long term expansion of the natural oils market. However, this development will depend to a large extent on the course of legislation which, fortunately, is likely to restrict the synthetic products used in food. It should also be emphasised that origin and reputation play an important part in determining prices. A new producer has to be "accepted" and a subsequent relaxation in quality standards may be reflected in a lower quotation which can persist.

1. General prospects

For climatic reasons, the AASM are not among the principal citrus producing countries, although citrus fruits grow naturally in most of these countries, with the exception of the Sahel countries where citrus fruits can only be grown with irrigation. Although the dry tropical climate favours the cultivation of good quality limes and pomelos, and the humid tropical climate the cultivation of lemons, other citrus fruits are mediocre in appearance and most often clearly inferior in quality to the fruit produced in a Mediterranean type climate.

For all the AASM, the present state of cultivation does not permit the immediate development of an export industry. In fact, although some countries possess export crops, these are limited (except in the Ivory Coast) to one or two orchards. The crops already have a fixed purpose and are therefore not available for a new industry. The other AASM produce only traditional crops which cannot be used profitably in industry (mainly because of insufficient quality and/or quantity and because the trees are too widely scattered). A study of the supply of fruits does not, therefore, indicate good prospects for the creation of an export industry ; it is essential that intensive production orchards are created previous or parallel to such a development.

It is consequently important first to discover the regions capable of producing a supply which can be developed industrially in the medium term (including those countries where such a supply already exists). The selection of favourable ecological sites required systematic prospecting using agro-climatic criteria. Such a study is obviously beyond the scope of this study. It is possible, however, to trace broadly the prospects for the production of citrus fruit for essences in the Associated States.

A number of other factors completes the classification of the countries according to their ecological suitability alone. These are the economic, human and political environment, the research work carried out in the countries, the existence of specialists ..., the factor of ecological suitability nevertheless remaining the basic criterion. The following classification takes into account all these factors.

(a) Countries with a favourable ecological suitability, the other criteria being passable to favourable :

- Cameroon (channels for exports of fresh fruit, means of communication, research)
- Ivory Coast (export channels, good general economic environment)
- Dahomey (citrus orchards, research)
- Malagasy (citrus orchards, research)
- Mali (research)
- Senegal (geographical position, means of communication, research).

(b) Countries with a passable to favourable ecological suitability, the other criteria tending to be unfavourable :

- | | | |
|-----------|----------------------------|-----------|
| - Burundi | - Upper Volta | - Somalia |
| - Congo | - Central African Republic | - Togo |
| - Gabon | - Rwanda | - Zaire. |

In particular, there has been insufficient research to be able to know with certainty whether the creation of intensive orchards under good agronomic and economic conditions is possible.

(c) Countries with a mediocre ecological suitability, the other criteria being variable :

- Mauritania
- Niger
- Chad.

In our opinion, the production of citrus fruit for essences is not possible in these generally unfavourable countries : the best that could be done would be to plant small irrigated orchards for the production of dessert fruit.

This classification is, of course, purely indicative ; the countries have been classified according to their suitability for producing essential oils. For this reason Somalia, for example, which produces for the export market (pomelos), does not appear in the first group. The suitability of those countries classified in the first group is not valid for the whole country, only for one or two sites which would have to be selected as being the most suitable and which would represent an economic optimum for all the criteria.

For information, the regions where these sites are situated are :

- Cameroon
- Ivory Coast
- Dahomey
- Mali
- Senegal
- N'Gaundere Central Region
- Central North Region
- Central South
- Sikasso Region
- Casamance, Niayes.

2. Prospects by country

The entire production of essential oils is exported. The essences are manufactured outside the Associated States, mainly in Europe, by specialised laboratories (particularly large drinks producers), which, from various essential oils, natural and/or synthetic, prepare their mixtures, the composition of which is secret.

At present, therefore, there are no openings in the AASM for essential oils of citrus. The construction in situ of a manufacturing laboratory might be possible in some producer countries where the national or regional market is large enough.

2.1. Countries producing the "Guinea" type of sweet orange essence

This essence is a special case because of the systematic prospecting carried out in the West African Associated States and in some states of Central Africa into the "soils" favouring its production. According to this research, the countries most suited to small-scale

production are Dahomey, Cameroon and Mali (this last country already producing some hundreds of kilos of essence).

2.2. Ivory Coast

It is planned to extend the lemon and lime orchards greatly.

