A REVIEW OF HORTICULTURAL EXPORT PERFORMANCE OF DEVELOPING COUNTRIES IN ASIA:

ASPECTS OF QUALITY, COMPETITIVENESS AND SUSTAINABILITY

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Abstract

Many developing countries in Asia have a comparative advantage in the production of horticultural commodities. Drawing from the widely diverging experiences of six countries, it is concluded that government policies significantly influence horticultural export performance. In order to meet strict consumers' specifications in importing countries, maximum cooperation is needed between the private export sector, the government, the research community and growers. Increased horticultural production in temperate highlands has led to serious land degradation and production of negative externalities. However, the trade-off between profitability and sustainability as well as the desirability and from of government intervention remain controversial issues.

1. Introduction

Most horticultural products in developing countries are produced on small farms and often in relatively labor-intensive ways. With appropriate policies and technologies, horticultural production can significantly contribute towards increasing the incomes of small-scale farmers, expanding employment opportunities and enhancing rural development. In addition, the horticultural sector can be an important source of foreign exchange earnings. In Asia, Taiwan, China and the Philippines have traditionally been important exporters of horticultural products. More recently, Thailand and (to a lesser extent) Malaysia have greatly increased their horticultural exports as well (Figure 1).

Most studies of trade in horticultural products have either been global (e.g. Islam, 1990) or highly commodity and country-specific (e.g. von Braun *et al.*, 1989; Scobie and Youngblood, 1990). This paper will attempt:

- to summarize past trends and current developments of trade flows of horticultural products in Asia.

- to review export performance of various major as well as some minor exporters of horticultural products in Asia and identify condition necessary for success in the world market for horticultural product.

- to briefly review the market structure and demand in high income importing countries of horticultural products and derive implication for horticultural exporters.

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- to investigate the relationship between profitability and sustainability in horticultural production and suggest implication for future export strategies and policies.

1.1. Export Strategies

Traditional agricultural exports face relatively slow growth prospects in world markets due to low income elasticities of demand. The price fluctuations of most of these commodities are also no longer subject to international commodity agreements. Moreover, food exports such as cereals, livestock products, and sugar, can often not compete with subsidized exports of developed countries. However, unlike cereals and other traditional agricultural products, the world market for fruits and vegetables has expanded consistently throughout the past decade. Therefore, diversification of the agricultural production and export base has the potential for significantly increasing agricultural incomes and export revenues and lowering their variability. Because export markets of Asian countries tend to be more diversified than those of other important exporting countries in Africa, Latin America and the Near East, Asia has been able to significantly improve its competitive position in the world market for horticultural goods during the past two decades (Islam, 1990).

1.2. Trends in Exports of Horticultural Products

By the mid 1980s, horticultural products constituted about 12 % of world agricultural trade and 13% of the agricultural exports of developing countries (Islam,1990). However, the latter percentage can be much higher for individual countries. Although the EEC and the USA are still the largest exporters of horticultural products, the developing countries' share of world horticultural exports has steadily increased during the past 15 years. Trade in individual commodities has been concentrated in a few exporting countries, however; the top four exporters in horticultural share of total exports in many commodities. While future increases in horticultural exports of developing countries, the outlook for individual exporters of horticultural products depends also on supply-side policies, macroeconomic policies, composition of exports and other factors influencing competitiveness.

1.3. Strategies for Increasing Earnings from Horticultural Exports

Even though aggregate import demand for fruits as well as for vegetables has been shown to be own-price inelastic, the demand for certain individual horticultural products can be quite own-price elastic (APO, 1988; Islam, 1990). Such commodities typically include, among others, mangoes, avocados, kiwi fruits, bananas, and processed fruits and vegetables. In order to achieve further increases in foreign exchange earning and increasing from the export of horticultural products, developing countries should aim at:

- capturing an increasing share of world trade by becoming more competitive in the production of own-price elastic commodities, i.e. achieving reductions in unit production costs.

