

Distr. LIMITED
ID/WG. 201/l1
21 January 1975
United Nations Industrial Development Organization
ORIGINAL: ENGLISH

Regional Meeting on the Development of<br>Selected Branches of the Food Industry<br>in Selected Countries of the Middle East<br>Beirut, Lebanon, 2-8 March 1975

# THE CANNING INDUSTRY " CONSERVA" IN SYRIA-1/ 

by
Edmond Hajjar*

[^0]id.75-581

## CONTENTS

Page
I Introduction ..... 4
II Private Canning Factories ..... 4
III PublicSector "Conserva" Bactories ..... 4
A. The Modern Company for "Conserva" and ..... 4 The Agricultural Industries
B. The "Conserva" Company of the Syrian Coast (Jebla) ..... 5
IV The Conserva Companies ..... 5
A. Raw Materials Used in Production ..... 5

1. Basic Problems ..... 5
2. Ways and lieans Being Organized to Solve ..... 6 the Problems
3. The Main Varieties of Raw Materials Used in ..... 7 Production in the Conserva
4. Specifications of the llajor Primary and ..... 7 Additional Raw Materials Used in Production
V Description of the Public Sector "Conserva" Factories ..... 11
A. Comprises of: ..... 11
5. The liodern Company for Conserva and the Agricultural ..... 11 Industries (Al-Ghota, Al-Qaboon, Al-Mzeireeb)
6. The Conserva Company of the Syrian Coast (Jebla) ..... 11
B. The liodern Company for Conserva and the Agricultural ..... 11
Industries
7. Installations ..... 11
8. Production ..... 14
VI The Iethod of Processing the Main Products of the Conserva ..... 17 Companies
A. Processing of Tomatoes ..... 17
B. Processing of Peas ..... 17
C. Processing of Green Beans ("pool") ..... 18
D. Processing of Green Okra ..... 18
E. Production of Truffles ..... 19
F. Production of Green Beans ..... 19
G. Production of Ready-Made (Convenience) Foods ..... 19
H. Production of Pickles ..... 19
I. The Production of Assorted Jams ..... 20
J. Production of Compotes ..... 20
K. Production of Trinks ..... 20
L. Production of Cans Needed for Packing the Product ..... 20
Page
VII Statistical Jata ..... 21
VIII New Products in the Conserva Industry in Syria ..... 21
IX The Problems Facing the Conserva Companies and ..... 30 Proposals and Recommendations for Overcoming Tnem
A. The Problems ..... 30
9. Supply of Raw haterials ..... 30
10. Production ..... 33
11. The Organizational Framework and the ..... 34Administrative Apparatus in the Conserva Factory
12. Tarketing of Products and Sales Policy ..... 35
13. Depots ..... 36
14. Cost Calculation ..... 36
15. Proposals and Recommendations ..... 37

## I. Introduction

Food processing is one of the most important branches of the Syrian industrial sector. It contributes to the agricultural development by means of consuming a great proportion of its agricultural production, particularly the out of season products.

The food processing industry in this country is not a completely modern one, however, it has a great potential and would play a much more important role in the Syrian economy if it were modernized and expanded. There are canning factories which belong to the Covernment and others which are privately owned. The former represents a much higher production capacity than the latter.

## II Private Canning Factories

The most important are:
The Arab "Conserva" Company within the Damascus city boundaries, (Qaboon area).
The Syrian "Conserva" Company, also within Damascus (Haraista area).
The production capacity of the private sector companies is about 3-3.5 tons of tomato pulp daily for which about 20 to 25 tons of fresh tomatoes are needed.

These two factories work about 100 days per year and their anrual production of tomato pulp is estimated at 200-250 tons. They also produce canned peas, jam and compote, etc., but only in small quantities in comparison with the production of the public sector.

## II Public Sector "Conserva" Factories

In Syria there are two "Conserva" companies in the public sector。
A. The Modern Company for "Conserva" and the Agricultural Industries:

Its base is in Damascus and its principal activity is the processing of preserved foods - fruits and vegetables - and convenience foods and drinks, and also the production of cans for the industry. This company also has two cold-stores; one in Qaboon and the other in Mezze. They store foodstuffs belonging to the company itself and also other foodstuffs belonging to various sectors, for a set fee for each variety of preserved goods.

The a/m company comprises of the following five branches:
(i) The "Conserva" branch of Al-Ghota;

```
(ii) Tue Sonverve branch of Al-Gaboon: (ií) The "Conservai brench of Al-Mzeireeb;
(iv) The Mesoe Cold Storager
(T) The Al Gabon Cold Storage.
```

B. The "Gonserra" Company ifthe Syrian Coast (Jebla):

It is Zoonted et Jehla and incluades a "fully-integrated" factory for the "Consomve" imiuatry. It contains one line for the production of tomatoes, peas and othor camed goods of various kinds, drinks, etco, another line on the production of cans and other auxiliary parts such as boiling pens mre aiso a laboratory
 "Conserva"and the ifricultural Industries, and the problems mentioned are to a great extent from the cperationai conditions prevailing in themo Vith regard to the "Consesva" Comyany of the Syrian Coast, no cuantitative facts can be mentioned since this industry has not yet achieved full operation. It must also ide menticned tird the private sector was not fully analysed due to the very mall scale of iss production。

IV The "Conserv"' Conparies
The Conserve compaies produce tomato pulp and carry out preserving processes for sone wrieties of vegetables as well as producing some readymade foods and ptokloe, espondally cucumbers. They also produce jams, compotes and drinks, etc. The muner of varieties of items processed is very large and the quant ties produosd rary $\equiv$ great deal, according to the availability of raw material ard ferens for the und rroduct. Tomato productsform fifty per cent and more of totaj producition. Jains and drinks are estimated to constitute twenty-five por cent, enc. the remeinder consists of assorted vegetables, convenience foods and hoinks.

## A. Dam Ifebreiges Used in Production:

1. Esgororopemsi

Tie "Coneare Companies"face great problems concerning the supplu of oxatoes. pees, beans, vegetables and fruits. All the final procuotr, concentrates, juices, jams, compotes and drinks, have strict dualif stondards, wich basically depend on their raw material qualit. Slthoug the "companies" buy great quantities of each raw material. (in may Dasen most of the total crops), there are no contross wita the suphies oi raw materials. In consequence, the
prices for the raw materials are the ones prevailing in the market (which are higher than the ones normally paid by producers) and the quality varies from one supplier to another. Frequently, the standard of the raw materials is very much under the minimum required to produce cuality products. In addition to the cuality and the prices which are not adecuate, it must be added that the supply timing is also frecruently not in accordance with the processing requirements.

Therefore action should be taken to solve the following problems:

- Variation in the price of raw materials during production season, which affects processing costs;
- Variation in the specifications of the raw materials, which affects product quality;
- Irregularity in delivery dates, which affects operating roitine in the factory during the season;
- Irregularity in supplying the quantities needed dailys which affects costs and production planning.


## 2. Mays and Means Bjing Organized to Solve Problems:

The company started buying tomatoes in 1970 through the co-operative federation at a fixed price. However, the required technical specifications of the tomatoes were not defined and this led to the delivery of some quantities in which there were many unripe tomatoes and tomatoes unfit for processing. In some cases these amounted to fifty per cent of the quantities delivered to the factory and this had an adverse effect on the quality of the end product. The above practice was a mistake since if there are prior contracts, it should be possible to obtain. $\operatorname{sjod}$ quality tomotoes according to the production requirements needed to obtain end products within the specifications of the standards.

The Federation of Foodstuffs Industries is trying to overcome these difficulties by arranging for prior contracts for the purchasing of the principal raw materials and it is also trying to create fully integrated bodies for supervising purchasing operations for raw materials with the specifications and in the quantities and at specified times. Amorg these bodies are the following:

- A body supervising the study of the market for the products reouired so that it should be possible to organise programmes for purchases in the light of this study;
- A body supervising the quality and specifications of the raw materials; it has established a laboratory in most of its 'out-stations' for carring out analyses and experiments relating to the definition of the required specifications;
- A body co-operating wit? the Centre for Agricultural Experiments of the Ministry of Agriculture, for carrying out field agricultural experiments and circulating the results obtained to the farmers who grow the crops recuired by the company and helping them to apply the results so as to obtain the best varieties required for processing as well as the best possible return.

3. The Main Vari, ties of Raw Materials Used in Production in the Conserva:

Tomatoes - green peas - green beans - dried beans - green broad beans (fasoolia) - okra - spinach.

Truffles - vine leaves - cucumber - carrots - olives - potatoes eggplant - scuash - onions.

Apricots - oranges - lemons - malberry - pomegranate - pears cherries - quince - apples - figs - peaches - plums.
4. Specifications of the Major Primary and Additional Raw Materials Used in Production:

Tomatoes: These must be completely ripe and red - fresh - free from disease and various insects - non-acid and unbruised - and with no deep cleft marks.

Vegetables: Feas - truffles - green beans - cucumber - vine leaves - okra - green broad beens (fasoolia) - scuash - onions peppers - potatoes - garlic - carrots - coriander - olives - etc.: these should be fresh, and should be of the local variety (baladi), suitable for processing. They should have no diseases or insects, and should be free from blemishes and rot.

