

**Asia Regional
Agribusiness
Project:**

**Quarterly Report
for January to
March 1995**

Contractor's Report



**Regional Agribusiness Project
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Asia Regional Agribusiness Project Quarterly Report for January to March 1995

Development Alternatives, Inc.

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SECTION ONE

BACKGROUND

PROJECT OBJECTIVES

The objective of the Asia Regional Agribusiness Project (RAP) is to improve private sector agribusiness performance and participation in Asia, resulting in the region's increased employment and income. Business performance here refers to increased access to business opportunities and support services for small and medium-sized businesses (which are often women-owned).

The purpose of the project is to continue to increase the effectiveness of the agribusiness projects and programs of the U.S. Agency for International Development (USAID) Asia Bureau Missions in promoting market efficiency and trade investment in an environmentally sustainable manner.

RAP serves the technical and information needs of Asia Missions and their clients. It emphasizes improving regional market transparency, creating a better understanding of regional market support infrastructure, and defining product quality standards for market entry. RAP identifies solutions to agribusiness development environmental concerns, serves as a regional liaison with the U.S. private sector, incorporates gender concerns into Missions' agribusiness efforts; and addresses key regional agribusiness development issues that transcend individual country programs.

RAP's services are organized under four principal components:

- Market Information Services;
- Environmental Services;
- Trade and Investment Services; and
- Analytical Support.

COMPONENT OBJECTIVES

The following paragraphs describe briefly the objectives of each of RAP's four service components:

Market Information Services: Provides information to USAID Missions, projects, clients, and the agribusiness community that will increase regional market transparency and knowledge of regional market opportunities.

Environmental Services: Provides technical and informational support to USAID Missions in Asia vis-à-vis existing agribusiness projects, new agribusiness projects involving environmental issues and regulations, and the environmental sustainability of overall project portfolios.

Trade and Investment Services: Provides services to increase the international market participation of Asian agribusinesses, and develops commercial linkages with U.S. agribusinesses interested in accessing foreign markets.

Analytical Support: Provides selected analytical services to support Mission agribusiness project design, implementation, monitoring, and evaluation, and investigates agribusiness development issues of common interest across the region.

LEVEL OF EFFORT AND FINANCIAL BUDGETS

RAP is a four-year project, with an optional fifth year, and has the following level of effort and dollar budgets (see Annex H for a budget update).

Level of Effort (September 30, 1993 to September 29, 1997)

| Description | Level of Effort (Person-months) | Dollar Budget |
|--|------------------------------------|--------------------|
| Long-term Technical Assistance Key Personnel (Includes those from Abt Associates Inc. and Fintrac Inc.) | 196.0 | \$1,237,521 |
| Short-term Technical Assistance Personnel ¹ | 62.0 | 333,187 |
| Project/Administrative Support | 72.8 | 176,612 |
| Total | 330.8 | \$1,747,320 |

¹ For a summary of RAP's short-term technical assistance efforts, see Annex F.

Itemized Budget (September 30, 1993 to September 29, 1997)

| Item | Dollar Budget |
|-----------------------------|--------------------|
| Salaries and Wages | \$1,224,513 |
| Indirect Costs | 1,215,794 |
| Travel/Per Diem | 584,010 |
| Other Direct Costs | 320,509 |
| Subcontractors | 1,522,404 |
| Subtotal of Estimated Cost | 4,867,230 |
| Fixed Fee | 229,415 |
| Total Estimated Cost | \$5,096,645 |

EXPECTED RESULTS

RAP will result in increased employment and income in Asian countries and increased U.S. agribusiness trade and investment in the region.

End-of-project achievements will be as follows:

- improved market information services;
- Increased capacity of agribusinesses to deal with environmental issues;
- Sustainable linkages between the United States and host-country agribusinesses and support organizations;
- Improved project design and agribusiness monitoring and evaluation systems within Missions; and
- Improved coordination with other technical assistance and business support resources for Mission programs.

Additional information on RAP's expected outputs is provided in Annex A. Section Two of this report details the outputs RAP achieved in the first quarter of 1995.

SECTION TWO

ACTIVITIES AND PERFORMANCE

The paragraphs below summarize the RAP technical assistance team's achievements in January, February, and March of 1995. A copy of the 1995 work plan is included as Annex B.

1995 CORE ACTIVITIES AND PERFORMANCE

Market Information Services

1. **Activity: Market Asia** (Thomas Klotzbach and RAP staff)

Publication/Editorial. (All RAP staff contributing) Issue No. 6 was published and distributed in February. A copy is in Annex C. Issue No. 7 was sent to the printer in March.

Performance: On schedule. Distribution has increased to 4,000 copies, of which 3,600 were sent to individual subscribers. Early next quarter *Market Asia* articles, along with other RAP Market Information Services products and general information on the RAP project, will be available through an Internet World Wide Web home page on a trial basis.

2. **Activity: Reader Survey** (Thomas Klotzbach)

Our November 1994 survey will be repeated in 1995 to obtain feedback on product and market coverage, subscriber profiles, desired frequency, and other information to improve the receptivity and effectiveness of *Market Asia*.