- diversification, i.e. redirecting the composition of exports towards commodities that are not only own-price elastic but income-elastic as well.

Another potentially promising way of increasing export earnings from horticultural products is to further increase the share of processed products whose unit value typically is some two to three times higher than that of fresh products. The share of processed products in developing country horticultural exports increase from 33 % in 1961-63 to 52 % in 1983-85. The latter figure for vegetables alone is 19 %; however, it is over 36 % for Asian countries (21 % if Taiwan is exclude) and as high as 89 % for Taiwan. Income elasticities of processed horticultural products have been estimated twice as large as those for fresh products (Islam, 1990).

In addition to the above demand-related factors, supply-side policies, including fiscal and monetary policies, are important determinants of export performance (Athukorala, 1991). An efficient marketing infrastructure in exporting country and close links with effective distribution system in the importing countries are also critical to growth in export of horticultural products.

2. Performance of Major Asian Exporters of Horticultural Products

2.1. Taiwan, a Traditional Exporter of Horticultural Products

Taiwan has experienced significant decreases in both area and production of vegetables over the past six or seven years. Vegetable production decreased from nearly 3.5 million t in 1984 to 2.7 million t in 1990. On the other hand, both area and production of fruits have shown a rather steady increase over the past decade, from 115,500 ha and 1.7 million t in 1981 to 190,800 ha and 2.3 million t in 1990. The composition of fruit production, however, has changed significantly, away from banana and pineapple and towards citrus fruits.

During the past ten years Taiwan has been moving from being a major exporter of horticultural products towards becoming an increasingly significant importer of such products (Figure 2). Continuing strong economic growth in both the manufacturing and services sector, combined with rapidly increasing prices for labor and land, are quickly eroding Taiwan's comparative advantage in the production of agricultural; commodities. Exports during 1990 of both fresh fruits (78,000 t) and vegetables (212,000 t) were about one-half their respective 1985 levels. Exports of processed vegetables have decreased by some 50 % as well since the mid 1980s. In line with the trend, import quantities of fresh vegetables during 1990 (516,000 t) were about double their 1988 levels. The rise in imports of fresh fruits, although impressive, is less dramatic than that of fresh vegetables mainly because of a rather extensive array of trade barriers on fresh fruits.

2.2. Thailand, a Nontraditional Exporter of Horticultural Products

Thailand produces between 5 and 6 million t of fruits (excluding melons) and about 2.5 million of vegetables (including melons) every year (FAO, 1990a). Total

1990 revenues from exports of fresh, dried and canned vegetables were nearly US$ 170 million, a five-fold increase since 1985 (Figure 3). Fruit exports during 1990 totaled 130,000 t, valued at around US$ 73 million (100,000 t or US$ 60- million excluding nuts). In addition, Thailand's exports of fruit juice are valued at around US$ 22 million per year, the bulk of which consists of pineapple juice.

Thailand has benefited greatly from rapidly increasing wages and land prices in Taiwan, its principal competitor in the world market for horticultural products and in the Japanese export market in particular. Besides the labor cost advantage, technological improvements in production have made significant contributions to improving Thailand's competitive position in the Japanese market (Honma, 1991). Additional important reasons for Thailand's success in horticultural production and exports are the continuous improvements in marketing and transportation facilities as well as focussed, problem-solving research with close links to both extension services and the private trading sector. In addition, a conducive overall economic environment and active supply-side policies have contributed significantly to export performance. Thailand also has diversified its vegetable exports to include of commodities. Its fresh vegetables export consists mainly of asparagus, onions and shallots, young corn and capsicum and pimenta. Thailand's exports of frozen vegetables consists mainly of vegetable mixture and frozen beans.

Although traditionally, most growers of horticultural products in Thailand are small-scale, often part-time farmers, the majority of whom produce primarily for the domestic market, the practice of contract-growing for large exporters and processing factories is on the rise as horticultural production is becoming increasingly vertically integrated. Contract farming is more common in fruits than in vegetables. At present contract farming in vegetables is mostly confined to tomato (both for paste and for fresh exports).

