Industrializing the Philippine Countryside: Some Prospects and Possibilities

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ABSTRACT

A lot of effort is being exerted by the government to exalt the economic and social status of the Filipino poor whose number is continuously increasing. The Philippine agriculture scenario is gearing towards smaller, diversified and intensively cultivated farms, stronger cooperatives, more profound environmental concern, better policies to protect processing and manufacturing industry, and lesser reliance on the agriculture sector. With these, it is envisioned to promote agriculture to ensure food production, export of processed products rather than raw materials and built-up of import substituting industries. In essence, rural industrialization is a significant factor to achieve economic growth and thus, alleviate the living condition of the Filipino majority.

The first logical approach towards industrialization is the processing of low value products through intelligent utilization of available and trainable labor force, raw materials from farms and the natural resources. Instead of being more suppliers of raw materials, we should be able to produce our own products from our natural resources. Meaning, we should not be only engaged in the repacking, assembling and trading products but to be involved in their honest-to-goodness manufacturing. This way, agricultural production would be enhanced vis-a-vis the privatization of agribusiness enterprises which would consequently create more jobs in the farms

and factories in the countryside if the following requirements are satisfied: irrigation, roads, utilities (electricity, communication, transportation), schools and hospitals, peace and order condition and policy reforms.

The rice and tomato processing projects are good examples of successful agribusiness enterprises established in the countryside. The rice industry project increased the yield per hectare and added value to the product by drying, milling, and packaging before marketing. Tomatoes are processed into finished products before being transported to urban areas. The projects' success could be attributed to good organization, sufficient financial support, appropriate technology and efficient participation of the project people and farmers.

In conclusion, we Filipinos have what it takes to power our own development-initiative, technical know-how, and the manpower to produce our basic needs in life. However, a strong political will and discipline of the people are needed as well to bring about industrialization in the Phlippine countryside.

INTRODUCTION

In 1950 the rural population in the Philippines was 16 million representing 80% of the total population of 20 million Filipinos; in 1988 it was 34 million or 59% of 58 million. The Philippine urban population in 1988 was 24 million with at least 3 million Filipinos classified as urban poor in Metro Manila alone. Although the percentage of rural population from 1950 to 1988 has decreased, the number of needy Filipinos still continues to increase. As one writer puts it (Anonymous, 1987): "The poor of today are not the same as the poor of the 1950's and 1960's. They are much more numerous and they live in an economy that is weaker. As a result it is more difficult to improve one's social status--find a job, leave the slums and join the middle class."

The never-ending migration of the rural people to the urban centers is best explained by the availability of more job opportunities in the cities. In fact, even those who were resettled eventually would sell their rights and returns the cities for the same reason. Thus, government planners of developing countries always advocate to create more jobs in the rural areas. Our government is no exception. Consequently the successful experience in the rural industrialization of Taiwan, Japan and South

Korea has been always recommended as one solution to generate employment and alleviate mass poverty in a developing country.

The purpose of this paper, therefore, is to discuss some strategies on how rural industrialization can be effectively implemented in the Philippines from the standpoint of the agriculture sector which according to President Aquino comprises 70% of the countries population and employs half of its labor force.

SCENARIO OF PHILIPPINE AGRICULTURE

On January 29-30, 1988, the College of Agriculture of the U.P. Los Baños held a planning conference which had for its theme "Visions for the College of Agriculture at the Turn of the Century" (Villareal, 1988a). The conference telescoped the characterization of Philippine Agriculture with the following statement: the trend will be towards smaller, more diversified and intensively cultivated farms, cooperatives would become stronger, more concern on the environment, better policies to protect the processing and manufacturing industries, and the Philippine Society will rely less and less on the agricultural sector than on industry and the service sectors for its gross national products.

On 27 January 1990, the college constituents in another workshop added the following features to the scenario of Philippine farm (Rasco et al 1990): "sustainability of production capacity, and commercial rather subsistence orientation. It is also expected that these farms will be producing sufficient quantities of the basic commodities such as staple food for the farmers' use. It will be also producing a substantial surplus of all products where they have a comparative advantage. Exportable surplus will be shipped in completely processed form to achieve the value added advantage."