Performance: On schedule. The *Market Asia* reader survey has been repeated in each issue of *Market Asia* since its original inclusion in the November/December issue. The March/April issue will be the last issue that includes this particular reader survey. At the end of this quarter, 360 responses had been received, with an additional 20 to 30 arriving each week. A summary of the results to date is presented in Annex C. Because of the extension of time of the first reader survey, the second reader survey (originally scheduled for May 1995) will be rescheduled for November 1995.

3. **Activity: Transfer *Market Asia* to Private Publisher** (Joseph Pietrus, Thomas Klotzbach)

To achieve long-term sustainability of *Market Asia*, RAP will negotiate its transfer to a private publisher at the earliest possible date. The sooner this is achieved, the more likely it is that *Market Asia* will become a sustainable publication. RAP will continue providing editorial material for the life of the RAP project, and have the publishing house assume responsibility for layout, production, circulation, and advertising sales and the expenses of these functions.

Performance: Behind schedule. During this quarter the short-term technical assistant consultant on *Market Asia* sustainability continued her analysis on options for *Market Asia* sustainability, although

the activity had been delayed because of serious illness of the consultant. A final report will be completed in the upcoming quarter and an action plan for *Market Asia* sustainability will be implemented. Several of the consultant's preliminary recommendations (reader survey, subscription database information) are already being implemented.

4. **Activity: Environmental News Bulletin** (John Bowman)

A summary sheet of important environmental happenings will be distributed as an insert to *Market Asia* three to four times a year. There will be a breakdown into two topical areas: (1) environment and sustainable agricultural practices, and (2) food safety/food regulations. Articles from environmental, agricultural, and food safety journals and bulletins will be synthesized. Significant related events in other USAID projects will be presented, as will announcements and outcomes of relevant conferences and publications.

Performance: First issue scheduled for publication in May.

5. **Activity: RapNet** (All RAP consultants contributing)

Judged by the lack of response, *RapNet* volume no. 1 proved of limited interest to USAID staff and project employees. We will continue publication in an effort to build interest and develop mission/project information interchange.

Performance: March issue behind schedule. Issues rescheduled for publication in April and June.

6. **Activity: Quick Response Service** (Heather Doyle)

Service Provision. The RAP Clearinghouse continues to provide rapid response services to Missions and projects for market and other information needs. A promotion effort will be undertaken in early 1995 to provide Missions and projects that have not used the service with an understanding of how others are actively using the Clearinghouse.

Performance: Quick Response Service activities continue. A log of January to March activities is included in Annex D.

Expansion to Associations/Firms. The Clearinghouse will offer similar services to regional industry and trade associations to strengthen their membership service offerings. Initially, the service will be provided free of charge, although more-detailed requests may require RAP to charge fees for service. See also the Association Strengthening section (10.) below.

Performance: On schedule. Arrangements were made to offer Clearinghouse services through India's Agricultural & Processed Food Products Export Development Authority. We expect to obtain one or more similar agreements in other countries during the second quarter.

7. **Activity: Market Information Bulletins** (Thomas Klotzbach, John Bowman)

A four- to eight-page market information bulletin will be prepared monthly for distribution through RAP association and project counterparts in the region. The bulletins will form a complete market information packet, which can be stored in a RAP-provided three-ring binder or individually distributed to private sector exporters. Market coverage will include developed markets in Asia, the Middle East, North America, and the United States. John Bowman will provide information on the food safety and phytosanitary requirements of products covered. Initial product coverage ideas include durian, mangosteen, lychee, longan, baby corn, asparagus, Asian vegetables, mango, papaya, melon, grapes, okra, orchids, roses, and carnations.

Performance: On schedule. Three market information bulletins were prepared this quarter. Rambutan was published in January, asparagus in February, and durian in March. Copies are included in Annex E.

8. **Activity: Market Opportunity Surveys**

Floricultural Export Opportunities. A market feasibility survey will be conducted for floricultural products that have production potential within RAP beneficiary countries. Markets to be covered include the United States, European Union (United Kingdom, France, Germany, Holland, Italy), the Middle East (Saudi Arabia, Kuwait, United Arab Emirates), and Asia (Japan, Hong Kong, Singapore). Product coverage will vary between markets, depending on the likelihood of having a competitive advantage over existing suppliers. The market feasibility survey will include current and historic levels of domestic production and imports, competitor profiles, price and volume trends, seasonality of demand and supply, consumer preferences and grades/standards, admissibility criteria, and lists of importers. The short-term technical assistance Floriculture Specialist will visit two Asian markets and two RAP beneficiary countries. RAP beneficiary country visits will include a one-day workshop on the world market for floricultural products.

Performance: Scheduled to begin in March, this activity was put on hold pending USAID obligation of additional project funds.

9. **Activity: Intra-Regional Agribusiness Trade Among RAP Beneficiary Countries**

This report will analyze current agribusiness trade among the RAP beneficiary countries, selecting up to 40 products that present potential expansion of intra-regional trade. For imports, the report will detail current import market shares, import market size, historical trends, import regulations, specifications, domestic production, and importer contacts. Export information will include current export markets, volume exported, and external contacts. The report will include recommendations for future project activities, if any, to promote intra-RAP trade.

Performance: Scheduled to begin in May 1995.