In order to further increase the exports of fruits and vegetables, improvements in post-harvest techniques and increased private sector investments in processing plants for canning, freezing and dehydrating are needed. Smaller-size processing plants that are capable of handling various kinds of fruits are required. This will not only results in greater flexibility in the processing of surplus production for which there is no fresh market, but also increase capacity utilization.

2.3. Other Asian Exporters of Horticultural Products

2.3.1. China

After India with an annual production of about 25 million, China is Asia's second largest producer of fruits with a production of 17 million t during 1989. Total fruit production has more than doubled since 1980, and some individual fruits (e.g. oranges) have shown even more dramatic increases.

China is also a very significant producer of vegetables. Adjusting the available FAO production statistics for Taiwan component reveals that production (in million t)

of fresh vegetables in China has increased from around 78 in 1980 to 106.7 in 1987, 109.6 in 1988 and 11.3 in 1989.

China's exports of fruits and vegetables have shown dramatic increases over the past three decades; earnings (annual averages for each period in million US$) rose from 64 in 1961-63, 172 in 1970-72, 323 in 1975-77, to 552 in 1983-85 (Islam, 1990). In 1987, China exported about 400,000 t of fruits valued at US$ 270 million, and 865,000 t of vegetables worth about US$ 565 million. During the same year, fresh, dried and canned fruits accounted fro 37, 43 and 20 % of total fruit exports. Corresponding percentages for vegetable exports were 39 (including frozen vegetables), 18 and 43.

Hong Kong is China's main export market for horticultural products. Despite increasing competition from reliable suppliers of high-quality vegetables such as Taiwan, Thailand, Australia and South Korea, China is still Hong Kong's most important source, of (particularly) fresh but also dried vegetables, and significant source of fruits as well. However, growth in import demand for horticultural goods in Hong Kong has slowed down during the past decade. Other important export markets for Chinese horticultural export products include the former USSR and Japan. More recently, Taiwan is also becoming in increasingly important importer of horticultural products from China, particularly dried mushrooms (but not fresh fruits and vegetables).

In China, trade in fruits and vegetables is monopolized by two state corporations. The China Grains and Oils Export and Import Corporation handles exports and imports of fresh (including preserved) fruits and vegetables. The China Native and Livestock Products Exports and Imports Corporation is responsible for the trade in dried fruits and vegetables. These corporations completely control all export marketing activities. They allocate quota to prospective agents in the producing areas where the produce is collected by network of state procurement agencies; they are the only source of market information; indeed, they are the only link between domestic producers and foreign consumers. This strict functional division between domestic and foreign trading is likely to discourage the full utilization of China's export potential.

2.3.2. The Philippines

The Philippines have a strong comparative advantage in tropical fruit production, mainly due to favorable climatic conditions and relatively cheap labor. Consequently, exports of fresh fruits and vegetables consist of 98 % of tropical fruits among which banana, pineapple and mangoes loom largest. Banana is the most important horticultural export item of the Philippines, followed by pineapple. During 1989, exports of bananas and pineapples came to respectively 850,000 t (US$ 146 million) and 152,000 t (US$ 24 million) (FAO, 1990b).

The banana markets consists of several sub-markets that differ by from and variety of produce demanded, location (foreign vs. domestic) and type of consumer (high

income vs. low income). Each of these markets has its own requirements. The Japanese market can be considered as largely saturated, as evidenced trend in banana imports during the past few years. Varieties other than the common 'Cavendish' variety are being test-marketed but without significant successes thus far. Research on the characteristic of the postharvest behavior of nontraditional varieties is necessary to boost the declining export market. Continuing maintenance research of banana pest and diseases, including the monitoring of their economic importance, are also important given the demand foe high-quality and blemish-free bananas in importing countries. Although some multinational companies invest in research, very little research is carried out on small-scale banana growing. Postharvest the technologies and transport facilities are inadequate, suggesting the need for government assistance. The government could also assist in the exploration of new export markets.