With the above-mentioned scenario it is not difficult to comprehend that the lessons in Taiwan in promoting agriculture to ensure food production, export of processed products rather than raw materials and import substituting industries (textiles, cement, household appliances) are worth looking into. Indeed, national security demands that a certain latitude of self-reliance in food production be promoted. Moreover, the Philippines should now graduate from a mere supplier of raw materials needed by industrialized countries to a manufacturer of high value products both for domestic and international markets. The coconut is a good example. The Philippines for many decades had been limited to exportation of copra, coconut oil, and dessicated coconut. We have also been exporting 80% of our coconut production while

only 20% is utilized locally. Instead of selling copra at pathetically low price, can we not process it into special products and sell it at several times its original value.

RURAL INDUSTRIALIZATION

The first logical approach towards industrialization is through processing of low value products from agriculture and natural resources. This approach will eliminate importation of raw materials which in the past resulted only in repacking, assembling and trading instead of honest-to-goodness manufacturing. We must begin with the abundant resources we have, namely: available and trainable labor force, raw materials produced in our farms and our own natural resources.

Available and Trainable Labor Force

Although cheap labor has always been mentioned as an important component of industrialization, it should be qualified that such labor force should be trainable and that some degree of discipline is necessary to really benefit from it. For instance, a number of experts have analyzed Taiwan's and Korea's economic growth and concluded that a major cause for the success has been disciplined manpower, willingness to work hard at relatively low wages and absence of labor strikes.

Raw Materials

From the farms. The demand for raw materials particularly farm produce will create a market for agricultural products, stimulating agricultural production. This will generate more employment opportunities since jobs will be available not only on the farms but in the factories as well. More agricultural activities will also stimulate urban employment as more business opportunities for the manufacturers of fertilizers, pesticides sprayers containers; for dealers in seeds and farm implements; and for truckers and haulers of farm produce. The growth of these enterprises will naturally expand urban and rural employment as the business aspects of the industry will require additional manpower. More employment can increase income and improve the purchasing power of the majority of our people and allow them to purchase the products of industry and consequently, expanding our domestic market. Expansion of export market is a natural consequence after the individual skills in manufacturing and entrepreneurial

management have been mastered. It is good to target export market because after the local market is satisfied, then the next best alternative is the export of quality processed products to other countries thereby precious foreign exchange.

From natural resources. The export-import history of the Philippine metal industry has been characterized by exportation of thousands of tons of cheap metal concentrates by the mining industry and importation of thousands of tons of expensive finished metal products by the whole industry (Perez, 1989). The resulting trade imbalance is basically caused by the shipment of dirt and impurities that go with the export and the import of skill and talent that is added on the finished product.

For example, in 1988 alone, the mining industry exported 219,090 metric tons of copper in a concentrate, 24 metric tons of gold, 480,824 metric tons of nickel ore, 38,318 metric tons of chrome in a concentrate, 52 metric tons of silver and 1,435 metric tons of zinc. Except for gold, all were exported as processed or semi-processed raw materials. On the average, the mining industry produces $351 million worth of copper annually, sells the concentrates at $466 million at $115 profit. The Japanese in turn smelts and rolls it into sheets and exports the processed copper for $1.2 billion at $756 million mark-up. These sheets are used by our manufacturers in fabricating simple machine components. The mark-up would be more than twice if we import consumer products out of the total nickel produced locally, the country can save $970 million annually representing the profit of foreign suppliers.

Nevertheless, the benefits from rural industrialization will become a reality if factories are dispersed in the countryside where raw materials are produced. By moving the factories to the countryside, job opportunities are made available to the rural people who need not migrate to the cities just to find a job. Housing and other problems associated with overpopulation can be minimized too and contribute to urban renewal. Great savings in energy can also be realized since low-valued raw materials from the farm can be converted into high-valued products before transporting them to the metropolis. Fruits and vegetables for processing are good examples since they have high water content. Therefore, if raw materials are produced in Ilocos Norte and the factory is located in Metro Manila, transporting these agricultural products over long distance is a waste of fuel, time and effort since it is just like transporting water stored in individual fruits and vegetables. Whereas, if the farm produce are processed first in Ilocos Norte before shipping them to Manila, high-valued products are transported instead. In fact, we have learned from experience

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in the Philippines that tomato processing factories should be located in not more than 30-kilometer radius from the production sites for transport efficiency and for keeping the good quality of tomato fruits on arrival to the factories.