- lemon essence

The price of the essential oil of lemon, as indeed that of the other essences, is subject to considerable variations, but the market prospects seem favourable in the medium term. Consequently, an intensification of cultivation combined with a limited and cautious expansion of acreages (the area planted with lemon trees already represents 60 % of the cultivation of citrus essences) may be envisaged ; this should, however, be done with the agreement of the shareholding companies and clients of the Consortium des Agrumes et Plantes à Parfum de Sassandra (Consortium of Citrus Fruits and Plants for Perfume at Sassandra).

- lime essence

The cultivation of limes, now being extended (Toumoudi, Sassandra) runs some risk because of the existence of the Tristeza virus ; only the Sassandra region is unaffected by this virus, but the dangers of contamination are great. Given the behaviour, which is sometimes acceptable, of limes in a contaminated zone, it seems that a policy of moderate expansion in the contaminable regions and, possibly, in the contaminated regions (where the Tristeza strain is less virulent) can be justified. The following recommendations should, however, be taken into account for these regions :

- the plantations must be perfectly maintained ;
- agronomic research must be continued and intensified to select the resistant plant stock.

In all, it would be preferable to extend cultivation of limes in other regions of the Ivory Coast. There are, in fact, very favourable ecological zones to the north of the 9th parallel (Ferkessedougou and especially Odienne) which are also characterised by the absence of virus and where the industrial cultivation of limes could be introduced with the highest chances of success.

As regards existing orchards, it would be desirable for the Ivory Coast to continue, structure and intensify its efforts for producing essential oils of citrus and juice concentrates with the aim of improving the organisation, since this country already benefits from a firmly established production structure.

2.3. Other Associated States

It seems risky to plan a large development programme for the production of citrus essences in these countries based on the production of one single type of essence, even if the market is favourable at present. It takes several years to create and organise citrus orchards for essences and it is hazardous to predict what the situation of the corresponding market of essences will be when the orchard comes into production, especially since the cultivation risks are not negligible (these are perennial crops which cannot be propagated or maintained without high costs of upkeep and the quality of the essence must be satisfactory from the start).

The drawback of such production is therefore the discrepancy between greatly fluctuating demand in the short term and the establishment of a supply which can only be envisaged in the medium or long term, depending on the country. It is thus a question of reducing the time of providing the supply in reply to demand and thereby creating a production structure which is as flexible as possible.

The establishment of a development programme for the production of citrus fruit for essences might therefore take the following form :

- organisation of prospecting with a view to determining the sites most favourable to the production of several essences in demand on the market (good quality of the essences, zones undamaged by virus...); this type of prospecting, which already exists for the "Guinea" type of essential oil, should be made general.

- creation of small intensive orchards and improvement of existing orchards, if necessary. Launching of small experimental production units for several essences, with a view to testing the products on the market and making them known. Such an operation would be facilitated if the industrial groups using essence and juice concentrates could be interested.

More precisely :

In Senegal, in Casamance, the construction of a polyvalent agro-industrial unit processing several varieties of fruits including citrus. The development of the production of citrus fruit for essence, together with the production of essential oils and juice concentrates of lime, lemon and possible orange and pomelo, could be included in the range of manufactured products of this agro-industrial unit, with, in particular, the small-scale production of citrus jams.

In Cameroon, where the soil and climatic conditions combine to permit intensive orchards for the production of high quality fruits, the creation of small orchards for the

production of essential oils of lemon, orange and bergamot ; the production of limes is envisaged in the north of N'Gaoundere, because of the absence of the Tristeza virus and due to the introduction of the railway. Moreover, the climate of the western heights would suit the coloured citrus fruits intended for the local market.

3. Conclusion

It appears that some AASM have authorised large financial investments for the establishment of the industrial production of citrus fruits. It is important that these investments are not wasted through negligence or a return to the traditional methods of orchard cultivation. It is important to see that the appropriate techniques of cultivation (introduction and selection of varieties, development of processing sizes, manures...) are publicised and their strict application supervised.

For those States which have not yet started production of citrus fruit for essences, it must be remembered that :

- it usually requires very special care and techniques of cultivation to produce tropical fruits ;
- the market is speculative and versatile ; it certainly does not favour the construction of large production units, as in the case of pineapples.

On the other hand,

- industrial manufacture may be adapted, under the right economic conditions, to small extraction units ;
- the value of the finished product, as well as the relatively small quantities produced, permit air transport (domestic routes). This would enable some ecologically suitable but very isolated regions to develop.

