# MARKETING FEASIBILITY STUDY
# FOR A FOOD PROCESSING PLANT LOCATED AT CHUNGJU, CHUNG CHONG BUK PROVINCE
# REPUBLIC OF KOREA



CONDUCTED FOR INTERNATIONAL COOPERATIVE ALLIANCE

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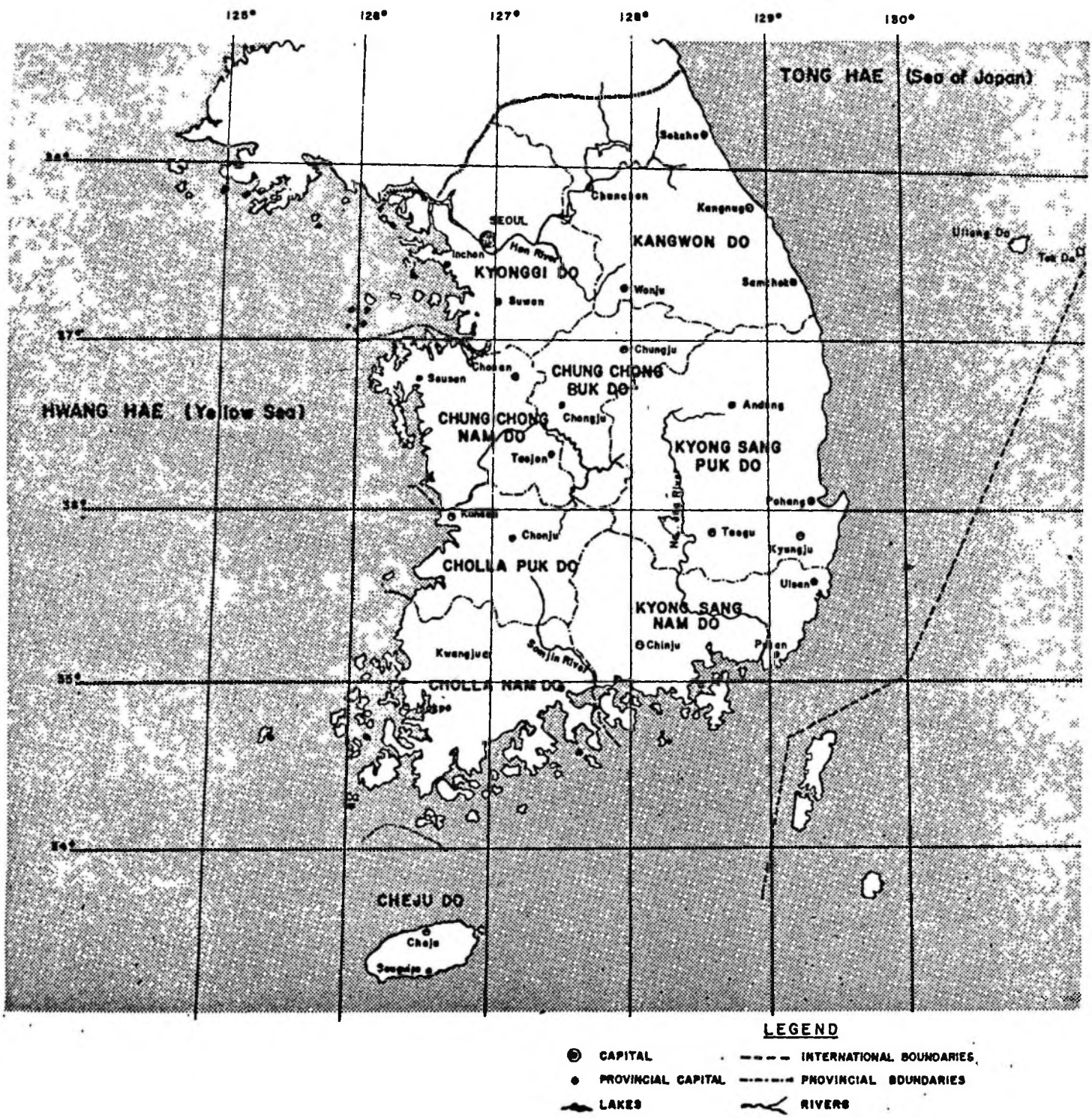
# REPUBLIC OF KOREA



FOOD PROCESSING PLANT

CHUNGJU HORTICULTURAL COOPERATIVE

REPUBLIC OF KOREA

## BACKGROUND AND SUMMARY

### DESCRIPTION

The Chungju Horticultural Cooperative, located at Chungju, Chungbuk Province, Republic of Korea, proposes to start a food processing plant as a means of gaining additional market outlets, developing a higher priced increment of production, stabilizing over-all prices for their products and enhancing incomes of farmer members.

The Chungju Cooperative is a member of the National Agricultural Cooperative Federation, a quasi-government organization which includes all cooperatives in the Republic of Korea. NACF is assisting the Chungju Cooperative to apply to the International Cooperative Alliance for a grant to help defray the cost of establishing the processing plant.

Rationale for granting of financial support from ICA is the opportunity to utilize the proposed processing plant as a pilot or example of cooperative endeavor for observation and emulation by other cooperatives both in Korea and in other developing nations. Purpose of the study reported in the following pages was to determine the marketing feasibility of the proposed processing facility.

The National Agricultural Cooperative Federation serves at one level as the link between the Korean government and individual farmers throughout the Republic. This is accomplished through a system of town and village cooperatives which are affiliated with county cooperatives, in turn with provincial NACF offices, and

thus tied to NACF central headquarters in Seoul. Other links in the cooperative chain include special horticultural and livestock cooperatives in important production areas.

Almost all farmers in Korea are affiliated with NACF through either the town and village cooperatives or the special cooperatives. NACF is a supra-cooperative organization that performs major functions including purchase and resale of agricultural production supplies; domestic and export marketing of farm products; provision of credit through a cooperative banking facility; extension services or "farm guidance" for farmers and their families; and related activities such as research, publication of agriculturally related materials and many others.

Processing of agricultural commodities is presently carried out by a number of special horticultural cooperatives affiliated with NACF. In addition, NACF is heavily committed to a chain of retail general merchandise stores, specialized retail outlets in urban areas and wholesale marketing centers in major Korean cities.

The Chungju Horticultural Cooperative was established in April, 1946. The cooperative is made up of some 829 farmer members, most of whom are fruit growers. Cooperative participation at present is 4,100 shares with paid-in capital and reserves of 4,879,000 won in 1969. Cooperative leaders anticipate that membership will increase to 1,500 members with 16,230 shares by 1975.

The cooperative is governed by a five man board of directors selected from among 50 representatives who in turn are elected by the general assembly consisting of total membership. Employees include the manager, nine clerks and four others.

Cooperative activities include purchase and supply of production materials, farm chemicals and fertilizers to members; marketing of members' produce; and services such as training and guidance in production and management.