INGREDIENTS OF SUCCESS

The privatization of most agribusiness enterprises has an important role in making rural industrialization a success. However, investors are likely to move or establish their factories in the countryside only if basic requirements are satisfied such as: irrigation, roads, utilities (electricity, communication, transportation), schools and hospitals, peace and order condition and policy reforms. Although, in many occasions the investors put up the schools and hospitals for their employees and laborers, the expected role of the government is to provide these and other infrastructures such as roads, irrigation and utilities, policy reforms and assurance of peace and order condition. Likewise, it would be difficult to attract foreign investors in the future unless the country's infrastruoture problems like power shortages and lack of rods are solved (Zamuco, 1990). The investors, on the other hand, should take care of credit, market outlets and research and development programs to support their operations. Collaboration with government's R&D institutions are commonly done by private investors. Above all, political stability in the country should be established so that economic growth can be started.

It does not take a great deal of imagination to appreciate the importance of the above-mentioned requirements to encourage investors to move to the countryside. These are similar ingredients of success provided to Taiwanese farmers' which raised the productivity of their agricultural land (Villareal, 1987). We also need these if we wish to insure the success of agrarian reform in the Philippines. For agrarian reform is not a simple matter of distributing land to the tillers of the soil. In fact ownership of the land is not a guarantee of bringing about desirable changes in the socioeconomic conditions of the landless agricultural workers (Anonymous, 1989). The sources of increased agricultural productivity are diffusion of new seeds, varieties, fertilizers, etc. Changes in land tenure neither substitute for these nor make it any easier for them to come about (Mangahas, et. al. 1976). This suggests that agricultural workers should have access to resources/support systems in order to make their land productive and they should be active participants of change since no change can happen if they

themselves do not contribute their share in development. Different access to resources has brought about the social stratification and the attendant consequences in the sugar farms (Espinas, 1988). Moreover, site quality has been found to be more important than land size in planning for resettlement or awarding of land rights since poor land would require more input to make it productive (Cruz et. al., 1987).

In addition to private investors, one other successful method of rural industrialization is through cooperatives, popularly known as coops or farmer's associations. The famous ''Kalakalan 20'' if properly implemented can probably play the role of a coop. There are numerous success stories on coops not only in the Philippines but also in other countries. Of course, there are also numerous failures experienced in the Philippines where we can derived lessons to successfully operate the coops. We have to put our mind into it. The successful operation of coops is imperative if the objectives of agrarian reform are to be realized. In a market-oriented agriculture which hope to create with agrarian reform, an effective organization which will plan the production and marketing of agricultural products is extremely necessary. Coops can do this job and even more. This role of coop, is particularly significant if we consider that greater number of farmers owning smaller parcels will dominate the scenario of Philippine agriculture in the year 2000 and beyond.

The way coops are organized and implemented in Taiwan are worth noting at this point. In general, their coops have three main sections with specific functions namely: economic, credit, and agriculture extension.

The main function of the economic section is to handle the procurement of farm inputs and implements (i.e. tractors, seeder, transplanter) and other goods (i.e. cooking appliances, washing machines, television sets, refrigerators, food items, etc.) for sale to coop members. It is also doing the marketing of products produced by coop members. Thus, the day to day business activities of the coop fall under this section. The credit section provides deposit and loan services to members. Whereas the production, training and welfare services of coop members are handled by agricultural extension section who are paid by the coop. In other words, most extension services in Taiwan are privatized and operate more business like with unparalled efficiency. These observations clearly show that a coop member in Taiwan need not worry where to secure loans, what technology to use and where to market his produce because the coop provides those services to him. Thus, he can concentrate all his time and efforts in making

his land productive and rely on the coop for all possible services that he might need. We should have something similar in our country.