Fruits: Apricots - peaches - pears - quince - Syrian (shami)
mulberry - figs - pomegranates - oranges - lemons - etc。: these should be fresh and completely ripe, free from diseases and insects and should be free of blemishes and rot.

Metal Boxes: The tin or can should be coated on the inside with alacquer substance not liable to rust, which is non-toxic and unaffected by acidity,

Labels: These should be of glossy paper, printed in a number of colours, and be of local manufacture.

Bottles: These should be of ordinary glass of local make。
Packing and binding materials: Cardboard boxes of Exropean origin, and maufactured locally.

Adhesive paper: Gummed paper, 7 cm . wide.
Sugar: Refined and also beet sugar, of local make.
Other auxiliary substances: such as spices and olive oil - ghee meat - etc: local production and according to the specifications laid down by the Ministry of Supply.

In addition to these primary specifications the Federation of Foodstuffs Industries is at present drawing up regulations in which it lays down the following:

- the technical specifications of the final product;
- production norms for every kind of product.

We believe that this regulation will be ready and tested during 1974 and will be in effect in 1975,

The following table 1 shows the estimates of raw materials production in 1975 according to the 1971-1975 plan and the increase over 1970 production.

TABLE 1
Estimates of Raw Material Production in 1975 and Increase over 1970
Production (000 tons)

| Product | 1970 | 1975 | Increase \% |
| :---: | :---: | :---: | :---: |
| Tomatoes | 216 | 330 | 52.8 |
| Potatoes | 50 | 70 | 40 |
| Onions | - 50 | 135 | 170 |
| Apples | 22.5 | 45.5 | 120 |
| Citrus | 7.3 | 17.8 | 144.5 |
| Garlic | 3.6 | 7 | 92 |
| Hummus | 41 | 65 | 62 |
| Beans and Peas | 14 | 20 | 43 |
| Assorted Veg. | 180 | 250 | 38.8 |
| Olives | 128.9 | 157 | 22 |

(please see the next page for the continuation of this table。)

| Product | $\underline{1970}$ | 1975 | Ircrease |
| :---: | :---: | :---: | :---: |
| Continued: | 5.5 | 12.1 | 119 |
| Pears | 13.1 | 32.1 | 145 |
| Apricots | 5.3 | 5.3 | - |
| Peaches | 3.5 | 5.3 | 53 |
| Plums | 23.5 | 58.7 | 25 |
| Figs | 1 | 1.8 | 76 |

[^1]To attain the objectives previously mentioned for the production of agricultural crops, the following general methods are used:

- development of resources of land and water;
- mechanisation and modern methodsof agriculture;
- improvement of types of crop;
- stimulus and support of agricultural co-operation:
- guaranteeing a minimum price for arops supplied by the institu-. : tions of the public sector;
- increasing the efficiency of the marketing bodies and the methods;
- support and development of the state farms;
- promoting scientific research and putting the research results into operation in order to achieve the objectives of development and the Plan;
- completing networkg for irrigation and drainage and directing the flow of water in the inain channels at appropriate times.

In order to increase yields of agricultural crops, to achieve production targets, to provide adequate quality of raw materials and to improve varieties of agricultural crops; the following steps are being taken:

- generalizing the use of better and homogenecus seeds and removing the constraints limiting the increase of the yields;
- increasing seedings in the state farms and co-operatives and allotting all the necessary acreage for that purpose;
- carrying out agricultural research aimed at increasing productivity;
- increasing the attention given to soil preparation and the provision of the necessary maclinery;
-. the nse of the necessary pesticides to combat weeds;
- improving local varieties in order to increase yields.

Furthermore, in order to attain the above mentioned objective, the Ministry of Agriculture gave priority in its third 5-Year Plan (1971-5) to the following projects for:

- increasing productivity: and reducing losses particularly using adequate pesticides;
- increasing yields by means of increasing the numbers of seedings, includang potatoes:
- strengthening the agricultural infra-structure particularly by the establishment of agricultural schools;
- supporting scientific research: specifically aimed at crop protection:-
- increasing the planting of trees, promoting the development of vegetable plantations and increasing their yield, the support and dovelopment of field crops.

To buy the needed raw materials at a convenient location is findamental to the proper operation of the processing factories. Special mention should be made of the prices. Adequate prices would contribute to the reduction of production costs and the reduction of the market prices of final products which would lead to an increase in the demand.

As regard to tomatoes, for example, only recently the supply has been assured through the supervision of the Agricultural Cooperative Federation. In the past tomatoes were bought by the purchasing commission of the company, in the markets with prices varying according to supply and demand.

The primary materials needed are determined according to the programme of processing which is in the plan of the company, and in the light of the available supplies in store for this purpose. Therefore, there are mutual interactions between buying operations for primary materials and the processing programme: any shortfall in these materials affects the processing programme and vice-versa. Any defect in the operations of processing in accordance with whet has been determined leads to either excessive or inadeouate demand for the primary materials and causes fluctuations in prices. The market price fluctuation disturbs the estimates of operational costs; making difficult the management controls.

## Description of the Public Sector "Conserva" Factories

A. As previously mentioned the public sector "Conserva" factories are comprised of:

1. The Modern Company for"Conserva" and the Agricultural Industries (Al-Ghota, Al-Qaboon, Al-Mzeireeb).
2. The Conserva' Company of the Syrian Coast (Jebla)。

The following is the basic information for each factory:
B. The Modern Company for "Conserva" and the Agricultural Industry Pactories:

1. Installations:
(a) The"Conserva" Factory, Al-Ghota

This factory comprises of:

- storage operations: these include depots for storing raw and auxiliary materials, as well as spare parts;
- processing operations: these include the main production lines and the processing units, then the sections for industrial services, such as boiling pans and diesel and tin can factory, the mechanical and electrical workshop and the laboratory.

Depots and storage: The depots are divided into a number of sections, each taking in certain materials according to their type and the period of storage. There are stores for manufactured materials, for empty containers, for semi-manufactured materials, and depots for spare parts and machinery. These depots are divided as follows:

- depots for short-term materials: these are used for storing raw materials; such as fruit and vegetables;
- depots for long-term materials: these are used for storing other materials, such as sugar and salt;
- production depots: these are used for storing the completed products;
- depots for machinery and spare parts.

Production lines and industrial units: The industrial operations in production are divided into four stages:

- the stage of preparing raw materials, in which they are cleaned, washed, peeled, etc.; the work on all of these lines is manual except for the tomato and peas lines.
-- the processing stage, in which the raw materials are pressed out and cooked, or both. Some of these lines rely on manual o. semi-mechanical work, except for the tomato and pea lines;
- the packing stage: in this stage the manufactured materials aro packed, by sealing the containers semi-automatically, for $2 l l$ varieties;
- the sterilization and despatch stage: the cans completely marufactured are sterilized in the sterilizers ("Autoclave") then they are cooled in the cooling channel with cold water.

Most of the machine and auxiliary equipment is used for more than one purpose in processing, with the exception of the automatic lines for tomatoes and peas, which are modern and have been recently installed. The old line for tomatoes in the factory has stopped working and is in need of general overhaul.

## Industrial services:

Steam: Steam is produced in the Ghota factory by means of three boiling pans with a respective capacity of five, four and two tons of steam per hour.

Electricity: The factory is supplied with electricity by the general network for the Damascus area. Recently the factory has been equipped with a reserve electricity generator with a capacity of $300 \mathrm{~K} . \mathrm{V} . \mathrm{A}$ 。 in order to run the necessary lines during a power cut for the main network.

Water: The water used for processing and washing comes from wells in the area of the factory.

Laboratory: The factory has a lab equipped to carry out all analyses necessary for processing.

The productive capacity for the Ghota factory: The productive capacity is estimated as follows:

- the new automatic line for tomatoes - 150 tons of tomatoes daily;
- the old automatic tomato line: thirty tons of tomatoes daily;
- the line for peas: 1.5 tons of peas daily;
- verious machinery for jams:2.5 tons of apricots per hour;
- marual workshop for tin cans: 1500 cars per hour.
(b) The Al-Gaboon Factory oi the " Congerva"

The factory comprises numerous sections which perform a variety of tasks, and these sections may be defined according to the following services:

- storage operations: these include depots for storing primary materials, manufactured materials and spare parts;
- processing operations: these include the main lines for production;
- industrial services which include:

Steam: produced by two boiling pans, the first being new with a capacity of two tons of steam per hour, the second an old one with a capacity of one ton of steam per hour.

Electricity: the factory relies on electricity from the main network and there is a diesel electricity generator recently instailed ( $200 \mathrm{~K} . \mathrm{V} . \mathrm{A}_{\mathrm{o}}$ ) for use in reserve in the event of a power cut of the main network.