The proposed food processing plant would be managed by the present management of the Chungju Cooperative. The plant would consist of site and facilities valued at 18,379,000 won. Raw material utilization capacity would be 2,000 metric tons per year. First year production plans call for use of 899 metric tons of raw materials to produce 17,000 No. 4 cans of fruit, juices and jam. This would result in projected total gross income from processing of 115,500,000 won with resulting earnings of 12,368,000 won.

Raw materials for the plant will be drawn from the surrounding area. Some 70 percent of the processed product will be marketed in the present marketing area of the cooperative which takes in parts of three provinces. The remainder will be marketed through NACF and wholesalers in Seoul.

Required financing includes 55,136,000 won for plant site, construction of buildings and purchase of machinery and equipment; 18,876,000 won for initial raw material purchases; and 27,223,000 for first year operating expenses, for a total initial investment of 101,235,000 won.

The Chungju Cooperative is applying for a grant from ICA in the amount of 53,136,000 won for construction of the building and purchase of equipment. NACF

has agreed to provide a loan for purchase of raw material and 80 percent of the initial operating fund needs. This would obligate the cooperative to provide 7,445,000 won or 7.3 percent of total financing as their share. Interest rates on the NACF loan would be nine percent on the loan funds provided for purchase of raw materials and 15 percent on the operating fund loans. Both of these rates are well below commercial bank interest rates which exceed 20 percent per annum.

MARKETING STUDY METHODOLOGY

The study reported in the following pages was conducted within the framework of a marketing feasibility approach. The technical feasibility thus is not evaluated. However, the technical specifications which are provided in the attached appendix were designed with reference to successful operation of the cooperative processing facility at Inchon, which would at least indicate that the proposed machinery and production line details are soundly conceived.

The conclusions derived from this study do not include any value judgement as to the course of action which should be followed by ICA in regard to the project. The scope of this report is necessarily limited to those aspects of marketing in the broader sense which will help determine the economic feasibility of the proposed project--again, within a framework and general outlook proceeding primarily from marketing considerations,

While quantitative measurements are interjected as components of the marketing analysis wherever possible, emphasis has been necessarily placed more upon qualitative factors. In the Republic of Korea as in many other developing countries, statistics are difficult to accumulate, sometimes contradictoryand often unreliable. Therefore attempts to perform a purely quamtitative analysis of the marketing prospects for this particular facility would be unrealistic and in large part meaningless.

Although the pragmatic as opposed to the econometric approach to marketing feasibility analysis may not appeal to the economic theoretician, in the judgement of this surveyor it is the only workable approach to actual problem solution under the specified conditions existing in the ROK at the present time.

Sources of information for the study included personal discussions with staff members of both the National Agricultural Cooperative Federation and the Chungju Horticultural Cooperative; personnel of the Korean and U.S. governments in Seoul; fruit growers; other food processors in the Republic of Korea; proprietors of retail food outlets; and to a limited extent, with consumers.

Other sources included various publications obtained from the Korean government, U.S. Agency for International Development, the cooperative movement in Korea and others.

The study was conducted at the request of the New Delhi office of the International Cooperative Alliance, under the guidance of M.V. Madane of that office. While the time and resources allocated to its completion did not allow an exhaustive study of all facets of the problem, it is felt that the information contained herein is adequate for the objectives concerned. These objectives included an over-all look at the marketing potential for the proposed project plus

a more cursory approach to questions of supply availability, financial feasibility and managerial capabilities.

## PROJECT FEASIBILITY

### MARKETING ASPECTS

From a marketing standpoint, the proposed project would appear to be feasible. Rate of growth in demand for processed foods in the Republic of Korea is increasing in annual increments of more than 10 percent. There is reason to believe that this growth could be accelerated if greater supplies of processed foods were available at reasonable prices.

The Chungju processing facility will be located in an area where no competitive facilities exist at the present time. The population of Chungju and surrounding areas represents a market area quite adequate to absorb the production volume envisioned by the project plan.

The Republic of Korea is one of the fastest growing economies in the world, with a nominal growth rate of 15.9 percent in 1969. Incomes and employment are also rising rapidly. Total demand for food is still increasing and demand prospects for processed foods are favorable. There are no strong deterrants in the culture or traditions of the Korean people which pose a barrier to increased consumption of processed foods.

One of the anticipated problems will be posed by the generally unsophisticated marketing and distribution system in the ROK. However, this is a problem that faces all food processors and one which can be at least partially overcome through positive planning and procedures to rationalize marketing channels used by the cooperative.

Location of the proposed project, in the second most important fruit production area in the Republic and its projected use of only a relatively small proportion of local production offer assurances of the feasibility of the planned supply procurement program. Additionally, careful consideration should be given to expanding the original list of foods to be processed to include as many others as possible. Some of the likely candidates for processing would be apple slices, pears, applesauce, apple and pear jams and possibly kim chi.

Further diversification of production would enable the plant to work at full capacity a greater proportion of the season, stretch out the length of the processing season and spread fixed costs over a greater number of units.

### TECHNICAL FEASIBILITY

This surveyor is not qualified to review the technical feasibility of the proposed project. However the project design by National Agricultural Cooperative Federation was drawn up by staff members knowledgeable in the field and based on successful operations by the Inchon cooperative over the past several years.

## FINANCIAL CONSIDERATIONS

The proposal appears to be based on sound financial estimates as presently written. However, without substantial participation by ICA on a grant basis, it does not appear that the returns from the project would be adequate to meet the required debt repayment burden, at least for several years.

## PROJECT BENEFITS

Among the benefits which would accrue from this project if it were successful would be: (1) some rationalization of food supply and provision of additional foods in processed form to meet the demands of the Korean people; (2) substantial addition to income of farmer members of the Chungju Horticultural Cooperative; (3) creation of employment for under-employed or unemployed members of the community with resulting economic multiplier effect; and (4) possibly some demonstration effect which might encourage other processors to locate in the area.

If the participation of ICA is limited to granting of funds, however, it is difficult to see how the Korea project would serve as an instructional model or motivating device in encouraging cooperative processing ventures in other areas of the Republic of Korea or other developing countries. There are already some 70 commercial and cooperative food processing entities in business in Korea at the present time.

If this project is financed by ICA on the basis of its serving as a pilot project, it would seem essential for ICA to insist on an active role in the development of the project as a whole. This role should not be limited to observation but should also include assistance and guidance in planning the project, the privilege of continuing to monitor the project operations and provision for use of the project as a case example of development of food processing enterprises.

In order to realize the above, ICA should give thought to utilizing the services of one or more consultants or ICA staff members to work with the cooperative at various stages of project development. In addition to providing an important assist to project success, the reports of the consultants together with case descriptions of various steps in project implementation would serve as a working/text for similar project development elsewhere. Also, the consulting experts would be enabled to accumulate knowledge concerning this type of project development which could almost certainly be utilized to advantage elsewhere in the developing world.