Finally, in most of the Associated States the development of citrus production with a view to satisfying home demand may justify, the working out of a planned programme. This produce would replace the costly imports and would overcome the under-nourishment of the population in citrus fruits, often the reason for a deficiency of essential vitamins. In the long term, and insofar as this cultivation is successful, it would be possible, on the basis of these achievements, to envisage production for the export market.

Due to the existence of a number of relatively advanced industrial projects for the production of essential oils, there seemed little point in drawing up a specialised pre-feasibility project. On the other hand, since it would be easy to integrate the small-scale production of citrus jams into a polyvalent agro-industrial unit, this possibility has been taken into account in the pre-feasibility project drawn up for the other tropical fruits.

D. PINEAPPLES

1. Supply

Two countries, the Ivory Coast and Cameroon, already have an organised intensive production of pineapples, which enables these countries to export fresh fruit and provides the Ivory Coast with a profitable industry. Only this latter country could, in the shortest possible time, expand its exports of fresh and canned fruit to any notable degree.

In the other Associated States, with the exception of the non-producing Sahel states, the production of pineapples has developed from traditional cultivation ; the produce cannot be used for export or industrial processing, for reasons of insufficient quantity and quality, heterogeneity and too great a geographical dispersion.

Consequently, the creation of an export channel and, above all, of industrial processing, must necessarily be in terms of creating and bringing into production plantations especially intended for supplying fresh fruit, whether for export or for canning.

In the Ivory Coast, industrial production has expanded appreciably in the last few years due to the construction of a third canning factory and to the extension of the production capacities of the two other existing canning factories. However, the commercial requirements of profitability are such that the research and management organisations and the other producer companies are collaborating in an effort to modernise village cultivation, to improve the quality of the fruit and to coordinate the agricultural and industrial activities, rather than in an effort to increase the area planted.

The Ivory Coast, which has a very favourable economic environment over a large part of its land, could extend its canning factories or construct new factories in the most ecologically suitable region, that is, the region north of Tiassale.

The expansion in European consumption of fresh pineapples and producer returns also justify a dynamic policy to develop pineapple production for exporting fresh.

As regards Cameroon, the potential for pineapple cultivation is comparable to that of the Ivory Coast but the opportunities have not been exploited. The zones which are ecologically most favourable for processing pineapples are far from possessing an economic environment as favourable as the department of Mungo where pineapples are at present grown under less favourable agro-climatic conditions.

Exports of fresh pineapples could be developed considerably if the growers rationalised the running of their plantations.

2. The conditions for setting up a pineapple industry in the AASM

When a pineapple canning factory is constructed, a number of factors determine the profitability of the enterprise.

At the level of investments in production, the time required to obtain the plant stock must in particular be taken into account. Since pineapples propagate by shoots, eight years is necessary to obtain a sufficient quantity of trees. This time could be reduced by half with the massive import of trees from producer countries, but this has always been refused by the latter.

"Parallel" investments (investments concerning supplies of intermediate goods to the factory and/or infrastructural work) are frequently necessary for the agro-industrial complex to operate under normal conditions. When it is less profitable to import these goods than to produce them in situ, it will be to the advantage of the canning industry to integrate a tin-plate unit, a cardboard unit and a sugar extraction unit. Finally, the infrastructural investments are very largely linked to the development of the region ; they cannot be taken over by the enterprise and in fact determine the possibility or otherwise of creating an industry.

As regards the choice of the system of agricultural production, taking into account the highly competitive aspect of the pineapple market, it appears essential that a new canning factory operates from the start under the most favourable conditions, that is, in industrial blocs. It is only when all levels of personnel have acquired the necessary experience that an extension of production in the form of village plantations can be envisaged.

The cost of pineapple production delivered to the factory depends primarily on the ecological suitability of the site : although the distance from the equator particularly influences the length of the production cycle (from 12 months at the equator to 3-4 months in the tropics), the quality of the fruit (especially the internal degree of ripeness) is particularly a function of the local agro-climatic conditions. It is, however, vital to consider the distance from the equator since this determines the type of investment. For those countries situated near the equator, the production schedule favours good planning, hence the construction of specialised agro-industrial complexes in canning production. In the tropics, on the other hand, the short production time demands industries of an average size, unmechanised, with polyvalent equipment and profitability ensured by producing other canned foods during the rest of the year.