Manual workshop: to produce cans.
Production capacity: This is as follows:

- semi-automatic line for tomatoes with a capacity of twentyfive tons daily:
- a line for peas with a capacity of 1.5 tons per hour;
- machinery for processing apricots with a capacity of 1.5 tons per hour.
(c) The "Conserva" Lactory of Al-Mzeireeb

The factory is conipcsed of the following:

- various depots for storing primary materials, manufactured materials, spare parts, etc.;
- lines for production and processing, which include the following:
- an old automatic Iine for tomatoes with a capacity of 100 tons of tomatces per twenty-four hours;
- a new automatic line for tometoes with a capacity of 150 tons of tomatoes per twenty-four hours;
- machinery for processing peas with a capacity of 1.5 tons of peas per hour;
- other various machirery used in processing assorted "Conserva"
- industrial services, which include:

Steam: this is produced by two steam boiling pans, the first with a capacity of five tons per hour, the second of six tons of steam per hour.
Electricity: the factory relies on power from the main network, and there are also two diesel electricity generators, ( $200 \mathrm{~K} . \mathrm{V} . \mathrm{A}$. each), used if there should be a power cut.
(d) The "Conserva" Company of the Syrian Coast (Jebla)

This factory was set up recently and experimental production began in the 1973 season, and it includes the following:

- various depots for storage of primary materials, mamfacured materials, spare parts, etc.;
- lines for production and processing, including the following:
- an automatic line for tomatoes, with a capacity of 150 tons of tomatoes every twenty-four hours;
- machinery for processing peas with a capacity of two tons of peas per hour;
- machinery for squeezing lemons and oranges with a capacity of two tons per hour;
- other assorted machinery for processing "Conserva", including machinery for mixing, sealing, sterilization, etc.
- industrial services and these include:
- semi-automatic workshop for can, with a capacity of 1500 cans per hour;
- two steam boiling pans with a capacity each of six tons of steam per hour;
- two diesel electricity generators, each with a capacity of $200 \mathrm{~K} . \mathrm{V}$ 。A。

This factory is still in the experimental stage and it is believed it will be in effective operation during the 1974 season and it is expected to carry out its production plan in the light of the availability of primary material at economic prices and in the necessary quantities.
2. Production:

The principal products in the "Conserva" companies are:

TABLT 2
PRODUCTION OF THE "COMSTRVA" COMPAUIES

| Product | Raw end auxiliary materials | Container Size | Distr Loc | oduct <br> xport <br> age) |
| :---: | :---: | :---: | :---: | :---: |
| Green peas | Large-preserved in water and salt, ratio 2\% | 1 Kilo net | 80 | 20 |
| Green okra | Medium, preserved in water and salt | " | 80 | 20 |
| Beans | Fasoolia, water and salt | " | 55 | 45 |
| Canned inknar | Lubb in water, $2 \%$ salt; lemon hummus 0,3 and 0 . | " | 10 | 30 |
| creen Beans | Beans; water, 2\% salt 1 emon hummus | " | 75 | 25 |
| $\begin{aligned} & \text { Nanned } \\ & \text { truffles } \end{aligned}$ | Brown and white canned truffles. Water proportion 5 and $1 \%$ salt | " | 20 | 80 |
| Mized vegetables | Peas; carrots; potatoes: $2 \%$ salt | " | 60 | 40 |
| Canned pickled cucumber | cucumber; water and $4 \%$ salt; 5 and 2 hummus with vinegar | " | 20 | 80 |
| Canned pickled carrots | Sliced carrots; <br> 2\% salt | " | 20 | 80 |
| Jomato pulp | Density 26/28. Salt 4 - 6\% | 5;1;1/3: ${ }^{4}$ kilo | 30 | 70 |
| Tomato sauce | " | 5:1:1 kilo | 30 | 70 |
| Tomato pulp | Density 28/30 Salt 2 - $6 \%$ | 5; 1: $\frac{1}{2} ; \frac{1}{4}$ kilo | 0 | 100 |
| " | $\begin{aligned} & \text { Density } 36^{\prime} 38 \\ & \text { Salt } 2-6 \% \end{aligned}$ | 11 | 30 | 70 |
| " " | $\begin{aligned} & \text { Density } 36 / 38 \\ & \text { Salt } 4-6 \% \end{aligned}$ | " | 30 | 70 |
| ( - means | Density 38-40 <br> salt 4-6\% <br> that no information was | " | $30$ <br> to all | 70 |

TABLE (cont'd)


The Method of Processing the Main Products of the "Conserva" Companies
The method of processing is similar in all the factories of the "Conserva", and in the following, we summarise the production method for some of the main products:
A. Processing of Tomatoes

The boxes of tomatoes are emptied into the washing basin, which is filled with water, to wash them and to iemove dirt from them,

Then the tomatoes are moved from the washing basin on a moving belt, on which they are sorted, to pick out leaves and green tomatoes, and other undesirable materials in the processing.

Then the tomatoes are sliced, squeezed and heated.
Then they are filtered to get rid of seeds and skins and solid foreign bodies.

Then there is the operation of concentration, done continuously,
The modern tomato lines used in the country's factories are of the continuous type, on which the operations of heating, corcentration and canning are done automatically, However, the operation of sterilization is performed by introducing the cans into the Autoclave at a temperature of $100^{\circ} \mathrm{C}$, and atmospheric pressure for 15 - 20 minutes, and sterilization is followed by cooling the cans in the refrigeration basin, which is filled with cold water which is constantly changed. Below is the sequence of processing operations for toma! p pulp:

Fresh tomatoes - washing - sorting - slicing - heating - making juice and purifying - sterilization = seeds and skins as one product and juice with the addition of salt to make another - concentration and/or thickening-up packing - sealing - sterilization - storing - export.

## B. Processing of Peas

Below is the sequence of operations of processing:
The peas must be fresh and not dried up;
The first step is the shelling of the peas, and sorting them by size, large and small;

Then comes the operation of boiling (cooking) at a temperature of $90-95^{\circ} \mathrm{C}$, for 3-5 minutes for large peas and for $2-4$ minutes for medium size,

Then comes packing in cans after the addition of salt at boiling point,
but the cover must be applied immediately after packing without leaving any chance for the temperature to fall or for air to get in. The proportion of salt added is of the order of 1.7 Kg . for every 100 litres of the water solution added.

Then comes sterilization at a termperature of $115^{\circ} \mathrm{C}$. The period of sterilization will vary with the size of the cans and the peas: a one kilo can will be sterilized for about 20 minutes. Nonetheless, the conditions of sterilization must be studied in the light of the type of raw material and of product, which are determined by the previous processing operations and the temperature before sterilization.
C. Processing of Green Beans

Processing is begun immediately after the beans arrive at the factory. The beans should be fresh.

Shelling is the first stage, followed by sorting of the beans by size;
This is followed by boiling (cooking) which lasts for 20-25 minutes, and this is followed by a second boiling operation during sterilization;

Sterilization lasts for 3-5 minutes for ripe, fresh beans and for 8-9 minutes for dried beans, with a temperature of about $90^{\circ} \mathrm{C}$.

In addition the sterilization operation will vary according to the variety of the raw material and the manufactured material, and it should be studied according to the circumstances of work, as for the method of processing peas.
D. Proauction of Green Okra

Below is the sequence of processing operations:
Processing begins as soon as the raw materials arrive at the factory. They shonid be fresh and not have any dried up pods.

The okra is then sorted so as to get rid of blemishes and foreign bodies unacceptable in processing. At the same time the okra stems are removed.

Then comes washing and cleaning, followed by cooking (boiling) .
Then there is a second washing after the boiling to get rid of materials resulting from boiling and after this comes packing and then sealing of the cans and sterilization.

Here again the sterilization will be affected by the type of raw materials and finished product: it is essential to experiment with a few cans to
determine the period and the temperature, as we mentioned in dealing with the method of processing peas and beans.

## E. Production of Truffles

The truffles are washed mechanically inmediately after delivery and are then cleansed of dirt bufore they are cooked. After cooking, the damaged truffles are sorted out, and then the remainder are packed, with the addition of a salt solution, after which sterilization is carried out.

## F. Production of Greer Beans

- trimming the pods and cutting is done manually;
- the beans arewarhed after cutting;
- then they are boiled (cooked) and washed once more after the boiling;
- boiling is done at $73-75^{\circ} 0$ for five minutes (a high temperature and a long boiling period causes high degrees of tenderness and crumbling or disintegration);
- the temperature of the added salty solution should be near boiling and not less than $93-95^{\circ} \mathrm{C}$.
- then comes sterilization: a $\frac{1}{2} \mathrm{~kg}$ 。 can requires a twelve minute period of sterilization at high temperature which will vary according to the type of raw material.
G. Production of Ready-made (convenience) Foods
- yalangi; stuffed merrows; beans with meat and rice, etco

Ready-made foods should be prepared daily in view of the difficulty of mechanising all the onerztione. Tre most important stages are:

- preparing the vegetables and stuffing;
- the stage of stuffing the vegetabies (egg-plant, scquash or marrows, vine leaves) with rice, meat and other ingredients added;
- the stage of packing and adding the tomatoes;
- the stage of sterilization and refrigeration;
- and finally the stage of washing the ready-made cans.


## H. Production of pickles

The most important of the standards or norms for judging the quality of pickles is to do with the the fimmess and flevour of the pickles,

- the cucumber is sorted according to size and then it_is washed;
- the washed cucumber is placed in barrels of water to which are added three percent salt and five percent vinegar.