# MARKET DEMAND

## DEMOGRAPHIC FACTORS

Present population of the Republic of Korea is about 32-million. Table 1 shows population trends through 1968. By the end of 1971, the total population of the Republic of Korea is expected to be about 33-million. Population growth has slowed from an annual rate of 3.3 percent in 1961 to an estimated 2.2 percent at

the present time. Currently the population is almost evenly split between urban and rural residents with the urban areas gaining in numbers faster than rural areas.

Seoul, with a population in excess of five million people, is the major metropolitan concentration as well as the capitol city of the Republic of Korea. Other important urban centers include Pusan, Taegu, Kwangju and Inchon.

The transportation situation in the Republic of Korea is improving rapidly. During 1970 three limited access highways (freeways) were opened. The most important of these runs the length of the Republic, linking Seoul in the North with Pusan at the southernmost tip of the peninsula. Two other new highways connect the new Seoul-Pusan expressway with important urban areas between the two cities. The ROK government is actively improving other important highway links as well as secondary roads throughout the Republic.

Chungju, location of the proposed cooperative food processing plant, is 135 kilometers from Seoul. The most direct route is over a road that is unpaved for three-quarters of its length. However, the paving of the road started in 1970 and will be fully completed in the next two to three years.

Population of Chungju is 85,000 with a population of one million in Chongbuk Province. Marketing outlets for 70 percent of the plant product will be found in Chungju and within a 40 kilometer radius from the plant according to the plan. Included in this 40 kilometer primary marketing area are two large specialized population clusters. These include a mining area and a number of military bases operated by the ROK military. Both are located near Taejon, Chung Chong Nam Province. The mining area has a population of approximately one million including workers and their families.

Chungju is the center of the second most important (after Taegu) fruit production area in the Republic of Korea. A number of industrial facilities are also located in the vicinity, including the largest fertilizer plant in Asia; tobacco drying plant; talc stone works; rapeseed crushing and oil extraction plant. A new hydroelectric facility is under construction on the nearby Han River. A small but growing tourist trade is being built up in the area with several tourist resort hotels already completed or under construction.

## DEMAND PATTERNS

Level of income is a major determinant of food consumption patterns. As disposable incomes rise, expenditures on food increase substantially in absolute terms. After reaching a certain point, expenditures decline in proportion to total expenditures and total income. Typically as income levels rise consumption patterns evidence a qualitative improvement with first an increase in total volume of food as measured by daily intake of calories.

This is followed by a gradual shift in consumption away from cereals and toward increased consumption of animal proteins, such as meat, milk and eggs; more fats and sugars; and more vegetables and fruits. The next step is generally an increase in consumption of processed foods of all types, including the so-called "con-

venience foods." Of course, in any given economy, all of the above steps are proceeding in parallel for different segments of the economy.

Average per capita income in 1970 in the ROK was approximately $200. Income shows a marked variation between urban and rural dwellers. The average monthly wage of an urban salaried head reached $89 in 1970. Table 2 shows past growth and future income projections.

A study conducted by agricultural economists at Yonsei University in 1968 showed that households with yearly incomes exceeding $750, the highest income group studied, spent $525 per year on food. This was about 2.8 times more than the $190 spent annually on food by the lowest income group whose average yearly incomes were less than $280. Food accounted for 53.8 percent of total expenditures for the higher income group compared with 79.3 percent in the lower.

Demand for processed foods in the Republic of Korea has grown at an average annual rate of 9.4 percent per year since 1964. There is no reason to anticipate any lower rate of increase for the foreseable future. Over-all processed food demand is actually growing faster in rural areas of Korea than in urban areas.

Consumers in rural areas utilized $8.7 million worth of processed foods in 1964 and $14 million worth in 1968. Comparable figures for urban demand were $10.2 million in 1964 and $13.8 million in 1968. Urban demand for processed foods is projected to exceed $17 million while rural demand will add an additional $18 million by 1971. (These figures appear to be skewed by a more rapid shift of population from rural to urban areas than estimated by the study mentioned above.)

Population growth, industrialization, urbanization and rising incomes are major factors influencing food consumption patterns in the ROK. There have been recent impressive increases in consumption of eggs, milk, fruits, confectionaries and processed foods. Table 3 shows increases in production of processed foods during recent years.

Opportunities also exist in the export sector. Records show that exports of processed fruit and fruit products grew from $11 thousand worth in 1967 to $671 thousand in 1969. Growth is projected to reach $3.2 million by 1976.

MARKETABLE OUTPUT

Anticipated production during the first year will consist of 500,000 cans peaches, 200,000 cans grapes, 700,000 bottles apple juice, 200,000 bottles tomato juice, and 100,000 cans strawberry jam. The Cooperative originally planned to utilize cull and off-grade fruit in the processing plant thus providing a market for that portion of the crop which is normally unsaleable or provides a low return. The objections to this course of action are noted below.

DISTRIBUTION

Planned distribution channels include local wholesalers and retailers as well as eventual location of an agent in Seoul. It is anticipated that some 70 percent of total production will be marketed in Chungju and neighboring areas of Chungbuk and Kangwon and Chung Chon Nam provinces.

TABLE 1.

POPULATION TRENDS, REPUBLIC OF KOREA

| YEAR | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1972* | 1976* |
|---|---|---|---|---|---|---|---|---|
| TOTAL (1,000) | 27,631 | 28,377 | 29,086 | 29,784 | 30,470 | 31,139 | 33,045 | 35,281 |

TABLE 2.

PER CAPITA INCOMES

| Year | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1972 | 1976 |
|---|---|---|---|---|---|---|---|---|
| Total (won) | 22,692 | 25,128 | 31,006 | 35,922 | 43,609 | 65,196 | 80,637 | 104,669 |

TABLE 3.

Fruits Processed

(Unit: c/s)

| By year / Items | 65 | 66 | 67 | 68 | 69 |
|---|---|---|---|---|---|
| Canned peach | 16,915 | 32,388 | 32,816 | 150,515 | 126,188 |
| " apple | 2,590 | 8,995 | 5,484 | 7,568 | 3,111 |
| Grape | 12,720 | 3,602 | 1,426 | 10,000 | 15,707 |
| Tomato juice | 4,134 | 25,273 | 14,303 | 13,588 | 11,186 |
| Apple juice | 2,177 | 50 | 8,150 | 18,607 | 14,320 |
| Apple jam | | | | 3,125 | 4,146 |
| Canned pear | 500 | 95 | - | 5,858 | 192 |
| Total | 39,036 | 70,403 | 62,179 | 209,261 | 174,485 |

The retail marketing system in the ROK is still relatively unsophisticated, being composed primarily of specialized small retail outlets featuring a relatively limited stock of merchandise. A great number of small outlets typically sell fresh fruits; biscuits, crackers and candy; and a small stock of canned goods.