Once the agro-industrial project is fixed according to the factors mentioned above, it will only be possible to sell the produce if a certain number of commercial requirements are respected. In addition to, of course, a consistent quality, the fruit must be packed in certain types of cans of which the capacity can vary according to the markets ; prices must be within a certain range : 0.84 to 0.93 FF for can n° 2 (582 cm³) and 1.31 to 1.43 FF for can n° 2½ (844 cm³), a range which corresponds to the competitive supply on the free markets. Delivery dates must be strictly respected.

Finally, sales can only develop well with a publicity and promotion campaign of which the advantages will be all the greater if the canning factory has an agent on the market concerned.

3. Suitability of the AASM for the production of industrial pineapples

By taking into account the ecological suitability of the countries, the opportunities for delivery and transport to Europe and the quality of the economic environment, it has been possible to draw up the table below of the countries which would be the most favourable for setting up an agro-industrial complex for the production of canned pineapple.

Country	Ecology	Delivery	Economic environment
Cameroon	++ (Bandjock)	+	-
Congo	++ (Niari valley)	0 to +	-
Ivory Coast	++ (Tiassale and North)	++	+
	0 (East Comoe)	++	+
Dahomey	++ (site to be fixed)	++	-
Malagasy	++ (North-east Majunga or Fort-Dauphon)	+ (1)	-
Togo	++ (site to be fixed)	++	-
Zaire	++ (site to be fixed)	0	-

(1) subject to the nearest port not silting up

++ very good ; + good ; 0 average , - mediocre

The only serious obstacle to the construction of a pineapple canning factory, without considering opportunities on the export markets, could therefore arise from an inadequate economic environment (parallel investments) even though the conditions of delivery are on the whole considered satisfactory for these countries.

It seems that demand for canned pineapple will show a certain levelling off during the next few years. There is therefore a need for caution as regards the creation of a pineapple agro-industry, especially if this industry concerns a large volume of production, since the increase in demand can easily be met by the existing producers.

However, the development of sales of the Ivory Coast on the European markets shows that a country with a consistent quality product can obtain a footing even in a very competitive market, by developing and maintaining an aggressive commercial policy, one aspect of which is to be permanently present in the importing countries. Better still, such an export policy puts producers from other countries in more marginal production conditions (the Hawaii Islands, Australia, even South Africa) in difficulties. Thus any new producer in one of the AASM countries offering a product of consistent quality, at competitive prices and carrying out a dynamic export policy, is certain to satisfy some of the growth in demand and should also succeed in partially replacing some world producers.

It must also be remembered that the market of the enlarged EEC is of great importance to the Associated States, because of its size and because of concessions on customs duties. This market is all the more important since it is likely to become more open to a new producer insofar as the preferential system granted on the French and British markets to certain producers should shortly be abolished or, at the very least, be severely reduced.

Although the launching of canned pineapple production in the Ivory Coast has been favoured by the preferential tariff system of the French market, this situation will not be repeated for a new producer (who at best could not start production before 1978-1979). It is therefore important that any new project by the AASM be worked out by a consideration of the strictly industrial requirements in order to start off under competitive conditions.

Finally, an analysis of supply and demand justifies the construction of a specialised agro-industrial complex in one of the AASM previously mentioned and of a polyvalent factory of the Formosan type in Malagasy. It is nonetheless true that because of the geographical position of some AASM in relation to some European markets, production of fresh pineapples could be a priority, since it would be difficult for other producers, particularly Asians, to compete because of the inevitable reduction in delivery times.

Because of the number of projects by pineapple canning factories already drawn up for various Associated States, no specialised pre-feasibility project has been drawn up.

E. CASHEW NUTS

The creation of a cashew nut processing industry in the AASM may be envisaged in the short term and the long term as a function of supply and the opportunities for industrial equipment existing at present.

1. Short term prospects

In Malagasy, the construction of a processing unit with a capacity of 5 000 tons of nuts for the production of cashew is quite feasible with the development of the area of cashew nut trees. But it is urgently necessary to adopt a programme to safeguard and maintain the existing plantations.

In West Africa, two regions have a potential of about 1 000 tons : one comprises the Ivory Coast, Mali and Upper Volta with the Ivory Coast predominating, and the other contains Togo and Dahomey with the latter country predominating. The construction of a unit of 1 000 tons in the Ivory Coast is therefore possible, the other unit (with a capacity of less than 1 000 tons) at present being completed in Dahomey.