10. **Activity: Association Strengthening** (Thomas Klotzbach, Joseph Pietrus)

Identification of Counterparts. The RAP team will identify institutional counterparts to be part of a RAP-initiated market information and trade and investment development network. Counterparts may

include export promotion organizations and private sector industry and trade associations. Some counterpart organizations have already been identified through RAP's varied in-country contacts.

Establish and Maintain Network. RAP will create a network, possibly electronic, to enable communication between the RAP Clearinghouse and the institutional counterparts in each RAP country, and between the counterparts themselves. RAP will act as an overseas market information repository for the organizations, assisting them in expanding their market information availability and capabilities. The network will also be used by RAP's Environmental Services and Trade and Investment Services components.

Service Provision and Training. RAP will provide hands-on training in market information systems installation, analysis, and dissemination to counterpart organizations, strengthening their service delivery to members. This training will be provided on demand, and will require buy-ins from local missions.

Performance: On schedule. Associations are currently being identified based on RAP team member contacts.

11. **Activity: Assistance to International Trade Centre and Market News Service** (all RAP consultants)

Implementation. RAP will offer International Trade Centre (ITC) assistance in the establishment and operation of the Asia Market News Service (MNS). We have already provided recommendations of small- and medium-sized broker contacts to the ITC. As the service unfolds, we will offer to use our frequent field visits (by all team members) to inquire into the validity of the information provided and other issues of interest to ITC.

Promotion. RAP will promote the Asia MNS to potential subscribers by: (1) providing a complimentary subscription to all existing USAID Asia agribusiness projects; (2) publicizing the Asia MNS in *Market Asia*, including feature articles presenting and analyzing information from the MNS; and (3) handing out and promoting the service with current and new contacts in Asia.

Performance: On schedule. Joseph Pietrus visited ITC in March and assisted in the development of provisions for the draft U.S. Department of Agriculture (USDA)-ITC Cooperative Agreement.

12. **Activity: Market Reporter Training** (Merle Menegay, Tom Klotzbach)

Early in 1995, Merle Menegay will meet with USDA officials responsible for market reporter training to: (1) review the training programs they present, (2) find out which RAP beneficiary countries have sent participants to these program, and (3) obtain a list of persons trained from the RAP beneficiary countries. During their 1995 field travel, Dr. Menegay and Mr. Klotzbach will document the general nature of each RAP country's agricultural price information system and its compatibility with USDA's approach. Using the aforementioned information and contacts, they will identify potential trainees and provide USDA with recommendations regarding training experiences that will be relevant to the trainees in their market reporting systems.

Performance: On hold pending USAID obligation of additional project funds.

Environmental Services

1. **Activity: Environmental Issues Associated with Agribusiness (DPRA)**

This will be a "generic" paper reviewing the advantage of long-term, environmental sustainability of agribusiness projects. Possible problem areas will be highlighted. Ways to achieve early recognition of problem areas to reduce environmental risk will be discussed. Ways to develop environmental profiles for agribusiness projects will be presented, possibly including a checklist approach to environmental compliance that can help companies and projects go through a self-review exercise. Sources of assistance, through RAP or other environmental projects, will be identified. The paper will position environmental interventions as beneficial to the long-term "bottom line," as opposed to short-term obstacles to business success. The paper will be used as an informative piece and as a marketing tool to pique interest in the environmental services accessible through RAP. It will serve as a basis for discussion during RAP fact-finding trips in the region.

Performance: On schedule. Publication scheduled for April 1995.

2. **Activity: Case Studies of Private Sector-Led Integrated Pest Management (John Bowman, DPRA)**

Successes in integrated pest management (IPM) throughout South and South East Asia are spreading but the participation of the private agribusiness sector, especially that of export-oriented food-processing companies, needs to be accelerated. This collection of case studies from the United States and other parts of the world (primarily Asia) will help USAID-supported agribusinesses realize the importance of investing in internal IPM programs to ensure the sustainability of their agricultural sourcing operations and to instill consumer confidence. Eight to 10 companies with a demonstrated record of IPM promotion will be profiled. Recommendations for Asian agribusiness clients of USAID will be made, with an emphasis on the lessons learned, how to, and importance of private sector-sponsored IPM.

Performance: On schedule. Data collection in process; report anticipated in fourth quarter.

3. **Activity: Technical Assistance in Cocoa IPM (USDA with Chocolate Manufacturers Association of America)**

Regional technical assistance will be provided through a U.S. export entomologist in environmentally sound ways to control the cocoa pod borer (CPB) and other pests threatening Asian cocoa production. A review of current production and pest-control strategies being utilized or researched in Malaysia, Indonesia, and the Philippines will be carried out, with focus on a regional approach to CPB control.

Performance: On schedule. TDY completed in February and report circulated to Government of Indonesia (GOI), USAID Mission, and the Agribusiness Development Project (ADP), ASKINDO, and Chocolate Manufacturers Association of America. As a result of the TDY, Indonesia participants are now formally designing a local IPM project. The TDY may also have piqued sufficient interest for a regional workshop. Further RAP/USDA involvement in the Indonesian project and/or the regional workshop is to be determined.