In contrast to this pattern, several supermarkets (self-service stores with a large and varied stock of merchandise) have been established in Seoul. As consumer incomes rise, typical retailing patterns will slowly but inevitably shift from the small, family operated, limited inventory outlets to larger, more diversified self-service and eventually "super-market" type outlets. A good example is the shift presently occuring in Japan, which exhibits a culture somewhat similar to Korea's.

Another retailing trend of interest particularly to cooperative food processors is the initiation by NACF of a chain of general merchandise outlets throughout the Republic. These outlets will stock food, sundries, hardware, clothes, appliances, almost everything needed by the rural consumer. They will eventually number 500 to 600.

There are several marketing channels open to cooperative food processors. These include sales agents who represent a number of product lines and collect a commission on goods sold; wholesale buyers who purchase direct from the plant and resell to secondary wholesalers who in turn resell to tertiary wholesalers or direct to retailers; through the NACF deomstic and export marketing system; and through plant-owned branches particularly in Seoul and perhaps Pusan. An additional outlet would be the export merchant who buys for export sale.

At the present stage of economic development, the lack of sophistication throughout the marketing channels in Korea and the consequent high cost of distribution leads to a dependence on high marketing margins to compensate for high costs and low sales volume. This is in direct contrast to the modern mass merchandising concept which concentrates on low unit profits and high volume sales.

Generally marketing margins for canned foods in Korea run about 100 percent. A No. 4 can of grapes, for example, which earns 110 won at the plant sells at retail in Seoul for 200 won.

SALES PROMOTION

Advertising and sales promotion have not yet been considered in the processing plan At the present stage of production and distribution in the ROK and with the growth trends evident in consumer purchasing power and general upgrading of dietary habits, one of the major merchandising tools is gaining shelf space for the product on retail shelves. This of course postulates the need for organizing effective distribution strategies.

Much of the brand promotion carried on for food products in Korea at the present time is by large manufacturers of candies and confectionary items which have become highly competitive and characterized by mass production firms with nation-wide distribution. It will probably be a long time before it will be profitable to engage in consumer advertising and any form of sales promotion for canned foods.

One effective vehicle for advertising and sales promotion does exist for the cooperative processors, however. This is the nationally known NACF symbol and name. This symbol could be evolved into a nationwide brand for all canned foods and other processed foods produced by all cooperatives throughout the ROK. The NACF symbol has already gained exposure and credibility through its use on milk delivery vans, etc.

If the separate cooperative processing plants were willing to subordinate their separate identies to an over-all cooperative brand identification, an advertising and sales promotion campaign would probably be worthwhile. Otherwise it would not pay for the Chungju Cooperative to undertake any such activity unless perhaps under special conditions, such as limited sales promotion in the city of Chungju.

COMPETITION

There are 70 food processing plants operating in the Republic of Korea. Some 36 of these plants turn out more than 100,000 cans a year; 15 produce more than 500,000 cans a year; and 8 produce more than one million cans of processed foods annually.

There are no food processing plants located in the city of Chungju nor in Chongbuk province. This represents a comparative advantage for the proposed cooperative in the local marketing area. A common rule of thumb postulates that a primary market area of 150,000 to 300,000 population is required for a processing plant with capital investment and operating costs of the magnitude planned by the Chongju Cooperative. This requirement is satisfied at the present time.

With no competitive marketing facility located in the primary marketing area and with the rapid growth trend in consumption of processed foods in Korea, the Chungju Cooperative is not faced with the prospect of carving out a share of a static market monopolized by existing suppliers. Rather they face the more advantageous situation of a primary marketing area free from competition in a national marketing which is exhibiting rapid growth.

However, if present conditions continue and particularly if Chungju Cooperative is successful in establishing a profitable processing facility in Chongbuk Province, they willinevitably stimulate competition at some future date. This is another reason for emphasizing quality control and marketing of high quality processed foods utilizing the best quality of fruit and vegetables that can be obtained.

PRODUCT LINE

While present plans call for production primarily of canned peaches, grapes, apple juice, tomato juice and strawberry jam, every effort should be made to broaden this product line and extend the processing cycle to as much of the entire year as possible. Present plans are for operations extending over a span of six to eight months. Cooperative members might be able to expand into production of additional fruits and vegetables if market outlets were developed. This would help extend the fixed cost of the processing plant over more units thus reducing per unit costs.

Examples of products that are already grown or could be grown in the area and their processing uses include sliced apples, pears, various jams and jellies, and kim-chi.

OTHER FACTORS

Another favorable factor is the attitude of local government toward the processing plant. City and provincial authorities have pledged their support for the plant because of its potential economic benefit to the area. This support has been expressed in substantive terms.

The property which is being considered for the plant site has been zoned for industrial use and the city is willing to condemn the property if necessary to obtain it. This should not be necessary however. The city has also guaranteed to make ample supplies of city water available to operate the plant.

INCHON COOPERATIVE

It might be constructive at this point to briefly review the operations and methods of the cooperative food processing plant at Inchon since this plant is serving to a large extent as the model for the Chungju plant.

The Inchon cooperative processing plant began operations in March 1967. The plant produces canned peaches, grapes, tomato juice, strawberry jam, grape juice, peach necter, various types of kim chi (Korean pickled vegetables) and "C" rations for Korean troops in Viet Nam.

The seasonal labor force which is made up of 90 percent women and 10 percent men comes from the local area. Peak labor requirements are 300 people. This drops to 150 in May and June. The plant runs nine months a year, and is closed down in February through April.

Some 80 percent of the raw materials come from producers in the immediate area with most of the rest from other parts of Kyongi Province. The plant uses about 200 tons of water daily.

Marketing channels include a branch office set up in Seoul. Produce is sold by the branch office to wholesalers in most cases. The bulk of products are handled through Seoul but may eventually be distributed nationwide.

A sales agent was formerly employed on a commission basis by the cooperative but this did not yield much success. Apparently the agent did not push their line. After establishing their own branch office in Seoul sales picked up immediately.

Major problem faced by the cooperative includes a debt repayment burden caused by relying heavily on borrowed capital for the original investment. Interest rates are relatively high in Korea and the subsequent debt burden makes rotation of capital funds extremely slow.

Another problem is posed by the nearness of the major metropolitan area of Seoul. The processing plant must compete with fresh market outlets for raw materials. This means a generally high and frequently fluctuating price structure.

Major factor in success of any new processing venture according to the Inchon manager would be concentration on producing a high quality product and putting it on the market as low in price as possible. The Inchon Cooperative as well as

other cooperative processing plants in Korea are prepared to lend managerial and technical talent to the Chungju Cooperative for the start-up and training periods.

RECOMMENDATIONS

The plant should concentrate first on using the best available raw materials to produce a top quality product. Provided the Chungju plant can produce a uniformly good quality product the major problem area would appear to be distribution. Marketing channels are for the most part unsophisticated and geared to a high mark-up, relatively low volume philosophy. Typically several wholesale levels are found between the processor and the retail grocer.