SOME POSSIBILITIES

Lantin (1988) suggested several agroindustries which could make use of available cheap raw materials in the localities where factories could be established:

1. Processing of meat, fish, vegetables, spices, mustard seed, black pepper, or chill powder, etc.;
2. Drying and dehydration of fruits, vegetables, fish seaweeds and marine products; processing of seaweeds into gelatine and agar-agar;
3. Flaking of soybeans; popping of corn, rice and other cereals;
4. Chipping and drying of cassava, banana, sweet potatoes, ube and other products;
5. Production of wine from bignay, duhat, mango, chico, passion fruit, alingaro, berries,rice, sorghum, etc.;
6. Production of alcohol for fuel from cassava, nipa and other sources (for small engine in rural areas and fishing villages);
7. Extraction of essential oils, like from citronella, citrus rind, vanilla, mint, eucalyptus, aromatic plants, etc. integrated with perfume production herbal soap making;
8. Extraction of edible oils, like from coconut, corn, sesame, sunflower, peanut, castor oil seeds, etc. or of cream from cacao and coffee;
9. Manufacture of activated charcoal from coconut shells and hardwood species;
10. Making of specialty paper, like from straw, ramie, abaca, salago and other indigenous plants;
11. Artifical flower making from silk integrated with sericulture and silk weaving;
12. Design and manufacture of drip irrigation components and systems to meet needs of fruit, vegetables, and ornamental growers.

There are many other possibilities but allow me to dwell on specific examples to highlight rural industrialization in the Philippines. I prefer to cite two examples, the Rice Industry Project under the Tarlac Integrated People's Livelihood Program (TIPLP) and the tomato processing industry. In the former project, the College of Agriculture provides technical assistance while in the latter, I have been an active participant in its development and we have gained

wealth of experiences worth sharing with the other processing industries.

THE RICE INDUSTRY PROJECT

The rice industry project in Tarlac as the core project of the People's Livelihood Foundation has been hailed as a success story (Ordonez, 1990). The project initially aimed to increase the low yield of the Capas farmers (average of 40 cavans per hectare) to 80 cavans per hectare. To increase yield, key elements were identified and provided in the implementation of the project. Technology was the most critical need while other requirements included credit facility, support services, and cooperativism. In terms of membership and farm area coverage, the project's record is unprecedented. From 506 in October 1988 (when it started) member-beneficiaries rose to 4,933 as of the first cropping season this year (1990). While the farm area expanded substantially from 1,019 to 10,352 hectares.

Today the rice industry includes not only production to marketing but other components as well namely a seed production center, an organic fertilizer laboratory, a farm equipment pool and repair shop, facilities for postharvest (rice mills, solar and mechanical dryers, warehouse), and a grains trading center.

The success of the rice industry project is a clear example of how rural industrialization can be effectively implemented, that is, if all the required ingredients are provided.

TOMATO PROCESSING INDUSTRY

Consumption Trends and Paste Requirement

Tomato consumption in the Philippines has been low for years - below five kilograms per capita per year (Table 1) as compared to that of Japan and USA which were 8 and 35 kg/capita, respectively, in 1984. However, there is a bright prospect in the utilization of paste as shown by the increasing amounts of imported and locally-produced paste that went into the food industry such as the manufacture of sardines, catsup, sauce, pork and beans, and food preparations like pizza, pasta, spaghetti, and many others (Table 1). For this reason, the paste industry as projected for 1990 in the Philippines will need about 15,000 metric tons of paste with local production contributing to at least 30

percent of the total. More consumption of tomato is expected in the Philippines as evidenced by the establishment of several sardine factories, hamburger stands, pizza and pasta restaurants in most urban centers throughout the Philippines.