4. **Activity: Analysis of Food Quality, Safety, and Phytosanitary Issues Affecting Trade in India and Bangladesh** (John Bowman; Technical Assistance Systems, Inc. (TAS), DPRA, USDA)

This will be a continuation of the analysis initiated in Indonesia, Nepal, Philippines, and Sri Lanka to assess the major issues behind the failure of food exports to Asian markets such as Japan, Singapore, Korea, and Hong Kong. An environmental team visit to India and Bangladesh will gather information that will be added to existing information from the initial visit to the other four countries. One analysis embracing all six countries and the export markets will be published in February or March.

Performance: Behind schedule. The TDY to India and Bangladesh was delayed until February by Mission request. The TDY was completed in late March; the final analysis and report are expected in late April or early May.

5. **Activity: Import Detention Summary** (TAS)

A review of the reasons for the detention of imported food and agriculture products is a useful tool to assess production problems in exporting countries. An initial summary based on the limited information obtained during the first RAP environmental trip to Asia has been prepared for RAP exports to the United States, Japan, South Korea, Hong Kong, and Singapore. A more extensive analysis of the causes of import product failure of RAP products based on more current and complete information would be beneficial. Emphasis will be on product failure into the United States, based on 1992 and 1993 Food and Drug Administration (FDA) data. Trade statistics will be employed to relate the number and frequency of violations with actual weight and volume of total imported product. RAP country violations at U.S. ports will be compared to those from select countries such as Australia, Malaysia, and Taiwan.

Performance: Started but put on hold pending USAID obligation of additional project funds.

6. **Activity: Food Plant Sanitation Audit Workshop** (DPRA)

This traveling workshop will stop in two or three RAP countries. Certified food sanitarians will cover good manufacturing practices and plant sanitation procedures. Missions/projects can invite their agribusiness clients to attend. Importantly, the processors will be taught how to conduct their own internal sanitation audits in order to maintain high export quality standards, or simply to comply with existing local regulations. Emphasis will be on topics such as equipment breakdown and cleaning, disinfestation of surfaces, pest and rodent control, personal worker hygiene, and safety. After the general sessions, the sanitarians will be available to inspect the facilities of one or more local companies, provide an evaluation of their sanitation procedures, and make recommendations for improvements.

Performance: Scheduled for fourth quarter 1995.

7. **Activity: Regional Phytosanitary Workshop** (USDA)

A regional workshop on phytosanitary policies and their relationship to Asian agribusiness will be held at a central Asian site in mid-1995. High-level USAID and Asian government officials will

discuss phytosanitary policy reforms needed to create a more suitable environment for expanded regional agribusiness trade and investment.

Performance: Scheduled for third quarter 1995.

8. **Activity: Postharvest Handling Workshop** (ASEAN [Association of South East Asian Nations] Food Handling Bureau, USDA, SUSTAIN [Sharing U.S. Technology to Aid in the Improvement of Nutrition])

A postharvest handling workshop, tentatively on Packaging Technologies for the Asian Fresh Fruit and Vegetable Industry, is planned to be held in Kuala Lumpur in association with the ASEAN Food Handling Bureau (AFHB). RAP and AFHB will jointly organize the event, all local arrangements are to be made by AFHB. RAP will recruit speakers and industry representatives and support travel costs of several speakers through the USDA PSSA. Participants are expected to fund their attendance. Mission projects may wish to fund the attendance of selected project clients.

Performance: Scheduled for third quarter 1995. RAP is currently exploring a change in seminar focus. Instead of a packaging-focused workshop, a more comprehensive workshop on environmentally sustainable technologies for agriculture and agribusiness in Asia is now contemplated. Focus will be on commercially viable technologies that have been developed, at least in part, with USAID support. Some speakers representing technologies with no USAID involvement, but which are extremely relevant to USAID interests in the region, would also be showcased. The workshop may have to be scheduled for the fourth quarter because of the magnitude of the event and conflict with other third quarter events.

9. **Activity: Food Laboratory Strengthening Project** (TAS, SUSTAIN, USDA)

Successful export of food and agricultural goods requires these products to meet the safety and quality requirements of importing countries. Many of these requirements include analytical testing for pesticide residues, food additives, filth and extraneous materials, microbial hazards, heavy metals, and so forth. Developing countries seeking to export food need this analytical capability to identify and detain lots that do not meet import requirements. This regional project will (1) identify the key laboratories to be assessed; (2) carry out on-site evaluations of existing capabilities; (3) make specific recommendations for training and technical assistance to improve capabilities; (4) carry out a limited amount of training and technical assistance on a follow-up basis; and (5) develop an overall regional strategy or proposal to remediate deficiencies and enhance export success of Asian products.

Performance: Scheduled to begin in the second quarter 1995.

10. **Activity: Case Studies of Export Service Centers and "Seal of Quality" Certification Programs** (Oregon Export Service Center)

Providing assurance that export products meet the food laws and quality standards of importing countries can be of valuable assistance in enhancing food export programs of RAP beneficiary countries. Programs that actually certify the quality of export products are of even greater value, as long as the importing country clients recognize the validity of the certification. Model programs exist within developed and developing countries that may be of value to USAID agribusiness initiatives in Asia. Key export and quality certification programs will be identified internationally. Mechanisms

of operation will be explained, including key lessons learned. Requirements and documentation of the programs will be obtained. Cross program comparisons will lead to the provision of general recommendations (guidelines) for export service centers in the RAP countries. The undertaking of this analysis is contingent upon the flexible use of USAID funds given to the implementor.