Pineapple in the Philippines are mainly grown on plantation-type farms. On small farms they are often intercropped with coconut or papaya tree. Although FAO statistic regarding pineapple production in the Philippines are subject to substantial revisions from year to year, the latest revisions suggest an annual production of around 1.2 million t throughout the late 1980s (FAO, 1990a). Exports of fresh pineapples have decreased somewhat recently, from 167,000 t in 1987 to 152,000 t in 1989. Export revenues, which have fluctuated around US$ 24 million per year, have decreased less than volume due to price increases during the second half of the 1980s. Exports of canned pineapple have been fairly stable at around 180,000 t per year, resulting in annual revenues oscillating around US$ 85 million. Pineapple just exports bring in another US$ 35 million annually.

The export performance of mangoes has not lived up to expectations, despite the absence of tariff and non-tariff barriers in most export markets. Nevertheless, export earnings from fresh mangoes have roughly doubled from US$ 8 million in the mid 1980s to US$ 16 million in 1988, mainly due to increased export quantities. Despite the fact that the Philippines mango variety is preferred among consumers, prices received in major export markets such as Japan, Hongkong and Singapore are low because of the relatively low quality of the Philippines mango.

Mangoes are mostly produced by individual farmers on a relatively small scale. Many such farmers lack adequate information regarding mango cultivation practices, relative profitability vis-avis other crops and appropriate post-harvest practices. Thus, improvements in extension services for mango farmers are necessary. Government investments in rural infrastructure, particularly in roads, would improve distribution and marketing efficiency and reduce post-harvest losses. Research might contribute to improved export performance by further development of mango varieties with a longer self life and suitable for off-season cultivation, in order to achieve a year round supply. Development of techniques which delay the ripening process, in order to ensure that the fruits arrive in good shape at their destination, is also needed. All these measures seem fairly urgent in view of the increasing competition faced by the

Philippines from other countries, including Australia and Malaysia, Both of which have started planning the 'Carabao' mango variety as well.

2.3.3. Malaysia

Fruits in Malaysia are mostly grown on about 135,000 smallholdings of one or two ha in size. The area under fruits has grown from 70,000 ha in 1970 to nearly 200,000 ha in 1990. In contrast, the area under vegetables is minor and has oscillated at around 10,000 ha through the past decade, producing about 470,000 t per year (Anang, 1989). Even though a sizable proportion of Malaysia's total vegetable production is exported (mostly to Singapore), at about US$ 20 million per year vegetable production exports are rather minor in absolute terms and Malaysia is a substantial net vegetable importer.

Durian, banana, rambutan and pineapple account for most of the area under fruits. Export revenues of fruit products have increased from US$ 6 to 42 million between 1980 and 1989. The exports of fresh pineapple (mostly to Singapore) are small at only US$ 1 million per year; however, annual exports of canned pineapple are significant at about US$ 22 million. Malaysia's share of the world market of canned pineapple is, however, only about 4 %, the largest exporters being Thailand (30 % of the world market) and the Philippines (13% of the world market). Durian, starfruit, papaya, watermelon and banana accounted for most of the 1989 export revenues from fresh fruits. With the notable exceptions of starfruit and papaya, the larger part (over 70 %) of the exports of fresh fruits goes to Singapore, Shortage of air cargo space is considered one of the most serious constraints to penetrating more distant fresh fruit export markets, Europe in particular.

2.3.4. Pakistan

Although currently not an important exporter of horticultural product, Pakistan represent a good example of a country that has a large but as yet unused potential for fruit and vegetable exports. mangoes, onions, melons and kinnow are considered as the crops with the largest immediate potential for export increases (PSL, 1989).