Table 1. Apparent average annual per capita tomato consumption and paste requirement in the Philippines, 1980-86.[a]

Year	CONSUMPTION[b] (kg/capita)	PASTE REQUIREMENT[c] (mt)
1980	3.22	2,287
1981	3.25	3,961
1982	3.22	5,318
1983	2.67	5,115
1984	3.09	3,381 (881)
1985	2.40	4,437 (1,683)
1986	3.35	8,223 (2,700)

[a]Based on National Economic Development Authority Foreign Trade and Statistics (1980-86), and Bureau of Agricultural Statistics (1987).
[b]Production plus net imports, divided by population.
[c]Figures from 1980 to 1983 represented imported paste. Those from 1984 to 1986 included both imports and local production. Figure in parentheses are local production.

Area and Production Trends

From 1960 to 1965, the area planted to tomatoes in the Philippines decreased sharply from 23,540 to 16,590 hectares (Fig. 1). In 1970, there was an increase of about 3,000 hectares but decreased steadily to the1985 level of 16,410 hectares. Although yields have remained low, these have increased steadily from about 2 t/ha to 8.5 t/ha which represented a quadrupling of productivity within two and a half decades.

The growing of processing tomatoes started only during the 1984-85 cropping season. Thus, very limited data are available to establish any trend. Nevertheless, the area grown to processing tomatoes has steadily increased with yield (Fig. 2) having been consistently higher than those for the fresh market. Similar case happened to the tomato industry both in the United States of America and in Taiwan.

One logical explanation for the above-mentioned phenomenon under Philippine condition is the distinct difference between the production and marketing of fresh market and processing tomatoes. In general, the production and marketing of processing tomatoes are planned which is not the case with fresh market

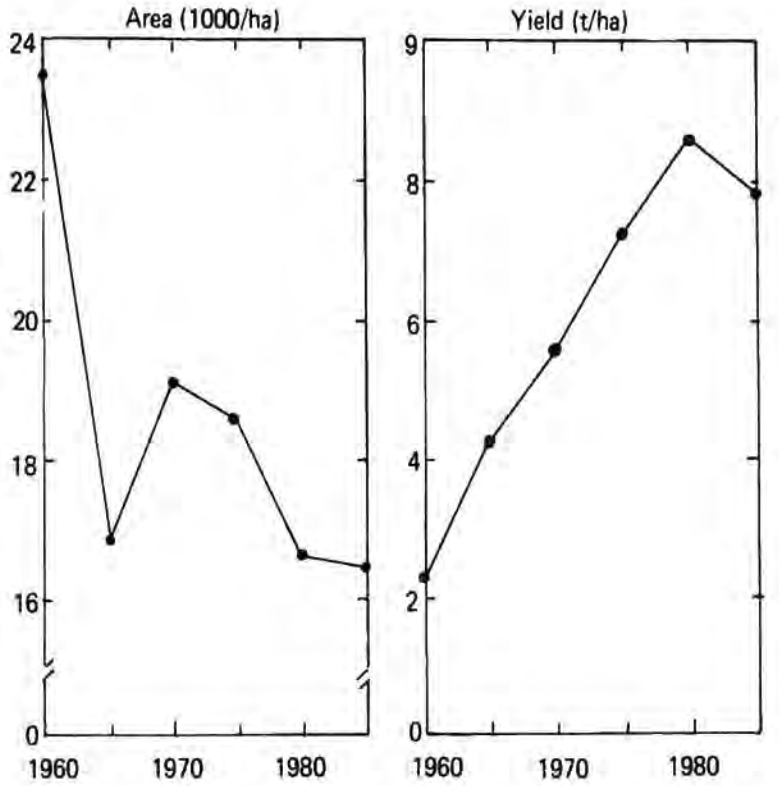

Fig. 1. Area and yield of tomatoes grown in the Philippines, 1960-85.