It will be difficult to rationalize this distribution chain particularly for that portion of production that is channeled into Chungju City and surrounding locality. Attempts should be made to bypass as much of the wholesale structure as possible to reach the retailer. At the same time it must be recognized that the fragmented retail structure composed of many small units would probably make any attempt to sell direct to the retailer prohibitively expensive.

Aside from the volume of product sold locally, the cooperative is recommended to establish a branch office at least in Seoul to handle transactions with wholesalers there. Some of the remaining plant production should be channeled through the cooperative chain of retail stores. This could be one means of bypassing some of the marketing middlemen and still gaining good marketing coverage over a wide area. Also, it might be possible to convince NACF that more marketing outlets should be established in Chongbuk Province.

## RAW MATERIALS

SOURCE

The cooperative represents the nation's second most important fruit production area. Raw materials will be obtained primarily from members of the cooperative in the three counties surrounding Chungju City plus production within the city limits. In 1969, latest year for which figures are available, farmers in these areas produced a total of 15,552 metric tons of fruit, including 14,198 tons of apples. The total membership production for the past threeyears is shown in Table 4.

Projected plant utilization for the first year will amount to about 5.78 percent of total production. The total volume of fruit produced each year is showing a slow but steady upward trend.

COMPETITIVE USES

There are no other food processing plants in the area from which raw materials are to be procured. Thus the only competitive use is for the fresh market. One of the reasons for desiring to establish a processing plant according to the cooperative is the price depressing effect of a large volume of fruit entering the fresh market in a short time span during and immediately following harvest.

TABLE 4.

PRESENT PRODUCTION AND VALUE

CHUNGJU HORTICULTURAL COOPERATIVE

(Unit: 1,000 won)

| Product | 1967 M/T | 1967 Value | 1968 M/T | 1968 Value | 1969 M/T | 1969 Value |
|---|---|---|---|---|---|---|
| 사과 Apple | 12,953 | 349,731 | 13,523 | 378,644 | 14,198 | 425,940 |
| 배 Pear | 614 | 15,964 | 644 | 17,388 | 665 | 19,950 |
| 복숭아 Peach | 460 | 5,980 | 503 | 7,042 | 520 | 10,400 |
| 포도 Grape | 83 | 2,158 | 93 | 2,418 | 98 | 2,744 |
| 기타 Other | 57 | 684 | 62 | 806 | 71 | 1,065 |
| 계 Total | 14,167 | 374,517 | 14,825 | 406,298 | 15,552 | 460,099 |

The processing plant will enable the farmer to market a portion of his total crop on a year-round basis, thus helping stabilize seasonal prices and enhance total income of farmer members. Fruits and vegetables generally show a relatively high elasticity of demand. This means that a fairly small proportion of the total crop taken off the fresh market should produce a relatively larger impact on prices.

QUALITY

One point regarding raw materials for use in the processing plant should be re-emphasized here. The cooperative as previously stated included in their initial planning for the food processing plant the use of off-grade and otherwise inferior fruit for processing.

Implementation of this particular concept would be a serious mistake on the part of the cooperative. The quality of the processed product can be no better than the raw materials that go into it. If dependable market outlets are to be secured and the processed product to be merchandised successfully, it is essential that only high quality produce be used in the canning process. It is recognized of course that some purely external characteristics such as fruit size and skin color may not have any significant effect on the quality of the igredients or the finished product.

PROBLEMS

One of the major problems faced by processors of fruits and vegetables is the wide fluctuation in prices on the fresh market and the consequent impact on prices and availability of raw materials for processing. This will not be as great a factor in Chungju, however, as it is with the Inchon cooperative which must compete with the fresh market in Seoul.

It may still pose problems at times, though. It is recommended that the cooperative investigate the feasibility of contracting with growers for a specified amount of raw materials each season.

CONTRACT PRODUCTION

Typical processing contracts include provisions for the grower to deliver the produce from a specified number of acres. The processor may also stipulate acceptance of an amount of produce based on an estimated yield per acre to protect himself against unusually large harvests.

The contract may also stipulate a price or price range to be paid the grower with an additional premium to be paid based on the profits shown by the cooperative processing venture at the end of each marketing year. This not only helps the farmer see the advantages of a contract arrangement but also helps put a floor under raw material prices for members of the cooperative.

The contract may also specify a certain quality of produce and in turn make available farm guidance services to the farmer. The contract would probably spell out harvest time and delivery dates. It may be difficult to move into contract farming particularly since most Korean growers are not familiar with

this concept. But its advantages to the processing venture and to cooperative farmer members make it worthwhile to at least explore the possibilities.

## OTHER INPUTS

### LABOR

NACF projections for the processing plant show a total of approximately 146 seasonal employees at peak employment and production in August. Experience of the Inchon Cooperative indicates that the majority of the seasonal workers will be female, primarily unemployed local farm girls. Since labor demands made by other agricultural operations peak in October-November (harvest season) and May-June (planting time) there should be no major conflict with competing labor uses.

Wages at the Inchon plant average 26 won per hour for women ($.66 a day) and 50 won per hour for men ($1.33 per day). This applies to seasonal labor only. The wages at Chungju should run about the same or possibly lower. The plant is projected to operate six months a year, from July through December.

### OTHER INPUTS

The plan calls for approximately 60 to 70 percent of the plant equipment to be procured domestically, with the remainder imported on a competitive bid basis. Imported equipment will include the juice line, seamer, etc.

An added cost factor for Korean food processing is the necessity to import tin plate. Cans are produced domestically.

Building materials, primarily cement, are available from nearby plants. Water suitable for food processing will be furnished by the city of Chungju from the headwaters of the Han River. Ample electrical generating capacity is already present, and capacity will be increased considerably with completion of a new hydro-electric generating plant now under construction.

Plant technicians and other technical specialists will be available initially on a loan basis from other cooperative processing plants. The Chungju cooperative plans to provide specialized training opportunities for prospective technicians. In addition, recruiting will be directed at graduates of food processing technical courses at Seoul National University College of Agriculture, Kyongi-do University and the Pusan Fisheries University.

The land to be utilized for construction of the processing plant is located on the outskirts of Chungju, adjacent to a good all-weather highway. The city administration is assisting the cooperative to obtain this land on which an option is already held.

## FINANCIAL ASPECTS

### PAST PERFORMANCE

The Chungju Cooperative appears to be a solidly based organization from a finahcial standpoint. Member equity accounts for 15 percent of total capital. In each of the past three years the business operations have resulted in a surplus over expenses. In 1967 this surplus amounted to 32,000 won; 136,000 won in 1968; and 452,000 won in 1969.

Total fixed assets of the cooperative are valued at 7,747,000 won. Marketings have grown from 31,555,000 in 1965 to reach 42,538,000 in 1969. The management has a good reputation among other business and financial contacts.