It is essential that the cucumber should be of uniform size for a single can, when they are placed in it when it is filled with the solution heated to $7 r^{\circ} \mathrm{C}$ 。
I. The production of assorted jams

The fruit is prepared and sorted according to size and ripeness; it is striped of seeds and skins according to type of fruit; then the fruit is boiled squeezed and crushed; it has sugar added and is then cooked; the jams are put in cans at a temperature of no less than $95^{\circ} \mathrm{C}$; filling when hot, facilitates sterilization.

## J. Production of compotes

The most important compotes produced are: apricots, pears, peaches and cherries.

The fruit is sorted by size, variety and ripeness; then the seeds and skins are separated from them, sometimes by use of warm water with a mild alkalic substance to assist in removing skins.

They are packed into cans and then a sugar solution is added at a temperature of not less than $85^{\circ} \mathrm{C}$ 。

The cans fillod with the fruit and the solution are heated to expel air, which affects the coloratinn of the compote.

## K. Production of drinks

Among the most important of thase are: lemon, orange, and Shami mulberry.
The fruit is sorted, then squeezed and filtered; sugar is then added. in appropriate quantities for each fruit, according to varietios and ripeness.

The fruit juice is stirred with sugar until the sugar is completely dissolved.

The fruit juices are put into clean and dry bottles and then the bottles are sealed and sterilized.
I. Production of cans needed for packing the product

The cans are made from thin sheet iron, coated on the inside with a veneer substancc which adheres completely to the metal and the inside of the can. This substance is unaffected by acidity, heat or salt solutinns.

The mast important stages of processing of the cans are:

- the bady of the can: sheets of thin sheet iran - cutting out of the body of the can - flattening out - wrapping round - welding the can lid pressing down - applying the rubber.

Then the lid is placed on the can after it has been filled, and it is sealedimechanically.

## Statistical Data:

To continue, some information concerning cost, price, production and other aspects of the "Conserva" Companies products are presented。 See Tables Three Eight. ( Pages 22-29).

## VIII New Projects in the "Conserva" Industry in Syria:

A preliminary study is being implemented for the establishment of a new "Conserva" factory in the Tdlib area.

The commissions concerned are still engaged in the study of the setting up of the Idlib factory in the light of the following data:

- the need of the Aleppo mohafazat for tomatoes and other vegetables;
- the internal need of the mohafazat for early agricultural produce;
- the requirements of the Jebla "Conserva" factory, estimated at 8,000 tons during the season;
- the impossibility of increasing the cultivated irrigated area because it exceeds the minimum for the agricultural cycle;
- ascertaining the amount of yield per unit of area for crops on irrigated and unirrigeted land.

Moreover, at the present time, an initial study is being made of establishing a unit for pickling olives in the light of the quantities available and the quantities of the product which are expected to be available for sale. However, the initial study makes plain that the quantities of olives necessary for processing can be transported to an existing factory for pickling, in view of the fact that the cost of equipment in the event of setting up the new unit in an existing "Conserva" factory are less than setting up a new pickling unit, since in the existing factories there arc already electricity, $\mathrm{s}_{\mathrm{t}}^{\mathrm{t}} \mathrm{e}$ m and land and sone of the building and equipment necessary for pickling. In addition is the saving of the cost of land and administration.

Moreover, the commissions are carrying out an economic feasibility study to see if the project is viable and a; so to compare the alternative of setting up the unit in Idlib, with the other oossibility of transporting the crop to the factory Jebla in Damascus.

In the light of the economic feasibility studies of the two above mentioned projects, the necessary decisions will je taken. Here reference must be made to

TABLI 3
Bstimated costs of the main products of the Conserva companies
（Syrian piastras）

| Type of product and capacity | $\left\lvert\, \begin{aligned} & \text { Cost of } \\ & \text { raw } \\ & \text { materials } \end{aligned}\right.$ | Cost of additional materials | Indus－ trial costs | Costs of container and wrapping | Sundry costs Trading pro－ fit；consumer discount | Total | Cost to con－ sumer |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Tomato puip Density 36，38 $\frac{1}{2} \mathrm{Kg}$ 。 | 49.38 | 0.75 | 19．63 | 34.02 | 23.05 | 126.83 | 120.00 |
| ＂ 1 kg 。 | 101.15 | 1.50 | 26.55 | 36.50 | 41.26 | 226.96 | 265.001 |
| ＂ 5 kg 。 | 545.00 | 5.00 | 177.25 | 134.30 | 191.45 | 1053.00 | 1315.00 |
| Tomato pulp Density $40^{\prime} 42$ $\frac{1}{3} \mathrm{~kg}$ 。 | 56.44 | 0.75 | 19.63 | 54.02 | 24.16 | 135.00 | 135．00 |
| ＂ 1 kg 。 | 115.6 | 1． 50 | 36.55 | 46.5 | 44.47 | 244.62 | 245.00 |
| ＂ 5 kg 。 | 622.88 | 5.00 | 177．25 | 134.30 | 208.75 | 1148．18 | 114．0．00 |
| Cherry Jarn 1 kg 。 | 112.36 | 72.50 | 43．67 | 46.50 | 49.97 | 325，00 | 350.00 |
| Pear Jam 1 kg 。 | 122．79 | 72.50 | 43.50 | 46.50 | 50.11 | 335.00 | 365．00 |
| Peach Jam 5 kg ． | 542.70 | 362.50 | 193.50 | 134．10 | 207．20 | 14.4000 | 1590．00 |
| ＂＂ 1 kg 。 | 108．54． | 72.50 | 43.00 | 46.50 | 34.46 | 305.00 | 345.00 |
| Apricot Jam 1 kg ． | 41.30 | 79.46 | 43.67 | 46.50 | 62.03 | 272.95 | 250.00 |
| ＂＂$\frac{1}{2} \mathrm{~kg}$ ． | 20.73 | 39.73 | 23.90 | 33.77 | 34.74 | 152.87 | 150.001 |
| ＂$\quad$＂$\frac{1}{4} \mathrm{~kg}$ ． | 10.32 | 19.86 | 12.65 | 17.10 | 17.62 | 77.55 | 80.00 |
| ＂＂ 5 kg ． | 206． 50 | 397． 30 | 196．52 | 134.33 | 274.86 | 1209.51 | 1210．00 |
| $\frac{\text { Compotes }}{\text {－Apricot }} 1 \mathrm{~kg}$ 。 | 41.30 | 31.90 | 21.50 | 46.50 | 41.52 | 182.72 | 190．00 |
| －Pear 1 kg 。 | 122.89 | 29.00 | 21.50 | 46.50 | 35.11 | 255，00 | 280.001 |
| －Peach 1 kg 。 | 108.54 | 29.00 | 21.50 | 46.50 | 34.46 | 24．0．00 | 265.00 |
| Peas 1 kg ． | 58.69 | 0.50 | 20.50 | 46.50 | 37.05 | 163.24 | 165,00 |
| ＂$\frac{1}{2} \mathrm{~kg}$ ． | 23.34 | 0.14 | 11． 27 | 23，77 | 21.91 | 96.43 | 100.00 |
| Green Beans 1 kg ． | 28.06 | 0.50 | 20.50 | 46.40 | 28.06 | 123.52 | 125.00 |
| ＂＂$\quad \frac{1}{2} \mathrm{~kg}$ ． | 14.03 | 0.20 | 11.27 | 33.71 | 17．4．1 | 76.62 | 80.001 |
| Artichokes 1 kg ． | 257．46 | 1.50 | 21.83 | 46.50 | 95.59 | 421.88 | 375．00 |
| Vine leaves 1 kg ． | 28.34 | 0.50 | 21.83 | 64.00 | 33.96 | 148.63 | 150.00 |
| Green，okra 1 kg ． | 65．9！ | 14.56 | 21.00 | 46.50 | 43.51 | 97.48 | 200.00 |

TABLT 4
Selling prices of the products of the Conserva companies (Syrian Piastras)

| Product |  |  |  | Unit | Consumers | Price |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Peas: 1 | large |  |  | 1 kg | 165 |  |
| Peas: m | mediun |  |  | 1 kg | 175 |  |
| Peas: 1 | large |  |  | $\frac{1}{3} \mathrm{~kg}$ | 100 |  |
| Peas: m | mediu |  |  | $\frac{1}{3} \mathrm{~kg}$ | 105 |  |
| Okra: s | slim |  |  | 1 kg | 200 |  |
| Okra: m | mediu |  |  | $\frac{1}{3} \mathrm{~kg}$ | 190 |  |
| Green beans |  |  |  | 1 kg | 125 |  |
| " | " |  |  | $\frac{1}{3} \mathrm{~kg}$ | 80 |  |
| Spinach |  |  |  | 1 kg | 150 |  |
| Vine leaves |  |  |  | 1 kg | 150 |  |
| Artichokes (inkinar) |  |  |  | 1 kg | 275 |  |
| Malukhia - leaves |  |  |  | 1 kg | 225 |  |
|  | - | rushed |  | 1 kg | 225 |  |
| Pickled cucumber with vinegar |  |  |  | 1 kg | 140 |  |
| Tomato pulp. Density 26, 28 |  |  |  | 1 kg | 190 |  |
| " | " | " | " | $\frac{1}{2} \mathrm{~kg}$ | 100 |  |
| " | " | " | " | 5 kg | 935 |  |
|  | " | Density | 30/32 | 1 kg | 215 |  |
| " | " | " | " | $\frac{1}{2} \mathrm{~kg}$ | 115 |  |
| " | " | " | " | 5 kg | 1050 |  |
| " | " | Density | 36, 38 | 1 kg | 265 |  |
| " | " | " | " | $\frac{1}{2} \mathrm{~kg}$ | 120 |  |
| " | " | " | " | 5 kg | 1315 |  |
|  | " | Density | 40, 42 | 1 kg | 245 |  |
| " | " | " | " | $\frac{1}{2} \mathrm{~kg}$ | 125 |  |
| " | " | " | " | 5 kg | 1140 |  |
| " | " | Density | 36:38 | 1 kg | 280 |  |
| Warch 1974 |  |  |  |  |  |  |
| " | " | " | " | 5 kg | 1345 |  |
| Apricot Jam (baladi) |  |  |  | 1 kg | 250 |  |
| " | " |  |  | $\frac{1}{2} \mathrm{~kg}$ | 150 |  |
| " | " |  |  | $\frac{1}{1} \mathrm{~kg}$ | 80 |  |
| " | " |  |  | 5 kg | 1210 |  |