Production of both fruits and vegetables has increased substantially over the past decade, mainly due to area expansion. In 1980, vegetable production (in million t) stood at 2.1, whereas the corresponding figure for fruits was 2.6. By 1989, these figures had increased to 3.5 and 3.8, respectively (FAO, 1990a). During 1989, Pakistan's exports of fruits amounted only to 64.000 t (US$ 13.7 million) and that of vegetables to 35,500 t (US$ 5.1 million). Exports of fruits in particular exhibit a declining trend (PSL, 1989). Processing of vegetables and fruits is negligible.

Pakistan's lack of a satisfactory export performance in horticultural product is not only a matter of inadequate post-harvest handling and subsequent quality, but has its roots in the lack of a suitable production base. Although Pakistani produce scores high on taste and flavor, appearance, presentation and shelf-life are of low standard. At the same time these are more important characteristics in world markets than taste and flavor. However, considerable opportunities exist to increase Pakistani exports if

a new generation of progressive and professional export companies that are able to organize both production and marketing can be developed which can work under a conducive commercial and technical environment. A deliberate "growth for export" policy as well as increased investment in research and development would be elements of such an environment. Also, improvements in post-harvest methods, including adequate transport facilities, are needed.

The experience of other Asian countries (including foremost Taiwan and Thailand, but also the Philippines and Malaysia) points to the inappropriateness of Pakistan's current export philosophy in which it tries to export whenever there is surplus production. Rather, explicit production for export is required in order to be successful. Also, evidence from these countries points to the usefulness of organizing farmers into groups and educate them the requirements of the export market. The private sector is not very well organized and there is a lack of good information and market intelligence.

3. Major Markets for Developing Country Exporters of Horticultural Products

The developed countries provide the largest market for horticultural exports, accounting for some 80 % of world imports of horticultural products during the mid 1980s. Per capita consumption of both vegetables and fruits, however, differs widely among individual countries that, therefore, have different potential for increased consumption and imports. Exporters of horticultural product might consider concentrating their production and marketing efforts on exports to countries with below-average per capita consumption. Although Western Europe is the most important export market for horticultural products from Asia, the fastest growing export markets are the USA and Japan. Despite the fact that the expected expansion in aggregate demand for vegetables is considerably slower than for fruits, import demand in developed countries will continue to grow and will be the most important source of future expansion of horticultural exports from developing countries (Islam, 1990).

Besides Western Europe, Japan and USA, the major export markets for vegetables produced in the Far East are Hong Kong and Singapore. Also, South Korea has the potential of becoming an important export market for horticultural products in South Korea have started to rise during the last few years.

Japan is the largest market for horticultural products in Asia. In 1988, more than 3.3 million t were imported into the country at a value of US$ 3.6 billion, up from US$ 1.4 billion in 1980. In the 1980s, the value of horticultural imports grew at an annual rate of 12.5 %, or 2.5 times that of agricultural imports (Honma, 1991). Nearly 25 % and of Japan's fruit consumption and 7 % of consumption of vegetables are imported. Overall, Japan,s dependence on imports for its supply of horticultural products is high; in 1988, imports accounted for 11.6 % of total supply in value terms. Over one-half the value of Japan's horticultural imports comes from Asian countries. The share of the USA is about 30%. Developing countries as a group

have, however, captured a smaller share of the growth in the Japanese import market of horticultural products than developed countries, particularly in process vegetables.

4. Profitability and Sustainability

Besides efforts to improve quality through extension services and farmers' training, both of which lead to improved knowledge and information, many producers of horticultural commodities attempt to increase profits by increasing the use of purchased inputs. Over the past decade in Asia, large areas of forest lands in the temperate highland zones have been cleared for the production of horticultural commodities, vegetables in particular. At the same time, the use of chemicals in general, and that of pesticides in particular, has increased dramatically (Hossain, 1990; Inayatullah, 1990; Lim et al., 1988; Vattanatangum, 1990; Wivutrongvana, 1989).