Marketings of farm supplies have increased from 32,785,000 won in 1965 to 157,420,000 won in 1969. Table 5-6 shows a breakdown of the farm supply and marketing business. Table 7 illustrates the financial position of the cooperative.

### PROJECT FINANCING

Figures included in the appendix to this report present a detailed explanation of costs, returns and capital investment for the project.

Total project investment is $326,500. If this total, $24,000 is to come from capital generated within the cooperative, $131,100 in the form of a loan from NACF and the remaining $171,400 is being requested from the ICA, in the form of a grant to the Chungju Horticultural Cooperative. The ICA contribution would be utilized to provide the physical plant facilities and processing equipment (with the exception of two million yen from Chungju Cooperative included in the building cost).

Bank interest rates for loans in Korea run approximately 25-26 percent. Curb market rates approximate four percent each month. It is interesting to recall in this context that one of the major problems that has bothered the Inchon Cooperative, probably one of the most successful and efficient processing plants among the cooperatives in Korea, has been the high proportion of debt financing utilized in establishment and start-up of the plant. Due to the heavy debt repayment schedule combined with high interest rates, rotation of capital funds provided by the membership has been slow and difficult.

Given the existing rate structure in the ROK and the anticipated heavy reliance on external financing for the proposed plant, participation on a grant basis by ICA would be an important, perhaps essential, contribution to the success of this endeavor.

The Chungju proposal requests 53,136,000 won (approximately $171,400) from ICA as a grant. The ICAgrant would cover 96.25 percent of plant facility and installation costs with the remaining 3.75 percent to come from Chungju member funds.

The National Agricultural Cooperative Federation loan would cover 100 percent of the initial cost for procurement of raw materials and 80 percent of the required first year operating funds. The cooperative at Chungju would provide two million

TABLE 5
VOLUME OF FARM SUPPLY BUSINESS
CHUNGJU HORTICULTURAL COOPERATIVE

(Unit: Thousand won)

| Commodity | 1965 | | 1967 | | 1969 | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Germicide | kg 53,455 | 5,760 | 101,753 | 9,961 | 35,700 | 42,581 |
| Insecticide | kg 39,620 | 10,496 | 185,805 | 23,992 | 93,700 | 66,699 |
| Farm equipment | unit 22,351 | 3,618 | 30,059 | 2,901 | 167,500 | 10,416 |
| Seedling | each 52,121 | 1,822 | 28,506 | 1,569 | 10,600 | 2,586 |
| Production materials | unit 170,621 | 7,538 | 203,777 | 13,480 | 362,000 | 19,935 |
| Fertilizer | kg 18,558 | 2,971 | 18,586 | 9,871 | 555,795 | 10,219 |
| Etc | unit 9,017 | 580 | 53,946 | 7,941 | 106,000 | 4,984 |
| Total | | 32,785 | | 69,715 | | 157,420 |

TABLE 6

VOLUME OF FARM MARKETINGS

(Unit: Thousand won)

| Commo-dity | 1965 | | 1966 | | 1967 | | 1969 | |
|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| | Kg | | Kg | | Kg | | Kg | |
| Apple | 1,237,900 | 31,555 | 1,330,500 | 36,988 | 1,796,000 | 55,621 | 1,555,640 | 42,538 |
| Pear | | | 356 | 9 | | | | |
| Peach | | | 3,576 | 86 | | | | |
| Total | | 31,555 | | 37,083 | | 55,621 | | 42,538 |

TABLE 7

## Trend of Loss and Profit

(Unit: 1,000 won)

| By year | Income | Expenditure | Net income | Remarks |
|---|---|---|---|---|
| 67 | 6,622 | 6,590 | 32 | |
| 68 | 8,281 | 8,145 | 136 | |
| 69 | 9,909 | 9,457 | 452 | |

## Balance Sheet (As of 31st, December, 1969)

(Unit: won)

| Assets | | Liabilities | |
|---|---|---|---|
| Accounts | Amount | Accounts | Amount |
| 1. Cash | 653,726 | 1. Account payable and Advance Received Account | 15,081,793.10 |
| 2. Deposits | 367,160 | 2. Liabilities on consignment | 1,122,768 |
| 3. Securities | 1,770 | 3. Borrowings | 11,500,000 |
| 4. Account Receivable | 9,283,858 | 4. Others | 2,807,337 |
| 5. Consignment | 545,302 | Sub-Total | 30,511,898.10 |
| 6. Inventories | 14,393,261 | Capital | 5,330,601.21 |
| 7. Miscellaneous Assets | 2,733,596 | | |
| 8. Investment | 116,518 | | |
| 9. Fixed Assets | 7,747,300 | | |
| Total Assets | 35,842,499.31 | Total Liabilities & Capital | 35,842,499.31 |

won for building costs and 7,445,000 won ($24,000) for 20 percent of initial operating funds.

The budget proposal projects first year earnings of 12,368,000 won on sales of 115,500,000 won. Costs when compared with Inchon Cooperative appear reasonable. Interest and depreciation are included in project operating costs, but repayment of the debt principle would have to come from projected earnings as well as any return on member's equity.

Projected annual interest costs amount to 5,093,520 won. For purposes of calculation this yields a raw interest rate of approximately 12.5 percent. If this interest rate were applied to those grant funds requested from ICA for the capital installation it would add 6,642,000 won to operating costs in the form of interest payments plus additional sums for repayment of debt principle.

If the cooperative had to go outside NACF to the commercial money market for capital installation funds the interest rate would probably be double or more than the 12.5 percent used above. Thus lack of ICA grant financing would impose a debt repayment burden that would be far to great for the projected earnings to cover in the first year and probably in succeeding years as well.

# APPENDIX

APPENDIX 1

2. Financing Program

(1) Summary

(Unit: 1,000 won)

| Classification | Amount | Details of financing | | | Remarks |
|---|---|---|---|---|---|
| | | Grant | Loan | Own-capital | |
| Plant building | 18,370 | 16,370 | | 2,000 | |
| Juice facilities | 26,020 | 26,020 | | | |
| Canning " | 1,650 | 1,650 | | | |
| Other facilities | 9,096 | 9,096 | | | |
| Purchasing of raw materials | 18,876 (100%) | | 18,876 (80%) | | two times rotation |
| Operation fund | 27,223 | | 21,778 | 5,445(20%) | |
| Total | 101,235 | 53,136 | 40,654 | 7,445 | " " |
| (In US dollars) | (326,500) | (171,400) | (131,100) | (24,000) | |

This project will need 101,235 thousand won ($326,500), of which 53,136 thousand won ($171,400) will be granted by the ICA, 40,654 thousand won ($131,100) will be lent by the NACF and 7,445 thousand won ($24,000) will be financed by own-capital of the project sponsor.