TABLT 4 (Cont'd)

| Product | Unit | Consumers' Price |
| :---: | :---: | :---: |
| Jams |  |  |
| - Pear | 1 kg | 365 |
| - Peach | 1 kg | 345 |
| - " | 5 kg | 1590 |
| - Cherry | 1 kg | 350 |
| - Quince | 1 kg | 75 |
| - " | $\frac{1}{2} \mathrm{~kg}$ | 145 |
| - " | 1 kg | 265 |
| - | 5 kg | 1165 |
| Compotes |  |  |
| - Pear | 1 kg | 280 |
| - Peach | 1 kg | 265 |
| - Apricot | 1 kg | 190 |
| Rosewater drink | Bottle | 175 |
| Pomegranate/molasses | " | 270 |
| Fig jam | 1 kg | 240 |
| " " | 5 kg | 1075 |
| Fruit salad compote | 1 kg | 265 |
| Cherry compote | 1 kg | 265 |
| Jams |  |  |
| - Apple | 1 kg | 265 |
| - " | $\frac{1}{4} \mathrm{~kg}$ | 75 |
| - Plum | 1 kg | 250 |
| Truffles - Best | 1 kg | 1200 |
| " White | 1 kg | 1050 |
| Mixed pickles | 1 kg | 140 |
| Mixed vegetables | $\frac{1}{2} \mathrm{~kg}$ | 85 |
| Sliced carrots | 1 kg | 100 |
| Olives Masaabi | 1 kg | 250 |
| Green Beans | 1 kg | 150 |
| Yalangi with oil | $\frac{1}{3} \mathrm{~kg}$ | 105 |
| Beans mudammas | 1 kg | 140 |
| " " | $\frac{1}{2} \mathrm{~kg}$ | 85 |
| Lemon drink | Bottle | 255 |
| Orange drink | " | 255 |


| Crop | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Rice | 1.2 | 2.2 | 2.2 | 2.2 | 7.6 | 2.5 | 1.3 | 0.4 |
| Peas | 0.5 | 12.0 | 0.9 | 0.5 | 0.5 | 0.3 | 0.2 | 0.5 |
| Beans | 11.8 | 12.0 | 12.5 | 14.0 | 7.5 | 9.2 | 8.8 | 1.1 |
| Fasoolia | 1.5 | 1.5 | 1.5 | 2.4 | 3.3 | 4.4 | 2.9 | 3.7 |
| Potatoes | 47.7 | 48.9 | 40.8 | 39.7 | 50.3 | 47.5 | 65.3 | 72.5 |
| Garlic | 4.8 | 6.7 | 7.2 | 4.4 | 2.5 | 3.6 | 4.3 | 5.6 |
| Onions | 32.9 | 33.2 | 32.3 | 43.9 | 50.1 | 47.9 | 65.3 | 90.4 |
| Tomatoes | 153.2 | 135.4 | 126.0 | 161.6 | 183.6 | 192.0 | 192.4 | 248.4 |
| Green peas | 1.2 | 1.9 | 1.5 | 1.6 | 1.4 | 1.7 | 2.5 | 1.05 |
| Green beans $(f \circ o l ')$ | 23.1 | 37.3 | 29.7 | 17.7 | 16.5 | 17.9 | 24.7 | 25.1 |
| Eggplant | 33.2 | 34.3 | 35.9 | 42.5 | 57.0 | 49.7 | 49.3 | 62.1 |
| Okra | 4.3 | 6.9 | 4.4 | 10.3 | 9.0 | 8.9 | 7.0 | 8.2 |
| Green beans | 4.4 | 5.1 | 7.4 | 11.8 | 14.6 | 12.2 | 13.8 | 18.1 |
| Cucumber | 38.8 | 42.8 | 4.5 .4 | 64.0 | 69.2 | 74.2 | 51.1 | 58.6 |
| Peppers | 10.1 | 9.7 | 11.4 | 14.8 | 14.8 | 11.0 | 12.0 | 18.7 |
| Squash | 30.9 | 34.3 | 28.4 | 41.9 | 35.1 | 40.3 | 37.8 | 39.9 |
| Green lubya | 2.8 | 2.8 | 2.2 | 2.8 | 3.7 | 3.6 | 2.4 | 2.9 |
| Green onions | 8.5 | 9.4 | 10.1 | 9.6 | 10.0 | 10.5 | 13.8 | 12.5 |
| Mixed vegetables | 13.2 | 10.4 | 7.2 | 7.6 | 7.5 | 9.9 | 13.3 | 14.5 |
| Olives | 123.0 | 66.0 | 117.0 | 113.0 | 112.0 | 127.0 | 85.0 | 117.0 |
| Grapes | 230.0 | 206.0 | 202.0 | 21.3 .0 | 21.3 .0 | 248.0 | 206.0 | 209.0 |
| Apricot | 29.0 | 3.0 | 15.0 | 22.0 | 19.0 | 13.0 | 22.0 | $31 . \mathrm{C}$ |
| Apples | 24.5 | 21.3 | 26.1 | 27.9 | 25.5 | 23.1 | 17.7 | 34.2 |
| Pears | 5.6 | 5.4 | 5.5 | 6.0 | 5.7 | 5.5 | 5.8 | 5.8 |
| Plums | 3.3 | 2.4 | 3.3 | 7.2 | 4.0 | 3.5 | 4.3 | 5.5 |
| Peaches | 4.4 | 4.5 | 4.9 | 6.3 | 5.9 | 5.2 | 5.0 | 6.3 |
| Figs | 53.0 | 68.0 | 54.0 | 52.0 | 53.0 | 50.0 | 44.0 | 55.0 |
| Cherries | 1.3 | 1.3 | 1.7 | 1.4 | 1.5 | 1.0 | 1.7 | 1.5 |
| Quince | 0.8 | 0.7 | 0.9 | 1.8 | 1.4 | 1.1 | 0.6 | 0.7 |
| Pomegranate | 11.4 | 10.4 | 11.9 | 13.3 | 15.9 | 18.0 | 16.4 | 24.5 |
| Oranges | 3.3 | 3.7 | 4.6 | 4.7 | 3.0 | 5.5 | 4.3 | 8.9 |
| Lemon | 1.1 | 1.1 | 1.4 | 1.2 | 1.0 | 1.6 | 1.6 | 3.0 |
| $\begin{aligned} & \text { Citrus } \\ & \text { (others) } \end{aligned}$ | 1.1 | 1.3 | 1.7 | 1.8 | 1.1 | 2.0 | 1.9 | 4.2 |

Table of annual retail prices for agricultural products
(Syrian Piastras)

|  | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Squash | 58 | 54 | 48 | 90 | 81 | 76 | 66 | 71 |
| Tomatoes | 48 | 55 | 36 | 54 | 51 | 63 | 66 | 28 |
| Tggplant | 62 | 48 | 40 | 68 | 64 | 58 | 62 | $6 ?$ |
| Green Beans | 71 | 57 | 68 | 83 | 82 | 84 | 81 | 101 |
| Fasoolia | 84 | 73 | 108 | 92 | 33 | 95 | 82 | 85 |
| Okra | 58 | 65 | 68 | 89 | 75 | 88 | 132 | 146 |
| Peas | 75 | 66 | 71 | 100 | 97 | 95 | 90 | 99 |
| Cucumber | 73 | 59 | 59 | 69 | 65 | 73 | 75 | 98 |
| Malookhia | - | 42 | 24 | 30 | 31 | - | 47 | 53 |
| Spinach | 29 | 26 | 24 | 37 | 33 | 35 | 36 | 53 |
| Potatoes | 34 | 35 | 42 | 48 | 33 | 43 | 42 | 43 |
| Red onions | 31 | 30 | 27 | 33 | 22 | 37 | 40 | 19 |
| Garlic | 26 | 56 | 93 | 81 | 82 | 64 | 68 | 34 |
| Apples | 94 | 86 | 88 | 129 | 96 | 87 | 132 | 113 |
| Oranges | 63 | 61 | 73 | 67 | 66 | 75 | 55 | 46 |
| Lemons | 55 | 43 | 61 | 65 | 70 | 70 | 80 | 77 |
| Grapes | 59 | 46 | 55 | 41 | 83 | 74 | 83 | 72 |
| Plums | - | 63 | 82 | 71 | 75 | 75 | 87 | 93 |
| Apricots | 97 | 94 | 116 | 93 | 67 | 103 | 88 | 79 |
| Figs | - | 35 | 54 | 38 | 45 | 37 | 47 | 63 |
| Peaches | 63 | 68 | 110 | 81 | 85 | 108 | 91 | 114 |
| Pears | 99 | 77 | 129 | 151 | 109 | 131 | 111 | 145 |
| Quince ${ }^{\text {a }}$ | 89 | 146 | 113 | 123 | 92 | 101 | 105 | 110 |
| Cherries | 190 | 224 | 160 | 158 | 171 | 229 | 186 | 194 |
| Pomegranates | - | 49 | 63 | 82 | 48 | 58 | 60 | 70 |
| Olives (dhan) | 133 | 140 | 131 | 157 | 150 | 150 | 162 | 225 |
| Green Olives | 149 | 148 | 149 | 161 | 150 | 150 | 162 | 238 |