The viability of a factory of 1 000 tons using the existing equipment has, however, at the present moment, not yet been established. A factory of this size seems a priori less profitable than the units of 5 000 tons which operate in East Africa, since the two units will require the same skilled staff to operate the machines.

It appears, therefore, that, except in Malagasy, taking into account the present state of supply, the opportunities for producing cashew are very limited in the AASM.

2. Long term prospects

In this case the construction of production units capable of processing 5 000 tons of nuts in the period 1980-85, based on detailed agronomic project, is possible.

The number of zones ecologically favourable to the cashew nut tree is considerable. Any zone which sets up production must pivot round a centre (large village, small town...) of which the most distant peripheral zones are no more than 100 km away. The plantations will be established near the villages, since nut harvesting is not a skilled work but requires daily trips at harvest-time. This work will be carried out by the women and children, the men being engaged, at harvest-time, in work which makes better use of their labour.

In order that the upkeep and harvesting are carried out under the most favourable conditions, each zone, constituting itself a complete and independent agro-industrial complex, will comprise an industrial bloc of 500 ha of plantations concentrated around the factory and 4 500 ha of village plantations, by limiting to 100 ha the area per village (these composed of individual parcels of 1 to 2 ha). The aim of the industrial bloc will be to involve the inhabitants of the zone in cultivation of cashew nuts and to provide large-scale publicity for the most appropriate techniques of cultivation. It can later be used for the production of seeds.

In short, the AASM have both ecologically favourable zones for the cashew nut tree and the necessary areas for large plantations.

It must, however, be remembered that the valorisation of the crop is lower than that of the other industrial crops already produced ; the cashew nut tree can only be an additional village cultivation at the same time as it stabilises the soil. It is, therefore, necessary to avoid having to mobilise the labour at harvest-time, which is the reason for the present difficulties in Malagasy, and on the contrary employ the unskilled labour available (women and children), in other words to organise production in village plantations.

Although the opportunities for industrialisation are small in the immediate future, in the long term, on the other hand, there is a demand which could justify several factories of 5 000 tons for nut processing.

This agro-industry would have in addition the advantage of being able to be set up in unfavoured regions (Upper Volta, Mali), the finished product, the cashew capable even of bearing the cost of air transport.

F. EDIBLE GROUNDNUTS

1. AASM supplies and export opportunities

World consumption of edible groundnuts, about 550 000 tons in 1972-73, represents only 22 % of world trade in groundnuts. The share of the AASM in this trade is 20 000 tons, scarcely more than 7.5 %. Exports of edible groundnuts from the AASM (Malagasy, Niger and Senegal) represent 2.2 % of their total groundnut exports and only 1 % of their production.

Malagasy produces groundnuts mainly of the Valencia type ; while production is increasing steadily, exports of unshelled edible groundnuts are declining and are at present no more than 3 500 to 4 000 tons, without doubt due to the lack of sufficient technical management.

Niger is, with Senegal, the only Associated State where work on the research and the selection of edible groundnut varieties has been carried out. An extension of this crop is envisaged with an objective of 20 000 tons of exported edible groundnuts.

In Senegal, exports of groundnuts for human consumption, as distinct from groundnuts for the oil industries, have ceased ; the harvest is principally intended for the manufacture of oil, all the more since the drought of the last few years has prevented utilisation of the whole of the industrial potential. On the other hand, specialised cultivation of edible groundnuts is advanced in the Kaolack region and it is hoped to bring the area under cultivation to 20 000 ha in 1975 which would produce 25 000 tons to be processed for export.

These three countries could export 35 000 tons of shelled groundnuts in 1976 representing only 15 % of the present European market which is likely to expand further.

If the quality corresponds to the demand, this produce should easily find openings on the European market without having any depressing effect on prices, taking into account the low percentage which this produce would represent in relation to the world market which, if it follows the same expansive trend, will absorb some 160 000 tons more than in 1972. The AASM can gain a more important position on the market and the producers of groundnuts for oil (Senegal, Niger, Mali) seem well placed to do just that.

2. Profitability of the production of edible groundnuts

Edible groundnuts are sold at a remunerative price on the world market and allow a higher producer price than that of groundnuts for oil for comparative productivity and cultivation costs. The value added by packing, which requires a great deal of labour, is greater than that added by processing into oil.

The effects on the economy are, therefore, great, in addition to making a useful contribution to the variety of crops of the countries which depend almost exclusively on the groundnut for oil.