Performance: Scheduled for the third quarter 1995 but dependent on funding decisions.

11. **Activity: Analysis of the Philippine Food Regulatory System with Respect to GATT (TAS)**

This analysis will assist the Government of the Philippines to determine whether its current food regulations and standards meet the requirements of the General Agreement on Tariffs and Trade (GATT). Consistency of these standards with CODEX standards will be determined, with an emphasis on pesticide residue levels, food additive tolerances, microbiological standards, and product-labeling specifications. Animal and plant health standards will be analyzed as to their consistency with the GATT sanitary/phytosanitary (SPS) requirements. Recommendations for strengthening Philippine food safety and plant and animal regulations in order to agree with the GATT SPS requirements will be included. This analysis will be undertaken only on a cost-shared basis or as a Mission/Agribusiness Systems Assistance Program (ASAP) buy-in and will be extended to other RAP countries depending on interest level of the Missions.

Performance: Scheduled for the second quarter 1995, but currently on hold awaiting Mission/ASAP decision to buy-into RAP.

12. **Activity: Environmental and Export Quality Control Technical Assistance (John Bowman, RAP subcontractors, and collaborators)**

RAP will assist Missions/projects develop scopes of work and identify expertise for technical assistance in such areas as food processing, good manufacturing practices, assessment of laboratory capabilities, HACCP (Hazard Analysis Critical Control Point), ISO 9000, wastestream management, IPM, and other environmentally friendly agricultural practices. There will be a new emphasis, however, in trying to promote RAP services in the area of environmental sustainability for agribusiness. Assessment of environmental impact and environmental compliance will be emphasized through the promotion of DPRA activities.

Performance: On-going activity. Highlight of this quarter was RAP environmental team seminars in India and Bangladesh on environmental risk management, import detentions, and IPM. Total attendance approximated 50 persons in India and 25 in Bangladesh. Answers to technical inquiries continued through the RAP Clearinghouse and this activity is summarized in the Clearinghouse activities log in Annex D.

13. **Activity: Comparison of Seafood HACCP Programs (TAS)**

The U.S. Food and Drug Administration has initiated an international, element-by-element comparison of seafood HACCP programs. The comparison includes countries such as the United States, European Union countries, New Zealand, and Iceland. Currently, the comparison does not include Japan. In collaboration with FDA, RAP will extend the comparison to Japan, and attempt to

summarize the existing country comparisons done by the FDA for RAP agribusiness clients. This study is contingent upon approval and cooperation from FDA.

Performance: Scheduled for April 1995, but cancelled because of low interest level of FDA and because of data problems in Japan.

14. **Activity: Seafood Market Readiness Workshop (SUSTAIN, USDA)**

This is to be a regional, traveling workshop that will aim to improve the transparency of and accessibility into the U.S. market for Asian seafood exporters. Seafood HACCP prerequisites will be discussed, as will the key issues behind the dynamics of the U.S. market. Such items for discussion include: (1) the species most in demand and why, (2) the advantages and disadvantages of Asian exporters to the United States versus other exporters, and (3) the key factors in demand by the U.S. exporters in addition to HACCP compliance. This event is expected to be led by representatives largely from the private sector. The main objective will be to increase Asian export competitiveness in the U.S. market.

Performance: Scheduled for May 1995. In development but implementation expected third quarter.

15. **Activity: FDA Seafood HACCP Workshop (USDA, SUSTAIN)**

FDA's Office of Seafood has agreed to participate in a RAP-organized, traveling regional workshop on seafood HACCP. It is anticipated that three two-day workshops will be held. The workshops will explain the new FDA regulations (scheduled to become official in June 1995) and the HACCP guidance document. The workshop will also provide time for one-on-one consultation for processors and exporters. FDA will provide the workshop trainers; RAP will organize the events and support the travel costs of the FDA staff.

Performance: Scheduled for September 1995.

Trade and Investment Development

1. **Activity: Opportunity Identification and Promotion (Joseph Pietrus, John Bowman)**

In 1995, we will add Indonesian organizations to our network and strengthen our network in each country. Strengthening will take the form of a broader range of contacts and a more extensive relationship through our associations initiative. We have established contacts with a broad range of U.S. agribusiness associations for the dissemination of trade and investment leads. In 1995, we will broaden these contacts to other target market countries. We will also promote direct contacts between these organizations and our RAP country association contacts as specific trade and investment opportunities arise. Late in the year we will publish a directory of RAP and market country industry association contacts for dissemination throughout the RAP association contact network.

Through our contact with ITC, we learned that it offers a wide range of services assisting developing countries promote export trade. Early in 1995, the Trade and Investment Specialist will visit ITC to determine how its activities can be incorporated into the RAP services package. Similar collaboration

will be explored with the Government of the Netherlands-USAID initiative promoting imports from developing countries.