APPENDIX 2

3. Expected Income and Expenditure

(Unit: 1,000 won)

| By Item | Manufactured amount | Marketing | | Production cost | | Income (A - B) |
|---|---|---|---|---|---|---|
| | | Unit price | Amount (A) | Unit cost | Amount (B) | |
| | can | won | | won | | |
| Canned peach | 500,000 | 70 | 35,000 | 66.39 | 33,195 | 1,805 |
| Canned grape | 200,000 | 100 | 20,000 | 92.95 | 18,590 | 1,410 |
| | bottle | | | | | |
| Apple juice | 700,000 | 60 | 42,000 | 51.51 | 36,057 | 5,943 |
| Tomato juice | 200,000 | 60 | 12,000 | 44.56 | 8,912 | 3,088 |
| | can | | | | | |
| Strawberry Jam | 100,000 | 65 | 6,500 | 63.78 | 6,378 | 122 |
| Total | | | 115,500 | | 103,132 | 12,368 |

APPENDIX 3

(2) Plant Building

(Unit: 1,000 won)

| Items | Quantity | Unit cost | Unit value |
|---|---|---|---|
| 1. Site | 500 pyong | 4,000 won | (2,000) |
| 2. Building | | | (13,990) |
| Body | 100 | 40,000 | 4,000 |
| Structure for Refrigerator | 70 | 50,000 | 3,500 |
| Warehouse | 150 | 35,000 | 5,250 |
| Guard office | 3 | 40,000 | 120 |
| Office Room | 15 | 40,000 | 600 |
| Boiler Room | 10 | 40,000 | 400 |
| Toilet | 3 | 40,000 | 120 |
| 3. Others | | | (2,380) |
| Fence (Block) | | | 150 |
| Water-service | | | 350 |
| Heating apparatus | | | 230 |
| Electric works | | | 1,450 |
| Water tank (Steel-concrete) | | | 200 |
| Total | | | 18,370 |

* 1a ≒ 30 pyong

APPENDIX 4

(3) Juice Facilities

(Unit: 1,000 won)

| Commodities | Capacity or type | Quantity | Unit cost | Value |
|---|---|---|---|---|
| 1. Washing chemical machine | 2 HP | 1 set | 800 | 800 |
| 2. Water washing-machine | 2 HP | 1 | 800 | 800 |
| 3. Grading fruit conveyor | 2M/Min 3HP | 1 | 50 | 50 |
| 4. Elevator | Bucket type | 2 | 50 | 100 |
| 5. Grator | 350R P.M. 3HP Hummer crusher | 1 | 100 | 100 |
| 6. Prehecter | 5 HP | 1 | 350 | 350 |
| 7. Pulpver | | 1 | 400 | 400 |
| 8. Finisher | | 1 | 100 | 100 |
| 9. Belly Tank | Stainless $0.3m^3$ | 1 | 50 | 50 |
| 10. Pump | 1/2 HP | 5 | 160 | 800 |
| 11. Homongehizer | 10 HP | 1 | 2,400 | 2,400 |
| 12. Generator | 10 HP | 1 | 3,600 | 3,600 |
| 13. Seasoning mixed tank | 300 R. P.M. $0.5m^3$ | 1 | 100 | 100 |
| 14. Flash pastearizer | Shell tubes types 2 HP | 1 | 500 | 500 |
| 15. Belly Tank | $0.3m^3$ | 1 | 100 | 100 |
| 16. Injection machine for Filler | 1/2 HP | 1 | 700 | 700 |
| 17. Sanitary vacaum seaher | Model 6. 150-900 can/min | 2 | 4,000 | 8,000 |
| 18. Vacuam pump | 2 HP | | | |
| 19. Sterilizing machine | USE in 5HP Seamer | 2 | 450 | 900 |
| Rotary cooker 10 R P.M. Retost | consecutive low temperature type 2HP | 1 | 1,300 | 1,300 |
| 20. Mixer | 1/4 HP | 1 | 120 | 120 |
| 21. Washing-machine for can | 1/4 HP | 1 | 250 | 250 |
| 22. Washing-machine for bottle | 1/4 HP | 1 | 1,100 | 1,100 |
| 23. Squeezer | 3HP 400 R.P.M. | 1 | 600 | 600 |
| 24. Filter | 1/4HP gear pump | 1 | 500 | 500 |
| 25. Cap-fixing machine | 1/4 HP | 1 | 150 | 150 |
| 26. Stainless | 1.0mm X $1^m$X$2^m$ | 25sheet | 6 | 6 |
| 27. Concentrator | 100 Gal | 1 | 2,000 | 2,000 |
| TOTAL | | | | 26,020 |

(4) Canning Facilities

(Unit: 1,000 won)

| Commodities | Capacity | Quantity | Unit cost | Value |
|---|---|---|---|---|
| Cutting machine | HP 1,500 can/hr | 1 set | 200 | 200 |
| Lye peeler | 1,500 can/hr | 1 | 250 | 250 |
| Removal machine | Conveyor type 3,000 can/hr | 1 | 750 | 750 |
| Total | | | | 1,650 |

(5) Other mechanical Facilities

(Unit: 1,000 won)

| Commodity | Specification | Quantity | Unit price | Amount |
|---|---|---|---|---|
| Well | Steel-concret 10feet X 36feet | 1 | 600 | 600 |
| Refrizerator colling machine | 10 HP | 2 | 2,000 | 4,000 |
| Additional facilities | Copper pipe, valve, gauge, laber expense | | 500 | 500 |
| Water Pump | 3 inch | 2 | 10 | 20 |
| Boiler | High pressure water-pipe type steam pipe | 1 | 2,564 | 2,564 |
| Electric facilities | 12 Kg/Hr | | | |
| | Tr. 50 KVA | 2 | 241 | 482 |
| | Tr. 10 KVA | 1 | 100 | 100 |
| Generator | 7,500 KW | 1 | 150 | 150 |
| Packing table | | 1 | 30 | 30 |
| Packing machine | 1 | 1 | 50 | 50 |
| Experimental loak | | | 600 | 600 |
| Total | | | | 9,096 |

APPENDIX 6

Production Cost (for 500,000 cans of canned peach)