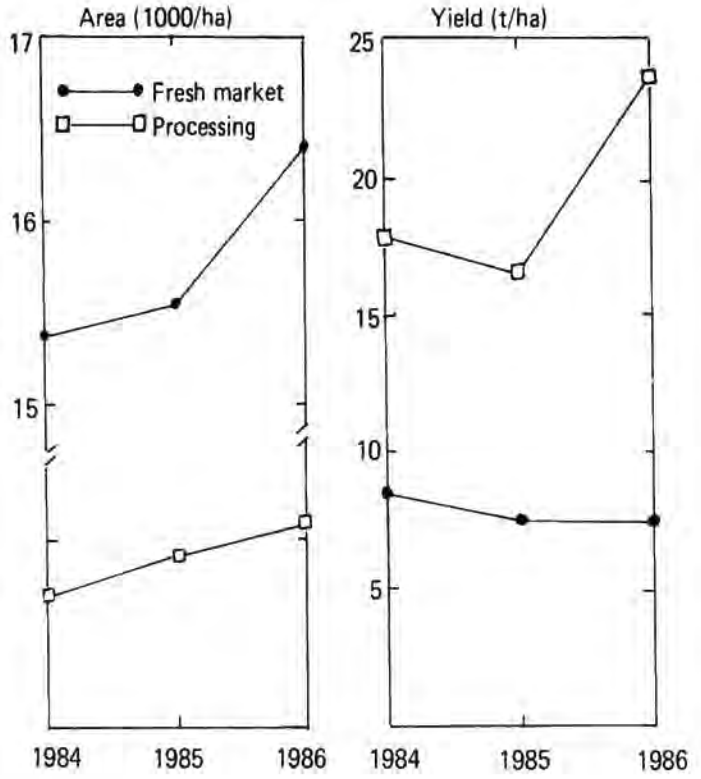

Fig. 2. Area and yield of fresh market and processing tomatoes in the Philippines, 1984-86.

tomatoes. Production is made only during the dry cool months of the year when climatic conditions are optimum for growing tomatoes. Thus production targets are prepared based on the capacity of the factory and deliveries to the factory are made according to schedules. Growers are provided with premium prices when production goes beyond a pre-arranged yield level (i.e. beyond 20 t/ha). With this arrangement, growers are encouraged to produce more resulting in excellent yields and high net return per hectare. Growers are assured of market and payment as soon as tomatoes are delivered.

On the other hand, the fresh tomato growers, without assured market, produce too much during the same period resulting in over supply of tomatoes. As a consequence the price is depressed resulting in low net return for them. During the rainy season, however, no processing tomato can be grown profitably because of unsuitable climatic conditions. The supply of tomato is also low because of the risk involved in raising a crop that only a few farmers grow them. Therefore, the price of fresh market tomatoes is very high resulting in high net return for the growers. For example, the price of fresh tomatoes went up to P 25/kg during the 1987 rainy season that it was not surprising to hear that tomato growers could get a net return of at least P100.000/ha.

The prospects for increased productivity are bright. During the first cropping season in 1984, the average yield was about 15t/ha which increased to 15.5 t/ha in 1985 and to 16 t/h in 1986. The target yields of the Philippine Fruits and Vegetables Industries, Incorporated (PFVII) in 1984 was 18 t/ha which was revised to 35 t/ha in 1986-87 because of its confidence gained in the last 3 years. In reality, the PFVII obtained 20 t/ha in 1984 which dropped to 14 t/ha in 1985 but increased to 28 t/ha in 1986. The decrease in yield was principally due to fruit spoilage when it rained for 3 days at the peak of harvesting and nonavailability of farm labor during the February revolution. During the 1986-87 cropping season, however, several farmers obtained yields higher than 50 t/ha and some even obtained 70-80 t/ha. These yields could be further increased when more location specific technologies are evaluated and perfected. Like the PFVII, the Northern Fruits Corporation (NFC) in Sarrat, Ilocos Norte has improved its yield from 26 t/ha to 31t/ha in its 4 yrs of operation (Mateo, 1989).

Processing Facilities

Two locations were chosen as sites for the factories: San Carlos City in the province of Pangasinan and Sarrat in Ilocos Norte. Both sites are in the main island of Luzon. San Carlos Ciy is about

200 km north of Manila whereas Sarrat is about 500 km north of Manila. Both sites enjoy favorable climatic conditions, excellent roads and fairly good irrigation systems. Because there is a long dry season from November to April and a very pronounced wet season from May to October, supplemental irrigation is a must in order to grow a crop of tomato or any crop for the matter during the dry season. It is generally cooler in these sites from November to February, thus planting of tomatoes is usually done between October and January.