TABLE 7

companies for $1971-2-3$ and the plan for 1314


TABLI I (Cont'd)

| Product |  | 1971 $P$ | 8 |  | ${ }^{1} 972$ | \% |  | 1973 | 8 | 1974 Plan |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Zahsa (?) + meat | - , | - | - | - | - | - | 85 | - | - | According |
| Eggplant + meat | - | - | - | - | - | - | 35 | - | - | to |
| Chicken + potatoes | - | - | - | - | - | - | 12 | - | - | demand |
| Jams |  |  |  |  |  |  |  |  |  |  |
| Apricot | 846 | 840 | 101 | 882 | 870 | 101 | 1172 | 1082 | 108 | 1200 |
| ouince | ${ }^{1} 66$ | 125 | 133 | 169 | 140 | - 20 | 112 | 168 | 67 | 150 |
| Cherry | 461 | 100 | 46 | 146 | $\because 30$ | 112 | 34 | 150 | 22 | 100 |
| Fig | 87 | 100 | 87 | 100 | 179 | 55 | 0.9 | 209 | 0.5 | 50 |
| Peach | 0.91 | 7 | 13 | 11 ! | 2 | 566 | 3.7 | 5.7 | 66 | 5 |
| Pear | 0.11 | - | - | - | - | - | 0.7 | - | - | - |
| Apple | 2.2 | 5 | 45 | 6.3 | 5 | 12.6 | 1.8 | 2.3 | 96 | 2 |
| Compotes |  |  |  |  |  |  |  |  |  |  |
| Pear | 15 | 30 | 49 | 31 | 25 | 124 | 30 | 44. | 63 | 20 |
| Peach | 18.5 | 20 | 61 | 29.3 | 30 | 97 | 15.8 | 44 | 34 | 15 |
| Cherry | 6.1 | 40 | 15 | 39.9 | 40 | 99 | - | 54.5 | - | 25 |
| Apricot | 15.9 | 50 | 34 | 15.4 | 26 | 59 | 4.3 | 27.5 | 1.8 | 10 |
| Molasses |  |  |  |  |  |  |  |  |  |  |
| Pomegranate | 7.6 | 5 | 152 | 7.4 | 7 | 106 | 2.9 | 16.5 | 19 | 15 |
| Drinks |  |  |  |  |  |  |  |  |  |  |
| Orange | 43. | 50 | 86 | 21 | 21 | 100 | 25 | 66 | 60 | - |
| Miul berry | 8.5 | 20 | 42 | 1 | 5 | 21 | 1.3 | 11 | 12 | 6 |
| Lemon | 40 | 50 | 79 | - | 2 | - | 29 | 44 | 68 | 20 |
| Tomato | - | 10 | - | 5.7 | - | - | - | - |  | 15 |
| Rose | 5.9 | 25 | 22 | 6.5 | 7 | 94 | 1.2 | 11 | 11 | 6 |
| Camar ed. deen | 13.9 | 25 | 56 | - | - | - | - | - | - | - |
| Ice block | 18587 | 20000 |  | 196000 | 300000 | 6512 | 295000 | 300000 | 98 | 30000 |

TABLI 8
Imports_and Pxports of some Agricultural Prodacts 1970 71 (in tons)

| Product | 1970 |  | 1971 |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Import | Trport | Import | Txport |
| Tomatoes | 25191 | 11691 | 28295 | 4877 |
| Onions | 616 | 5121 | 83 | 10932 |
| Garlic | - | 1220 | - | 2142 |
| Potatoes | 10752 | 35 | 14575 | 7 |
| Fasoolia'lubyabeans | 82 | 720 | 97 | 830 |
| Cucumber/pumpkin' squash | 648 | 3007 | 1571 | 2063 |
| Tggplant | 9482 | 31 | 7046 | 214 |
| Okra | - | 42 | 2 | 74 |
| Olives | 10 | 171 | - | 606 |
| Peas | 5 | 79 | 57 | 6 |
| Oranges | 61741 | 3 | 79717 | 2 |
| Lemons | 14211 | 7 | 14900 | 1 |
| Figs | - | 615 | - | 1187 |
| Fresh grapes | 2 | 4602 | - | 3359 |
| apples | 8076 | 646 | 8481 | 611 |
| Quince | 534 | - | 419 | - |
| Apricots | 473 | 553 | 305 | 1475 |
| Peaches | 1097 | 358 | 726 | 399 |
| Plums | 137 | 578 | 18 ? | 995 |
| Cherries | 119 | 2 | 59 | 10 |
| Pomegranates | 36 | 152 | 16 | 256 |

the need to try with all means available to develo agricultural crops to cover the maximum productive capacities of the existing factories first of all, and then to think of setting up new factories.

## IX The Problems Facing the "Conserva" Companies and Proposals and Recommendations For Overcoming Them:

A. The Problems:

## 1. Supply of raw materials:

The "Conserva" companies rely on a large mumber of crops and encounter difficulties in ereuring supplies of some of them, even during the season. Since all of the "Conserva" companies' products have given specifications, these must be observed. Therefore, it is necessary to purchase the raw materials with specifications in order to obtain a final product with the required quality. The raw materials are ensured by the company's purchasing commissionwithout there being prior contracts between it and the merchants. In most cases the merchant does not supply the raw material with the necessary technical specifications for processing and, delivers to the factory the remains of his market business, or he delivers to the factory the fruits and vegetables he can not sell in the market at prices higher then factory prices. However, that is not general practice for all purchases, but we merely assert that this happens in some cases according to the supply and demand on raw materials.

Since 1970, the "Conserva" companies have begun to ensure their raw materials and especially tomatoes and apricots by means of the Agricultural Co-operative Federation from the state farms at a fixed price, that has been previously agreed upon. But this agreement does not include the necessary specifications for processing which in some cases leads to the delivery of quantities of the raw material with poor characteristics. It has also been observed in some cases that the Agricultural Co-operation Federation does not observe delivery dates and daily amounts in such a way as to fit in with the factory's daily productive capacity. This has an effect on the proper muning of the processing operations and their regularity in general. As previously mentioned, ensuring the primary agricultural materials for processing is affected by the following:

- variation in the price of a singe commodity during the season of production, which affects industrial costs;
- variation in the specifications required for the industry, which affects the quality of production and return;
- irregularity in delivery dates, which affects the factory operating routine;
- irregularity in effecting deliveries n the quantities ordered, either on a daily basis or seasonally, which affects the production plan and the plan for marketing and costs.

For the company not to bind itself by prior contracts, whether with the state farms, or the Agricultural Co-operative Federation, or the merchants, in which are laid down the specifications required, the price and the quantities required to be delivered, daily and in total, is to put at risk the ensuring of the primary product, and it is sometimes compelled to take delivery of unsuitable produce for processing. Moreover, the company may have to ensure its primary produce at prices which fluctuate from day to day in one season for the same item.

The following table exemplifies clearly, the variation in buying prices for some of the principal raw materials in the period 1971-1973.

TABLE 9
Raw Materials Price Fluctuations
(Syrian Piastras)

| Raw Material | 1971 | 1972 | 1973 |
| :--- | :--- | :--- | :--- |
| Tomatoes | $10-11$ | $8-12$ | $10-20$ |
| Fasoolia | $45-50$ | $20-80$ | $85-100$ |
| Peas | $20-30$ | $25-41$ | $35-55$ |
| Beans | $20-25$ | $16-18$ | $20-26$ |
| Apricots (baladi) | $45-50$ | $40-62$ | $70-80$ |
| Oranges | $25-35$ | $30-35$ | $29-33$ |
| Apricots (Kilabi) | $20-30$ | $20-40$ | $35-65$ |
| Pears | $85-90$ | $75-85$ | $100-125$ |
| Quince | $30-38$ | $38-49$ | $45-57$ |
| Pomegranate | $25-30$ | $25-28$ | $36-38$ |
| Cucumber | $27-50$ | $40-43$ | $55-60$ |

On the other hand the company is lacking in the integrated machinery for supervising purchasing operations for primary products in the quantities, with the specifications and at the specified times required.