Soil productivity in many of the highland production areas has significantly decreased as a result of increased soil erosion which cause depletion of soil nutrients and reduction of the soil's to supply moisture. In their evaluation of the conflict between short-term profitability and long-term sustainability while choosing between alternative crop management practices and land uses, farmers typically take into account only the on-site impacts of alternative production methods on land degradation, including the total net present value of the sum of present and future streams of output Such private financial calculations (rationally) ignore off-site (downstream) effects of eroded soils and use of chemicals.

Such off-site effects (externalities) include cumulative effects such as reducing reservoir capacity and sedimentation of streams, as well as concentration effects resulting from runoff of chemicals such as impacts on the in-stream ambient conditions causing stress for the aquatic ecosystem. The presence of externalities is an important reason why markets do not always lead to maximum social welfare. Although measures that encourage, discourage or prohibit certain inputs and management practices or agricultural outputs could reduce the production of externalities, the ultimate effects of government intervention are often controversial (Dumsday *et al.*, 1990). However, where land resources have significant conservation benefits of a public good nature, markets seldom provide and efficient solution and government intervention is nearly always required.

Another reason for the production of negative externalities is that markets are often incomplete, which is the case when property right are not fully specified. Such incomplete markets are particularly common in developing countries. In several developed countries, however, market forces have started to become important in driving the conversion from non sustainable to sustainable ways of producing food (including horticultural product), as witnessed by the increasing number and turnover of ecological food outlets.

The commonly assumed trade-off between sustainability and profitability has recently been challenged in the Australian context (Wynen and Edwards, 1990). In a

comparison of chemical-free and conventional farming, private net returns were found to be similar for the two types of farming. However, sample sizes were small, involving 8 farmers in each category. On the other hand, recent research has counterattacked the view that continued heavy use of pesticides is unsustainable. Stroup (1991) presents evidence from the USA to show that the use of chemicals has significantly contributed to higher standards of living and healthier lives. This suggests that the positive impacts of environmental and occupational health regulations may be outweighed by the damage to health and safety that they cause by reducing income growth.

Concluding Remarks

Because horticultural products are generally labor-intensive, many developing countries with labor-abundant economies have a comparative advantage in the production of fruits and vegetables. At the same time, export prospects for developing countries are more favorable in certain commodities than in others. For example, their comparative advantage is likely to be most significant in the production of tropical fruits and vegetables, rather than in off-season fruits and vegetables which do not require strictly tropical growing conditions. Regarding the latter, developing countries face stiff competition from specialized producer in a number of developed countries.

Depending on comparative advantages, developing countries may wish to expand processing capabilities in order to increase value added and spread exports over longer periods. For example, an important reason for Thailand's substantially higher growth rate in earnings from horticultural exports compared to the Philippines during the period 1975-85 (16.6 % as against 8.5 % per year) is the much larger share of processed products in Thailand's exports as compared to that of the Philippines.

Most horticultural exporters cannot influence either the price they receive for products they sell or the prices they pay for inputs in international markets. However, since nonproductive cost can constitute up to 70 % of the final import price of horticultural products, the success of a country in exports of horticultural products might depend more on how efficiently and effectively processing, distributing, marketing and transporting are organized, than on the actual cost of cultivation. Thus, seeking possibilities of reducing costs and increasing efficiencies in both domestic and international distribution should be intensified.

Besides investment in infrastructure such as roads and markets, the experience of Thailand also points to the potentially important role of public assistance in scientific, market and economic research, as well as assistance in gaining market access by supporting promotional efforts in importing countries. In addition, the importance of public sector investment in transportation and marketing infrastructure cannot be underestimated. On the production side, effective transfer, by the extension services, of information and technology marketing system. A continuous supply of timely and up-to-date information regarding the import markets' requirements is another crucial element in a successful export promotion strategy.