Within the overall trade and investment development activity, a special initiative will be undertaken to identify target market country wholesale and retail private label opportunities for RAP country food processors. Establishment of such links may involve assistance from the Environmental Services component in establishing the food quality and safety required in buying organization markets.

RAP's trade and investment development activities include the identification and promotion of opportunities related to the transfer of U.S. environmental technology to RAP beneficiary countries. In 1995, we will promote to Missions/projects the opportunities available through the United States-Asia Environmental Partnership (AEP). A concerted effort will be made to promote the demonstration of U.S. environmental technologies to prospective agribusiness clients in Asia. This effort will be pursued through the establishment of a working relationship with the AEP, and in particular, AEP's Technology Cooperation component.

Performance: On schedule. During this quarter substantial progress was made in India through the participation of Kenneth Swanberg and Joseph Pietrus in the ACE Horticultural Conference, and through the Environmental team's seminar and field work. Agreement was reached with India's Agricultural & Processed Food Export Development Authority (APEDA) for APEDA to distribute RAP publications and publicize and receive RAP trade and investment inquiries to its 2,000 exporter members.

Joseph Pietrus visited ITC Geneva and made arrangements for the exchange of publications, assistance in trade leads, and collaboration in searching for joint venture candidates.

RAP's first significant known success came with the establishment of HI-REL Agri-Products in Pune, India. Using an analysis of the U.S. dried flower market HI-REL secured a loan from USAID's ACE project, built its processing plant, and made its first shipment of product to the United States. The project sources flowers from 10 farm families, employs 30 to 40 people (25 to 35 women), and will generate 1995 sales approximating \$600,000 — all to the U.S. market.

2. **Activity: Advisory Group (Joseph Pietrus)**

RAP's Advisory Group will be formed in the first quarter following the aforementioned lessons learned. An initial meeting is targeted for early May. The objectives of the initial meeting will be to provide Group members key commercial findings from RAP's work to date, obtain their input on industry interests and issues regarding trade and investment development activity with RAP countries, and encourage promotion of RAP country interest among their association members and personal contacts.

Performance: Behind schedule. Some contacts have been made but the group has not been formed.

3. **Activity: Trade Development Association Meeting**

We plan to initiate with the International Management and Communications Corporation (IMCC) short-term technical assistance and the Missions' development of a meeting of RAP country trade development associations in the second half of the year. The objective of the meeting is to bring

together selected associations with which we are working to exchange views on their activities, present ideas on new fee-generating activities (sustainability), and encourage collaboration between the organizations. We may invite participation of ITC's trade and association development staff. It is hoped this meeting will lead to formation of a regional trade promotion group. Prior to staging the meeting we need to gain sufficient credibility with the associations to warrant their interest. We also need to obtain Mission support as we expect it will be necessary for them to cover at least some participant expenses to ensure attendance.

Performance: Planning for this conference is scheduled to begin during the third quarter, 1995.

Analytical Support

1. Activity: Competitive Export Positions Analysis/GATT-Uruguay Round Analysis

These analyses have aroused significant interest in several Missions and will be continued. A second set of products, as well as several special products identified by individual Missions, will be added to the initial competitive position analysis. We expect this analysis will be ongoing throughout 1995; however, it is contingent upon Mission co-financing. RAP core funds will cover part of these analyses; however, Missions will be expected to cover the costs of our in-country analytical staff as well as extraordinary travel costs of U.S.-based RAP consultants. We are seeking ASAP's approval to publish the GATT analysis in which RAP participated.

Performance: Initial report publication is behind schedule. First report will be ready in late April. Other products will be analyzed as requested.

2. Activity: GATT-Uruguay Round Impact Studies

The Philippine Mission requested assistance from RAP to supervise the development of three commissioned papers analyzing the impact of the GATT-Uruguay Round (UR) treaty ratifications, in North America, Europe, and the Far East. RAP prepared an overview synthesis paper of these studies and added additional information on potential changes in tariff rates due to individual country commitments. Additional analyses on potential impact due to GATT will be conducted throughout the year as more data is gathered and applied to the base-line information.

Performance: Initial report publication is behind schedule. Synthesis report will be published in April. Commissioned papers will be made available on request.

3. Activity: Pakistan "Lessons Learned" Report

Performance: Behind schedule. The draft report has been completed and is being reviewed. It will be published in the second quarter of 1995.

4. Activity: Agribusiness Strategy (Delphi) Report

Performance: Behind schedule. Awaiting comments on the draft report from USAID.

5. **Activity: Price Information Feasibility Study Report**

Performance: Behind schedule. Most of the report has been completed in draft.

6. **Activity: Modernizing Urban Terminal Markets for Fresh Produce (Merle Menegay)**

The prevalent deteriorating condition and inefficient management practices of RAP country urban terminal market facilities for fresh fruits and vegetables contributed to the inefficiency of domestic marketing and impeded efforts to accelerate exports. Several Missions have recognized the critical role of such facilities and the need for their improvement and expressed interest in RAP's activities in this area. Accordingly, RAP will offer diagnostic surveys, workshops, and observation trips to familiarize urban leaders with the nature of the problem and illustrate benefits from improvements within those facilities. Likewise, various types of commodity system assessments may be warranted. These activities are contingent on Mission co-financing.