Since tomatoes are among the principal items needed by the "Conserva" companies, there are many difficulties in ensuring this item in the right quantities for processing in spite of the fact that they are guaranteed by the Agricultural Co-operativa Federation.

To take the quantities delivered to factories in 1972:

## The Chota Factory

If we take account of the fact that the effective productive capacity of the factory daily is 110 tons, i.e., 77) tons per week, and taking the deliveries to the factory of tomatoes weekly, we find that the Ghota factory during the tomato season worked for one week only at its effective productive capacity (when deliveries came to 830 tons); and that the factory worked for four weeks at about its effective productive capacity, (when deliveries weekly varied between 730 and 760 tons); for one week at about 530 tons; one week at 430 tons; and for the remaining weeks at a mean average of 335 tons of tomatoes. That is to say that at the height of the tomato season in the Damascus region, the factory worked for only four weeks at full productive capacity, apart from there being a shortfall in deliveries at the beginning and end of the season of about 30-50 percent of productive capacity.

As for the Mzeireeb factory, it faced the same difficulties in ensuring supplies of tomatoes. If we consider the theoretical capacity to be 110 tons daily, i.e. 770 tons weekly, taking the same season, 1972 there was one week when deliveries came to about 655 tons, two weeks of of 525 tons, two weeks of about 425 tons and the remaining weeks'deliveries came to between 200-300 tons.

The same difficulties are met by the Qaboon factory during the tomato season. If we take the effective production capacities of the "Conserva" factories daily, to be:

Al-Ghota
Al-Qaboon
Al- Hz eireeb

Total

and if we regard the lines as working at their given capacities for eighty days only then the necessary quantities of tomatoes for processing in the Damascus and Deraa areas will be:
$80 \times 25=29,750$ tons,
and if they are run for ninty days the total will be:
$90 \times 425=38,250$ tons;
in addition to what is required by the Jebla factory. Here we can see the difficulties and the gravity of the situation in ensuring the raw material for tomatoes to run the factories at full capacity.

## 2. Production:

In spite of ail the developments and improvements made in the "Conserva" factories, whether in ensuring modern equipment and machinery, increasing the mubers of technicians and a trend towards a better method of processing, nonetheless, scientific progress in the "Conserva" industry is still slow without any great improvement to go along with modern scientific development which is continuous in this important foodstuffs industry.

Since the specifications of the raw material vary from day to day and even in the same day, this leads to great difficulties in the processing operations and it is not possible to rely on one fixed processing method. But it is essential for the company's technicians to have a sufficiently high standard of knowledge to deal with production difficulties when they occur and before it is too late. This requires the presence of engineers who are chemists and specialists in the foodstuffs industries, of wide experience in this area, to obviate what is possible of production difficulties in processing.

The ratio of mistakes noticed in the "Conserva" industries decreases from season to season. The following are some of these mistakes:

- variation in colour and density of tomato pulp;
- variation in taste, colour, flavour and proportion of sugar in a given kind of jam;
- variation in the firmness of pickled cucumber, as well as in its acidity and so its taste;
- variation in the firmness of the fruit in compotes, in relation to any given kind;
- variation in colour of peas, and the presence of a variety of sizes in one car.

Therefore, at present, in all the factories of the "Conserva" companies, there is the laboratory, with the necessary equipment for control of production, continuous and precisely, to end production mistakes. Moreover, the production difficulties, as previously stated resu-t from the difficulties which derive from onsuring the raw materials, with the specifications and with the quantities necessary for processing daily, with the lack of the necessary technical experience, the reduction of yield and the increase in wastage in the materials processed. The most important reasons for the loss are:

- the variety of the raw material and its quality;
- the high rate of damage to the raw material during storage and delivery;
- the way in which the workers deal with the raw materials and the methods of handling in the preparatory stages;
- inefficiency of the industrial operations and unsuitability of the processing conditions for them;
- lack of preparation of the raw and auxiliary materials at the right time for processing.

3. The Organizational Framework and the Administrative Apparatus in the "Conserva" Company:

As stated previously, the "Conserva" company is deficient in technical personnel specialized in the "Conserva" industry with the competence and in the numbers necesisury for tinia vivas industry, for the effective supeivising of all stages of processing, in lirse with modern scientific development.

In view of the compariy's being composed of a number of factories one in Ghota, another in Qaboon and a third in Mzeireeb - and the administrative direction being in Damascus - the proper running of these factories is affected. A way must be found to bring together the Damascus factories (Damascus and Chota) in one place with the administrative direction in the same building as the factory to facilitate the management of operations (particularly during the seasons, which may require taking immediate action under a number of headings, especially with regard to ensuring the supply of raw materials) and because of the possibility of swiftness of reaction in taking decisions on commercial matters.

The company faces great difficulty in ensuring its specialized administrativeappearatus for several reasons. Anong the most important is the difficulty of guaranteeing specialized personnel able to organize and co-ordinate a number of factories widely separated, but linked by means of a singlecentralized administration.

Another difficulty arises from the lack of a cadre on whose numbers the company can depend, the companies having to contract with seasonal workers, who may not have sufficient experience in the particular work of the "Conserva": every year the company has to make agreements with new workers, other than those of the previous season.

Other problens are:

- the low minimum wage, whether for specialist, technical personnel or for production workers?
- lack of co-ordination between the different sections of the one factory and between the different factories of the company in such a way that the programmes for taking delivery of raw materials and their quantities are consistent with numbers of workers on the various production lines;
- the large number of manual operations in some stages of processing;
- the lack of a professional description for all work centres;
- the large number of situations vacant in basic posts and the amall number of specialist personnel.


## 4. Marketing of Products and Sales Policy:

At present the company relies on the consumer establishment for disposing of its produce within the framework of the other products of the public sector. The sales policy was unplanned in relation to every single product, This has brought about an unhealthy situation to the products: the consumer organization has been forced to link disposal of some products with that of others. However, a solution is on the way, since the plan is being studied in the light of the needs of the market for each item.

As for the exporting, this is assured by the General Organization for Foreign Trading in Foodstuffs (Tafco). The marketing operation has also begun to improve, by calculating actual approximate production costs and fizing the selling price tc the consumer in the light of these, at the same time keeping the legal profit for the company, Up to now, however, it has been noticed that for some products the selling price to the
consumer has been below production cost. This is in accordance with the state's policy of ensuring the supply of foodstuffs at the lowest possible price.

## 5. Depots:

The company is deficient, in all its factories, in technical storage warehouses for preserving primary materials of medium-term duration, such as citrus fruits, some fruits and vegetables. Such depots as these are of use also for storing semi-processed products on the production line, in the event of emergencies and when breakdowns occur which entail keeping back these products for a short time during which they may be in a highly delicate state, which may have an effect on their specifications.

## 6. Cost Calculation:

Up to the present time there is no special section in the "Conserva" companies dealing with cost calculation able to calculate production costs according to modern methods used world-wide. Since purchase of primary materials goes on a daily basis and at varying widely disparate prices, the existence of the real costs would help the trading officials in the company to meke sound manoeuvers in buying such materials at prices they consider to be economic prices without having to refer back to other departments, in order get approval for buying at prices higher than the prices planned for. Usually the reply comes back from the departments concerned after the goods have been sold to parties better fitted to act on buying and selling such as merchants and owners of factories in the private sector.

Among the important elements in production costs are the container costs. In spite of the efficiency of the Qaboon can factory in processing, its distance from the Ghota and Mzeireeb factories and the presence of old machinery which still rely on manual work and the lack of co-ordination of its production lines, have led to an increase in production costs for containers of the various sizes. If the Gaboon factory in its entirety were transported to Ghota, it would be possible to reduce total annual costs of the factory. Moreover, its being in the Chota factory where there is a modern technical workshop for mainterence of machinery might increase its productive efficiency. In addition a tin factory in the Mzeireeb factory must be provided, and this would reduce transport costs and the ratio of damaged tin during transportation.

Furthermore, the technical production difficulties we have previously mentioned; which are the cause of a high waste - ratio of materials in the various stages of processing - inevitably have a share in the rise of the costs of rocessed materials. In addition to this, there are some mate ials addea in the process of production which it would be possible to dispense with, and some others which it is possible to regulate in quantity, as is the case with salt and sugar if the conditions of the producticn operations weredealt with.

The cause of the increase of costs is also the obvious increase in the numbers of workers, permanent and seasonal, although the new lines installed recently in the factory are all automatic. The reason for the increase in numbers of workers is the lack of good co-ordination in work in relation to the sections in which there are hand-operated machines.