(In won)

| Classification | Items | Unit | Quantity | Unit cost | Amount |
|---|---|---|---|---|---|
| I. Direct Costs | | | | | |
| 1. Main material | Peach | Kg | 238,750 | 29.86 | 7,129,075 |
| 2. Sub-material | Sugar | Kg | 29,660 | 115.3 | 3,410,900 |
| 3. Packing materials | (Sub-total) | | | | (14,595,811) |
| | can | can | 501,000 | 26.70 | 13,376,700 |
| | box | box | 20,834 | 48 | 1,000,032 |
| | Wrapper | M | 52,085 | 2.80 | 147,368 |
| | Bastener | ea | 42,918 | 0.70 | 30,043 |
| | Paste,etc. | | 20,834 | 2 | 41,669 |
| 4. Chemicals | (Sub-total) | | | | (1,508,500) |
| | NaoH | Kg | 562.5 | 1,400 | 785,500 |
| | HCL | Kg | 255 | 1,200 | 306,000 |
| | Salt | Kg | 13,500 | 11 | 148,500 |
| | Citric acid | Kg | 97.5 | 2,700 | 263,250 |
| | Seasoning | G | 5,000 | 0.65 | 3,250 |
| 5. Direct wages | (Sub-total) | | | | (750,000) |
| | Men | person day | 450 | 500 | 225,000 |
| | Women | " | 1,500 | 350 | 525,000 |
| 6. Electric power | (Sub-total) | | | | (144,153) |
| | For machinery | Kw | 15,517 | 9 | 139,653 |
| | For light | Kw | 500 | 9 | 4,500 |
| 7. Fuel | (Sub-total) | | | | (290,103) |
| (for boiler) | light oil | D/M | 56 | 2,776 | 155,456 |
| | thick oil | D/M | 70 | 1,773 | 124,110 |
| | Gasolin | G/A | 38.5 | 111.10 | 4,277 |
| | Grease | G/A | 5 | 676 | 3,380 |
| | Mobil | G/A | 10 | 288 | 2,880 |
| 8. Implements | | | | | 2,327 |
| | (Sub-total) | | | | (47,000) |
| 9. Repair | | | | | |
| | Motor | | twice | 2,000 | 4,000 |
| | Engine | | " | 1,500 | 3,000 |
| | Seamer | | | | 30,000 |
| | Boiler | | | | 10,000 |

APPENDIX 7

| Classification | Items | Unit | Quantity | Unit cost | Amount |
|---|---|---|---|---|---|
| 10. Carriage | Horse-cart | Cart | 424 | 1,000 | 424,000 |
| 11. Water | | $m^3$ | 128 | | 3,000 |
| 12. Single used goods | | | | | 13,187 |
| 13. Sundries | | | | | 60,000 |
| 14. Depreciation | (Sub-total) | | | | (2,034,302) |
| | Machinery | | | | 1,911,527 |
| | Buildings | | | | 122,775 |
| 15. Capital interest | (Sub-total) | | | | (1,914,478) |
| | Raw-materials | | | | 320,808 |
| | Operation funds | | | | 1,593,670 |
| II. Indirect Costs | | | | | |
| 1. Indirect wages | (Sub-total) | | | | (660,000) |
| | Factory chief | | | | 150,000 |
| | Manager | | | | 105,000 |
| | Technician | | | | 90,000 |
| | Fireman | | | | 45,000 |
| | Guard | | | | 180,000 |
| | Clerks<br>handy men | | | | 90,000 |
| 2. Business management | (Sub-total) | | | | (208,500) |
| | Night-duty | | | | 31,500 |
| | Business trip | | | | 50,000 |
| | Clerical work | | | | 6,000 |
| | Correspondence | | | | 15,000 |
| | Books | | | | 6,000 |
| | Conference times | | 10 | 10,000 | 100,000 |
| Total | | | | | 33,195,336 |

APPENDIX 8

Production Cost (for 200,000 cans of canned grapes)

(In won)

| Item | | Account |
|---|---|---|
| I. | Direct Cost | |
| 1. | Main materials | 7,720,220 |
| 2. | Secondary " | 1,364,360 |
| 3. | Packing | 5,723,834 |
| 4. | Direct Labor | 670,000 |
| 5. | Power | 115,317 |
| 6. | Fuel | 239,641 |
| 7. | Tools | 2,000 |
| 8. | Repairing Cost | 18,500 |
| 9. | Transportation | 167,000 |
| 10. | Water-Supply | 3,000 |
| 11. | Stationary | 5,000 |
| 12. | Others | 30,000 |
| 13. | Depreciation | 654,450 |
| 14. | Interest | 972,808 |
| II. | Indirect Cost | |
| 1. | Indirect Labour Cost | 440,000 |
| 2. | General administration Cost | 129,000 |
| | Grand Total | 18,589,070 |

Production Cost (for apple juice 700,000 bottles)

(In won)

| Item | Amount |
|---|---|
| I. Direct Cost | |
| 1. Materials (apple) | 15,542,800 |
| 2. Labour cost | 1,200,000 |
| 3. Packing | 13,798,200 |
| 4. Power | 230,643 |
| 5. Fuel | 148,794 |
| 6. Water-supply | 3,000 |
| 7. Repairing cost | 15,000 |
| 8. Tools | 3,000 |
| 9. Stationery goods | 20,000 |
| 10. Transportation | 759,000 |
| 11. Depreciation | 1,157,180 |
| 12. Interest | 1,987,749 |
| 13. Others | 60,000 |
| II. Indirect Cost | |
| 1. Indirect labour cost | 880,000 |
| 2. General administrative cost | |
| 1) Night-duty | 42,000 |
| 2) Travelling expences | 80,000 |
| 3) Office expences | 6,000 |
| Correspondence cost | 15,000 |
| Pictures and books cost | 6,000 |
| Meeting expenses | 100,000 |
| Total | 36,056,366 |

APPENDIX 10

Production Cost (for tomato juice, 200,000 bottles)

(In won)

| Item | Amount |
|---|---|
| I. Direct Cost | |
| 1. Main materials | 2,112,000 |
| 2. Secondary | 4,950 |
| 3. Direct labour | 600,000 |
| 4. Packing | 13,789,200 |
| 5. Power | 115,317 |
| 6. Transportation | 213,000 |
| 7. Water supply | 3,000 |
| 8. Repairing cost | 10,000 |
| 9. Tools | 2,000 |
| 10. Stationery | 5,000 |
| 11. Depreciation | 521,340 |
| 12. Interest | 470,028 |
| 13. Others | 40,000 |
| II. Indirect Cost | |
| 1. Indirect labour cost | 440,000 |
| 2. General administration cost | 129,000 |
| Grand total | 8,911,349 |

APPENDIX 11

Production Cost (for strawberry jam, 100,000 cans)

(In won)

| Item | | Amount |
|---|---|---|
| I. | Direct Cost | |
| 1. | Main materials | 1,855,040 |
| 2. | Secondary materials | 1,495,000 |
| 3. | Packing | 1,637,995 |
| 4. | Direct labour cost | 38,000 |
| | Power | 14,418 |
| 5. | Fuel | 83,280 |
| 6. | Water supply | 3,000 |
| 7. | Repairing cost | 1,000 |
| 8. | Tools | 500 |
| 9. | Stationery | 90,000 |
| 10. | Transportation | 33,000 |
| 11. | Depreciation | 837,620 |
| 12. | Interest | 69,265 |
| II. | Indirect Cost | |
| 1. | Indirect labour cost | 220,000 |
| 2. | General administration cost | |
| | 1) Night-duty | 10,500 |
| | 2) Travelling expences | 30,000 |
| | Office expenses | 2,000 |
| | Communication expenses | 5,000 |
| | Newspapers and monthlys | 2,000 |
| | Meeting expenses | 30,000 |
| | Grand Total | 6,377,618 |