San Carlos Project. The factory in San Carlos City which is under the management of the PFVII was initially organized as a joint venture corporation of the Human Settlements Development Corporation and Technology Resource Center. The PFVII utilizes some of the equipment of the former San Carlos Fruit Corporation and has installed additional equipment for tomatoes and other products.

In San Carlos City, a small-scale factory with a capacity of 10 tons fresh tomatoes per hour was intalled. It uses the batch type of equipment in producing tomato paste. It can process tomatoes for nine continuous hours with three hours break for cleaning of the equipment. Thus, in one day the factory can process 162 t or about 1134 t per week 9 t/hour x 18 hours x 7 days). If raw materials are not available, as the equipment can also process mango, citrus, guyabano, guava, papaya and more in addition to tomatoes, the factory can be operational at least 10 months a year. This means also that employment for factory workers and growers of fruits and vegetables can be assured for the whole year.

A contract was signed with APV Bell Bryant and Bertucci International, an Australian company with offices and factory in the Philippines, for a turn key arrangement for both the design and fabrication of the factory. It has track records in processing juice and dairy products. On the other hand, the Italy-based Bertucci International is one of the leading tomato paste factory manufacturers. Thus, the combined expertise of the two firms promises a more flexible factory. The dollar cost of the factory is more manageable since many of the factory parts are manufactured by APV Bell Bryant in the Philippines.

Sarrat Project. The Sarrat Project is under the management of the Northern Foods Corporation (NFC) which is a commercial/ industrial government corporation engaged among others, in the processing of tomatoes into tomato paste.The factory has a capacity of 25t fresh tomatoes per hour and uses a continuous flow type of producing paste. The equipment runs for 24 hours for 6 days without cleaning. Therefore, 1 day a week can be spent to clean the equipment. Since the equipment can only process

tomatoes and requires tremendous amount of raw materials at a given time (25 t x 24 hours = 600 t/day or 3600 t/week) it means that the factory can only be operational for less than 3 months a year and inoperational for more than 9 months. Fran Rica of the United States of America supplied this equipment.

A major concern of every processing factory is an inexpensive and reliable supply of raw materials. The unreliable supply of coonut oil has been identified as a major weakness as far as its market position is concerned (Padolina 1988). In some ways it has detered the development of coconut oil processing industry.

The grower-factory method of collecting tomatoes as practised in Taiwan was modified and used in the San Carlos and Sarrat project. As mentioned earlier, the Sarrat project could operate in less than 3 months a year whereas the San Carlos operation could process tomatoes in 60 to 90 days as well as other fruits and vegetables the rest of the year. Thus, the processing of tomatoes could trigger the establishment of other agricultural crops (i.e. mango (*Mangifera indica*), guyabano (*Anona muricata*), banana (*Musa sapientum*), guava (*Psidium guajava*), papaya (*Carica papaya*), kalamansi (*Citrus microcarpa*), etc.). Moreover, by using appropriate cropping patterns around the factory, the problem in supplying a continuous flow of other processable vegetable may be overcome and guarantee the farmer stable income from his farm. Examples of such cropping patterns are presented in Fig. 3 (Villareal, 1986).

However, the problem of obtaining raw materials had been overcome under Pangasinan and Ilocos Norte conditions. From this point of view, the agricultural operations proved to be a success. The breakthrough was in working successfully with the farmers as subcontractors. In Ilocos Norte alone, at least 6,000 small farmers participated in this undertaking and more than 8,000 farmers joined this project in 1989 (Mateo 1989).

REASONS FOR SUCCESS

Administrators, technicians, and grower-contractors attribute the successful progress of the projects to organization, financial support, irrigation system, technology and the people labor.