Since the quality standards require a higher level of technical know-how by the producer, this crop enables the peasant to be trained in more advanced techniques from which his other crops will benefit, particularly groundnuts for oil.

However, the final quality of the products exported depends on the care taken at each stage : cultivation, harvesting and transport, industrial processing. It is therefore essential that at each of these stages the quality is maintained at a high level.

3. The conditions possible for operating an edible groundnut packing factory

An examination of these conditions shows the advantages of processing edible groundnuts at the place of production, as indeed the present producer countries tend to do.

In spite of the low production capacity (5 000 tons), the assumptions made show a profitability equivalent to that of the European industry (the recent considerable rise in the prices of edible groundnuts has considerably increased this profitability). It is nevertheless necessary for the industrial unit to be linked to a shelling factory or an oil factory.

Taking into account the plants for developing the cultivation of edible groundnuts by the exporting countries, it would be preferable, in order to increase profitability, to plan for the construction of units of 10 000 to 15 000 tons, as soon as cultivation is extended and supplies assured.

Finally, only a very high valorisation of part of the crop, up to the stage of roasting and salting, would favour the construction of a packing factory independent of, say, an oil factory. This also means that the packing factory must have a trade channel on the foreign markets to ensure the sale of the produce.

G. OTHER TROPICAL FRUITS

The European market for tropical fruit preparations is a narrow and limited one. Guavas, passion fruit (especially the juice), lychees (fruit in syrup), mangoes and pawpaws are the principal processed fruits consumed in Europe. The United Kingdom represents by far the greatest demand in Europe, annual sales at the retail stage, however, not exceeding 4 000 tons with lychees in syrup and tropical fruit salads predominating.

As regards the supply of other tropical fruits by the AASM, there is an almost total lack of organisation in fruit production.

Cameroon is one of the AASM which offers the greatest opportunities for the development of tropical fruits. There is, however, no organised fruit production, the crop consisting of fruit picked from trees surrounding African cabins.

In the Ivory Coast, some plantations of "other fruit trees" (mangoes, pawpaws and passion fruit) exist mainly for fresh consumption. The favourable agro-climatic conditions offer this country great opportunities to increase, where necessary, the production of tropical fruits subject to favourable openings.

In Malagasy, the lychee is a traditional crop, but no industrial plantations exist.

In Senegal, there are many varieties of fruit (the mango being the most widespread) but none is industrially viable for export.

Other Associated States - Upper Volta, Togo, the countries of Central Africa (particularly the latex pawpaws in Zaire) - also have other tropical fruits. In all, the main interest, in the short term, of the tropical fruits under consideration lies in the opportunities for fresh exports. This is, moreover, one of the lines explored by Cameroon and the Ivory Coast regarding pawpaw. Lychees in syrup from Malagasy and latex pawpaw from Zaire are exceptions and efforts should be made in the first case to obtain a competitive supply, in the second case to increase yields, of these products.

As regards prospects of the valorisation of these fruits in the medium and long term, industrialisation is justified on the one hand by the existence of regions ecologically suitable for the cultivation of tropical fruits and on the other hand by the fact that some tropical fruits and their processed products, depending on quality and taste, have potential export markets which can be developed.

The present narrowness of the market is largely due to a lack of knowledge about the products, together with a relative shortage of supply.

It would appear sensible to develop the intensive cultivation of the most suitable range of these various fruit trees and to construct a factory capable of processing this range of fruits. Fruit production spread over the whole year permits a staggering of output, and thus a continuous utilisation of the equipment and a rapid writing off of loans. A polyvalent operation of this type also permits the utilisation of the other "traditional" tropical fruits without having to create intensive orchards of these fruits, the existing supply being sufficient to meet the requirements of the processing unit.

The industrial unit should in fact represent an average sized investment and utilise simple production equipment so that local labour can be used extensively. Moreover, this industrial development should even be possible taking into account exports of fresh fruits and the improvement in profitability of agricultural and industrial activities by introducing intercalary fruit and/or vegetable cultivation and the corresponding industrial processing of the fruits and vegetables.

The output of such a processing unit will be oriented mainly towards semi-finished products, packed demi-gros, for the European food industry, and which this industry will incorporate into other preparations.

Investments for the distribution and necessarily hazardous commercial promotion are thus removed. On the other hand, it will be necessary to conclude agreements with the European food industry groups, which pre-supposes a suitable price policy to meet international competition.