Below is a table which makes plain the development in the numbers of workers from 1967-1973.

| Year | Permanent Workers | Seasonal Workers - Average | Total |
| :---: | :---: | :---: | :---: |
| 1967 | 214 | 275 | 489 |
| 1968 | 214 | 246 | 460 |
| 1969 | 199 | 203 | 402 |
| 1970 | 230 | 247 | 477 |
| 1971 | 235 | 292 | 527 |
| 1972 | 245 | 300 | 545 |
| 1973 | 221 | 425 | 706 |

## 7. Proposals and Recommendations:

1. Contrictoel arrangements with the farmers by means of prior contracts, which should be explicit and define prices, specifications and quantities to be delivered, average size of deliveries; delivery dates, $=$ containers to be used, and other controlling factors, along the lines of the contracts for sugar beet. The contractual relations to be established should be astablished in one of the two ways following:

- direct contracting between the company and the farmers with the help of the Agricultaral Co-operative federation and the co-operative associations.
- making a contract between the company and the Agricultural Cooperative Federation (ACF), and in this case, the latter must ratify individuel contracts with the farmers and the Co-operative Associations.

In buth cases th" "omserva" company, in orien to guarantee fulfilling of contraots, must guarantee a cash advance on account of the crop at an averase rate of twenty percent, at least of the estimated value of the quantitics contracted fors so that contracts such as these guarantee tho matual $\because i g h t s$ wi both parties.
2. Pamer.t of the value of the crop delivered within the shortest possible time, not to exceed a week from each delivery of the crop.
3. Delivery to be token at the factories of the "Conserva" company by a commission of veceipt, including representatives of the company and the ACP, as well as of the farmers, possessing the necessary skill and experience.

Should there be and dispute over delivery and receipt which the commission is une bie to reso? ve, the subject should be put before an arbitration commission, previously appointed, in the mohafazats to which the factories belong, comprising representatives of the Ministry of Agriculture and Asracultural Reform and the Federation of Foodstuffs Industries and the Central ACP.
4. In view of the shortage of primary material for some of the "Conserva" industries, in the event of the movenent of a quantity of tomatoes 0: other iteme Pron Damascus to Deraaa, or vice versa, or from Damascus to Jebla, or vice versin, at the wish of the company, and for its benefit, the company will bear the cosi of transport.
5. Fundarental study of the subject of containers and finding solutions for the use of the best types of container, provided this is done by consultation between the parties concerned and that this condition is included in the contract.
6. Attention to be paid to the subject of loading and unloading and the institu on ontrolling factors for this operation.
7. Drarilus up a ataçe by stage programme with the Ministry of Agriculture to encure adequate agnicultural primary products to operate the "Conserva" fectories at full productive capacity.
8. The interference of the suppliers of raw material should end at the delivery time ilic interference should be permitted after that act, since they wuid distur tho whole factory operations from the reception of rew arterishs, their urocessing end the delivery of final products.
?. Working towards organization of delivery between producers according to a programe which ensures giving every farmer the chance to deliver his crop according to the acreage sown and the quantity contracted for, so that the total of daily deliveries does not exceed the defined productive capacity of the factories.
10. The farmer should sort the tomatoes, vegetables and fruit before delivery to the factory, so that deliveries unsuitable for processing will be rejected and random samples will be taken on receipt (three containers fron each los, at least), while an estinate will be made of the ratio of produce which does not comply with the required specifications. If there is any contravention of the specifications the weight will be discounted, but the proportion of such contravention should not exceed ten percent. If it does, the whole quantity will be rejected, whatever its source.
11. In order to provide the largest possible quantity of primary materials and in view of the amount of study such a task requires, we consider it necessary to strengthen the company and the Federation with the Pollowing bodies:

- a body to supervise study of the market for the products required, so that it is possible to organize buying in the light of the study;
- a body to supervise type and specifications of the primary materials, with the help of a complete laboratory with equipment and personnel exclusively assigned to analyses, experiments and tests relating to the defiriition of the required specifications;
- a body to co-operate with the local agricultural and scientific departments to conduct field agricultural experiments and circulate the results obtained to the farmers who grow the crops reouired by the company and help them to implement the findings so as to get the varieties needed for processing.

12. Carrying out the necessary analyses of the primary materials and the materials in course of production and the processed materials in order to discover their characteristics and how far they measure up to standard specifications, and consequently directing processing operations.
13. Equipping each factory with a refrigerating room to keep some of the fresh primary inaterials for the time of processing, and also to store sone of the haif-processcd materiais, to complete processing when
work is slack in the factory or to store them in the event of a breakdown on the production lines, so that these products should not be affected in their more deiicate characterizations.
14. In the event of there being supplies of the primary materials in sufficient quantities, we consider it necessery to run the production lines for thee shifts per day and to spread the labour force over these shifts, sc that work will be uninterrupted in processing fresh primary materials in the shortest possible time after taking delivery. In this way it will be possible to reduce wastage, damage and overtime payments.
15. Proper exploitation of the machinery in the factory and repair of broken-down machinery, in order to ensure the running of automatic equipment aid to redace reliance on manual labour.
16. Development of the laboratories in the factories and equipping then with the personnel and equipment necessary for the analyses required and for the cerrying out of experiments for the development of production.
17. Trainirg of those working on the lines after they have been distributed in such $\exists$ way as to guarantee adequate numbers of specialists at every stage, at the seme time intensifying control and continuous effective supervision。
18. Strengthening the factories with a workshop for maintenance and a well organized store for spare parts, with specialist personnel to carry out proper maintenance at regular times and to repair sudden faults rapialy during the season.
19. To try to keep seasonal workers on continuously, so as to preserve the experience acquired.
20. So organize the depots as to facilitate movement through them and the withdrawal of the required materials at all times and under all circumstances.
21. Placing boards made of wood or any other material resistant to humidity in the store for primary matcrials used for completing processing, such as sliger. in order to prevent the seepage of humidity from the cellar of the stone to them.
22. Improving methods of producing cans and using the modern automatic machinery available to the company so that it will work automatically with the aim of increasing the productivity of the can factory.
23. Carrying out an economic study of the use of cans made from pressed out thin sheet metal.
24. Mechanization of transport and processing operations as far as possible, and renovation of old machinery.
25. Laying down production norms for every product and working continuously to improve them in order to achieve the ideal norms.
26. Ensuring specialized, educated technical cadres from top to bottom of the organization.
27. Increasing the numbers of those sent abroad for technical specialization in the "Conserva" industry.
28. Sending technical missions abroad for fact finding tours in order to exchange experience and develop the existing industry.
29. Strengtheningand reinforcing the technical and productive apparatuses in the Federation of Foodstuffs Industries, so that it can play its leadership role in supervision and direction.
30. The need to provide the necessary spare parts in the necessary quantities at the right times, in order to face any breakdown which might affect production, yield, wastage and return, etc.
31. The preparation of an "establishment table" for every factory whose setting up is decided on, before it is set up, and training part of its main technical personnel in the country which exports the machinery and equipment. Although this has not been done for the Mzeireeb and Jebla factories, nonetheless, we consider it to be essential to send some technical personnel from among the employees at Jebla and Mzeireeb, to the countries which delivered the machinery of the two factories. These emplcyees should be trained in operating, maintaining and working properly on the machinery and equipment as well as on developiag it. Until these technical personnel are sent abroad, we consider that the United Nations and the Arab League and other concerned world bodies should be asked to gend some of their specialists and experts to Syria to work on the development of personnel of the "Conserva" industry and the training of technicians locally, as well as to work on a detailed and precise study of the situation of these companies, in order to learn of their problems and put forward recommendations for overcoming them.
32. The neer for the company to make all possible efforts to implement its expioitation plan for 1974 completely, since the projects mentioned in it heve a great influence on the development of production and the reduction of waste.
33. The study of the possibility of moving the Qaboon factory and the central acininiatrative machinery to the Ghota factory, which will assist in reducins the proportion of technical personnel and facilitate the $r$ anning of the two ractories together, by the unified administration.
34. The nead for implementing a system for calculating costs so that those in the company responsible may by means of this system control the various operations with the necessary supervision.
35. Setting up a library in every factory equipped with all ecientific books deeling with the "Conscrva" industry.
36. Providing health and industrial safety conditions for the workers to protect then from disease and accidents.
37. Finding a suitable solution for the problem of incapacitated and aged, and guaranteeing their rights.
38. Development of ralations between the administration and the workers for the sake of increasing productivity, in such a way as to bring about real co-operation betreen the two sides on the basis of improving the working conditions, raising the productive capacity and increasing the return on labour and the maintenance of the machinery.
39. Drawing up an internal routire, standard and comprehensive for all the factories.
40. Drawing up a professional description of all the positions in the factories and reviewing as far as possible, the minimum wage, in the light of this djacription and in conjanction with the Ministry of Social Affairs and Jabour.
41. Acceleration in implementing the system of incentives for production.
42. Teaving froedom of manocuvre to the individual establishment within the frouework of the production plan previously agreed ong and making this plan have the force of law which must be carried out. This guarantees individual initiative and opportunities for the factory which is being impeded by routine.
43. To try to increase exports of agricultural products by means of a fully integrated plan, which ghould link up agricultural production and industrial production on the one hand, and between the demands of local consumption and export possibilities on the other.
44. The need to do sufficient propaganda and advertizing work in order to make known our products abroad, by means of wide-spread advertising campaigns for Syrian products in inarkets abroad。

[^0]:    * Production Director, Productivity Centre, Food Industry Union, Damascus

    1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has been reproduced without formal editing.

[^1]:    Source: 1971 - 1975 Development Plan (Council of Ministers Decree No. 144/F, 22 July 1971)