Performance: Behind schedule. The following reports were scheduled for publication in March-April. All have been delayed pending USAID obligation of additional project funds.

- Guidelines for Diagnostic Analysis. The report has been completed and is being prepared for publication.
- Taipei Wholesale Market Study. The draft report has been completed and is being reviewed by the Taiwanese co-authors.
- Singapore Wholesale Market Study. The report has been completed by the Singapore short-term technical assistance consultant. However, the author has asked that it not be published. The report points out certain deficiencies in the market and the author fears that publicly available criticism could be detrimental to her business and personal position. Several friends who are University teachers have lost their positions after making public criticism of Government of Singapore programs or actions. In light of this, we believe we should honor the author's request. Since the report was meant to be input for the Taipei, Hong Kong, Singapore Synthesis Study (see below), the lessons learned will still be published but not in attributable form.
- Synthesis Report. One of the two principal co-authors is seriously ill and on leave. Expect to publish in second quarter 1995.

7. **Activity: Comparative Environmental Analysis of Wholesale Markets in Asia (Merle Menegay, John Bowman)**

This study will provide environmental support to the RAP Analytical Support component on urban wholesale markets for fruits and vegetables. Some environmental issues to be considered are pesticide residue testing; recycling of solid wastes; handling of intra-market food safety issues; groundwater contamination; worker hygiene; and in-site sanitation issues such as filth, rodents, flies, and surface disinfection procedures. A case study approach in environmental management will be used, including analysis of (1) a major U.S. wholesale market, (2) several Asian-developed wholesale markets, and (3) emerging markets in RAP countries. The focus will be on offering to the RAP country markets lessons learned from the developed country markets. Options at different cost levels will be described to the RAP country wholesale markets with some concomitant cost/benefit analysis.

RAP core funds will be used to prepare items (1) and (2); item (3) will be provided on a buy-in basis.

Performance: Scheduled for April 1995. Short-term technical assistance formally submitted to USAID. Implementation on hold pending USAID approval, obligation of additional funds, and aforementioned country analyses.

8. **Activity: Integrated Distribution Systems** (Kenneth Swanberg)

As RAP countries become more urbanized, more food must be moved to urban centers. Because many of the commodities in the market basket of food products are perishable, refrigeration and/or processing are required to extend shelf life. In addition, as incomes increase in urban areas, demand develops for more exotic and higher quality foods. New distribution systems are required to accommodate these changes and have begun to develop at the retail level in some RAP countries. Evidence from other countries suggests that the next step is the evolution of integrated assembly-wholesale-retail chains. An analysis of the potential for establishing chain systems complete with wholesale distribution centers, assembly market points, and private label brands will be conducted in one or two RAP countries, probably as a joint RAP-Agribusiness and Marketing Improvement Strategies (AMIS) Project core funds effort. These analyses as well as more definitive feasibility studies can be extended on a buy-in basis with AMIS and/or RAP.

Performance: Scheduled for second quarter 1995.

9. **Activity: Market Channel Analyses** (Kenneth Swanberg, Merle Menegay)

The thrust of these analyses is to determine where and how USAID can introduce intervention activities using the private sector to significantly improve the existing marketing system to the benefit of both producers and consumers. Conduct of these studies will take advantage of the market channel analyses in the ongoing competitive position study. Where appropriate, demand analysis is incorporated into the study. These studies will be used as the basic guidelines for the food systems analyses that have been identified for three RAP countries, namely Bangladesh, Sri Lanka, and India. Analysis of the entire farm-to-market food distribution system will be described and analyzed in conjunction with the on-going work on the urban terminal market analysis. Market channel analyses may also be pertinent to the needs of other Missions and will be offered to them. Conduct of these analyses is contingent upon Mission co-financing.

Performance: Scheduled for third-fourth quarter 1995.

10. **Activity: Sustainable Agribusiness Project Financing** (Kenneth Swanberg)

Emerging agribusinesses in most developing countries are desperately in need of medium- to long-term financing. Several novel ideas have been experimented with, including USAID-initiated programs. In India, establishment of exotic timber plantations has been financed by selling fixed-rate bonds based on the future expected value of the trees. Also in India, three USAID projects (including the Agribusiness Commercialization and Enterprise Project) have established sustainable programs to finance catalytic new enterprises. Along similar lines, a mutual fund can be established through donor-private sector collaboration. A how-to report will be developed for one or more of these financing vehicles during the year. It is possible that this will be accomplished through development

of an actual program as the Nepal Mission has expressed interest in a sustainable financing mechanism targeted initially at the dairy industry.

Performance: Ahead of schedule. Pre-feasibility study in the second or third quarter. A home office review of financial and legal regulations has already been initiated to take advantage of the availability of a legal intern at no charge to RAP.

11. **Activity: Regional Monitoring and Evaluation (Joseph Pietrus, Kenneth Swanberg)**

As previously mentioned, we wish to proceed with implementation of the regional agribusiness monitoring and evaluation program designed in March/April 1994. Implementation is contingent upon Global Bureau and Mission action to implement the proposed system.