Several authors have shown that both domestic (trade) policies and macro-economic government policies significantly influence export performance (Athukorala, 1991; Islam, 1990; Scobie and Youngblood, 1990). Elements of the former include assurance of adequate availability of inputs (including fertilizers, water, packaging materials and credit) and the right mix of consistent incentive to both producers and processors. A conducive macro-economic and trade policy should allow price signals from international product and factor markets to be clearly transmitted to domestic producers. Therefore, it should avoid excessive (implicit or explicit) taxation, overvalued exchange rates and import quotas.

Last but not least, maximum cooperation is needed between the private export sector, the public sector (including the research community) and growers, in order to be able to generate a steady supply of high-quality horticultural products that are well-tailored to consumers' specifications in the importing countries.

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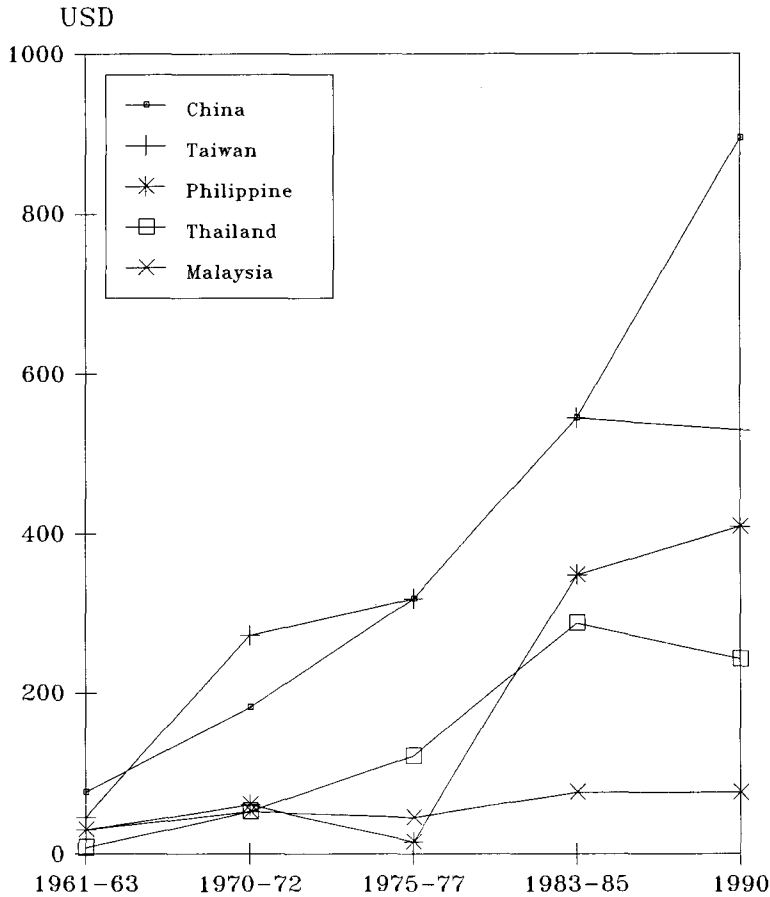

Figure 1-Three Year Average Value of Fruit and Vegetables in Selected Asian Countries