Good Organization

Both projects provided good organization and took care of the planning of production and marketing. They engaged the services of top consulting firms to assist company personnel in the

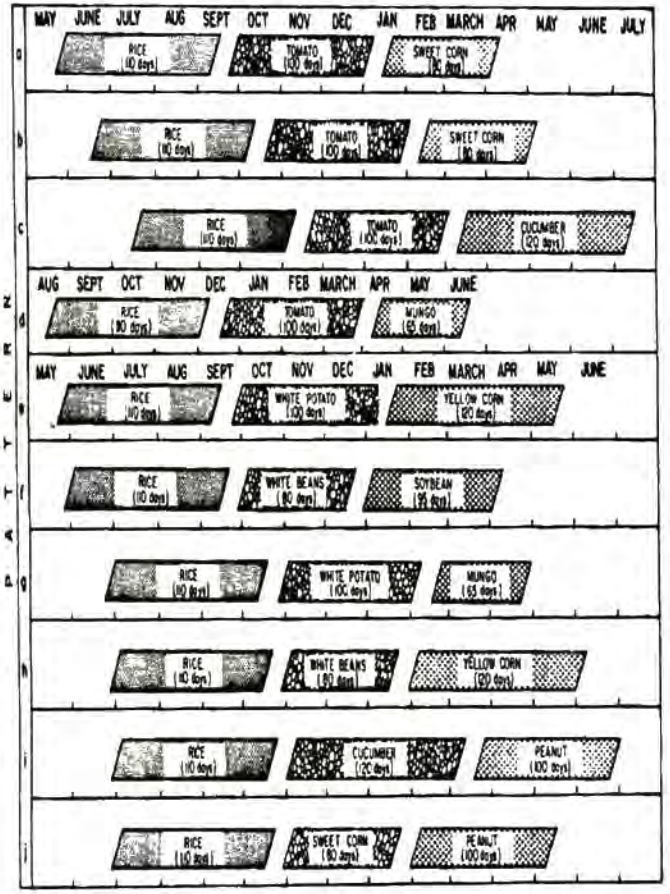

Fig. 3. Suggested cropping models for participants of the tomato project.

initial implementation of the projects. They also supplied the inputs needed to grow tomatoes

Sufficient Financial Support

Support could have been better if regularly sustained. Although a major portion of funds was made available to the projects when needed, it was mostly delayed due to strict rules in using government fund.

Excellent Irrigation System

Since tomatoes require large amount of water for growth and development, it could have been impossible to raise tomatoes without water in both sites especially from October to March when rainfall is negligible. So that, sites near reliable water sources have been carefully selected for contract growers. The system, however, can be improved to assure water availability in order to achieve higher production per hectare.

Appropriate Technology

Tomato varieties and the transfer of some production technologies flowed to Pangasinan from the Asian Vegetable Research and Development Center (AVRDC) in Taiwan via the Bureau of Plant Industry's Economic Garden in Los Banos. From the results of a PCARRD-supported project at the Institute of Plant Breeding, College of Agriculture, U.P. at Los Banos, the growing of wilt-susceptible tomato following a paddy rice has been introduced. This practice allows wilt-susceptible but processable varieties from California and AVRDC to be raised in Pangasinan. In the past, bacterial wilt precluded the successful production of tomatoes. When this technology was used it has not yet been tested in commercial scale under Philippine conditions. But the scientists were confident that the technology should apply as well to large-scale growing as it successfully did in experimental plots.

In the case of the Sarrat project initial technologies both on the tomato growing and processing were provided through the assistance of the Philippine Packing Corporation.

The People Factor

The participants in the projects, namely, the growers, technicians, managers and consultants, were willing to take the risks in growing tomatoes. Moreover, farmers agreed to try something new even though they were uncertain of what could happen.

Managers fought their superiors to get financial, moral and social commitments and saw to it that the projects were implemented. Consultants risked careers and reputations for the venture.

CONCLUSION

The rice industry project in Tarlac and the San Carlos and Sarrat tomato processing project illustrate the success of rural industrialization when given a favorable combination of factors for agricultural development. We Filipinos have the initiative, technical know-how, manpower and rich natural resources to propel our own development. However, a strong political will and discipline of the people are needed as well to bring about industrialization in the Philippine countryside.

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