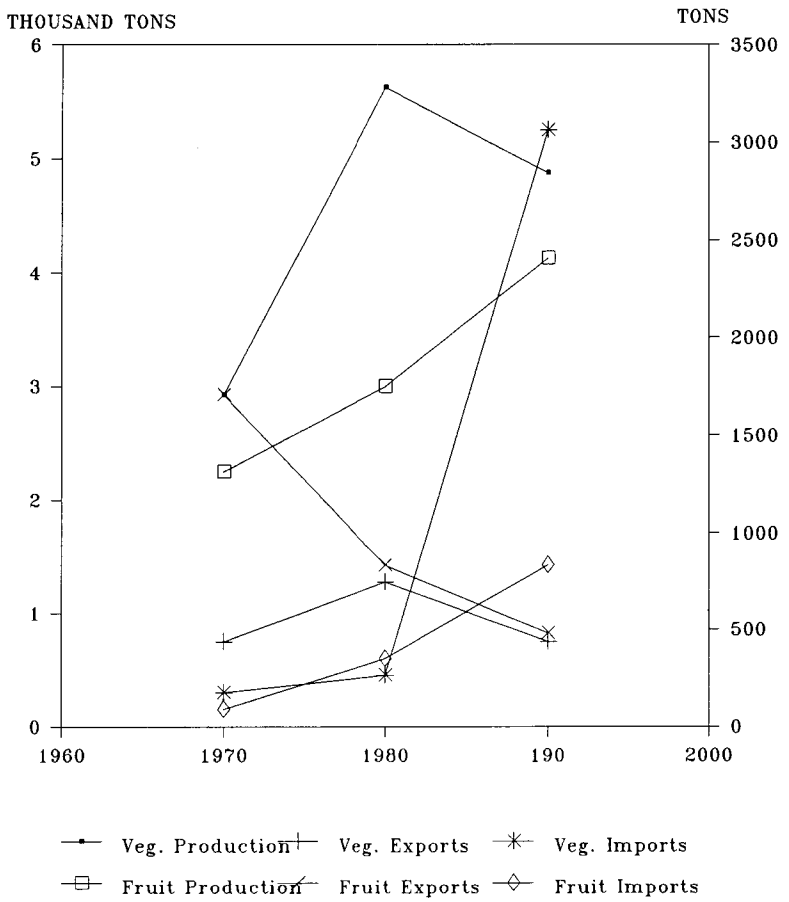

Figure 2-Production, Exports and Imports of Fresh Fruits and vegetables in Taiwan

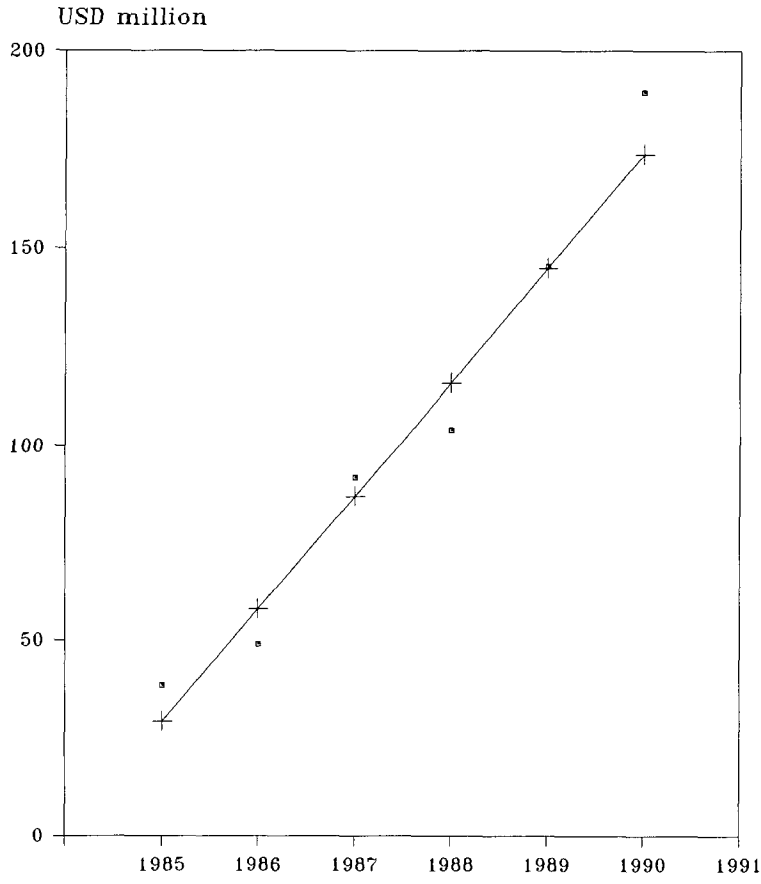

Figure 3–Trend in Exports of Fresh, Dried and Canned Vegetables of Thailands