Separately, the Agro-Enterprise Project (AgEnt) in Sri Lanka is interested in co-financing with RAP the development of a monitoring and evaluation system for its agribusiness efforts. Its expressed timetable is the first quarter of 1995. We recommend that the Global Bureau take action on the aforementioned regional agribusiness monitoring and evaluation plan in time to incorporate its rationale into the AgEnt plan.

Performance: Behind schedule. Implementation was planned for the last half of 1994 but is awaiting Global Bureau and Mission action to proceed. Expect Sri Lanka work to be implemented in third quarter.

12. **Activity: Analysis of the Constraints to the Import of Genetic Materials**

One Mission is interested in the identification of legislated and regulatory constraints to imports of genetic material and an analysis of their impact on domestic and export markets. RAP has identified an experienced seed industry consultant to design and coordinate the analysis. Implementation is contingent upon a buy-in by the interested Mission, or wider regional support.

Performance: Scheduled for third and fourth quarter 1995, depending on Mission buy-in.

Current Buy-Ins

No buy-in activity occurred in January to March 1995.

Current Subcontracting Activities

1. **Activity: Environmental Issues Associated with Agribusiness (DRPA)**

Performance: On schedule. Draft report completed and will be published in early May.

2. **Activity: Analysis of Import Detentions of Food Products Exported for Selected Asian and Other countries into the United States (TAS)**
Performance: Started but on hold pending USAID obligation of additional project funds.
3. **Activity: Food Safety and Quality Issues Impacting Agribusiness Trade in India and Bangladesh (TAS)**
Performance: TDY completed. Report in process but slightly behind schedule.
4. **Activity: Environmental Issues Impacting Agribusiness Enterprises in India and Bangladesh (DPRA)**
Performance: TDY completed. Report in process but slightly behind schedule.
5. **Activity: Comparative Environmental Analysis of Wholesale Markets in Asia (DPRA)**
Performance: On hold pending USAID obligation of additional project funds.
6. **Activity: Environmental and Export Quality Control Technical Assistance (all subcontractors and cooperators)**
 - TAS/OESC to provide information on entry requirements of RAP priority commodities into key target markets, for example, minimum residue levels for allowed pesticides, permitted food additives, and so forth.
 - DPRA to initiate a series of short monographs on environmental topics of interest to Missions/projects. First issue will provide information on small pond wastewater treatment from agroprocessing facilities.
7. **Activity: Floriculture Export Opportunities for RAP Beneficiary Countries (Fintrac)**
Performance: On hold pending USAID obligation of additional project funds.
8. **Activity: Comparative Analysis of Export Competitive Positions Indonesian Case Study (DAI)**
Performance: On hold pending USAID Contracts Officer approval of salaries for proposed Indonesian consultants submitted on January 13, 1995.

SECTION THREE

STATEMENT OF WORK

This section of the contractor's report includes comments on changes recommended by DAI in the work plan or contract to benefit RAP's clients. These changes result from DAI's experience over the past year, and they respond to expressed needs or to circumstances that differ from those in place when the Project Paper was developed. DAI also addressed some of these recommendations in its 1995 Annual Work Plan.

MARKET INFORMATION SERVICES

A formal letter is being prepared for the Project Officer recommending changes in the structure of Fintrac's level of effort. We wish to increase the total level of effort, while maintaining the budget level, in order to increase RAP information services and make more effective use of Thomas Klotzbach's time. This will be accomplished by reducing Mr. Klotzbach's level of effort and adding a greater amount of level of effort for two Assistant Market Research Specialists.

ENVIRONMENTAL SERVICES

The Environmental Services component of the RAP work plan was written ambitiously with the full expectation that some of the proposed activities would drop out as a result of declining interest and/or resources from the Missions. During this quarter we decided to drop the comparison of seafood Hazard Analysis and Critical Control Points (HAACP) programs because of the low level of FDA's interest and data problems in Japan. As the year proceeds we expect additional activities will be modified, replaced, or dropped as we continue to identify and refine Mission areas of interest.

There continues to be hesitation on the part of the Missions/projects to have their agribusiness portfolios reviewed for environmental sustainability. RAP can only provide such services upon demand. RAP will continue to promote the elements and management of environmental sustainability to the field through visits, reports, and related workshops, as was done this quarter in India and Bangladesh.

TRADE AND INVESTMENT SERVICES

There are no comments or changes at this time.

ANALYTICAL SUPPORT

Because of current interest in refocusing agribusiness efforts toward microenterprise, we have proposed to the RAP Project Officer that a concept paper be developed along the lines of the RAP staff

member's presentation at the USAID Center for Development Information and Evaluation (CDIE) Agribusiness Assessment Conference on Agribusiness as Microenterprise.

Analytical Support Consultant Kenneth Swanberg's terms of employment with RAP allow him to work one month annually on other projects. Current plans are that he will spend part of April and/or May on a non-RAP assignment.

OVERALL PROJECT ISSUES

There are outstanding issues on how to develop user friendly, fee-for-service mechanisms for market information, environmental, and trade and investment services. A number of alternatives are being considered; however it will be essential to the sustainability of RAP services that private clients pay a reasonable fee for services they receive.

In developing our internal monitoring and evaluation plan, we identified several inconsistencies in the objectives, outputs, and activities stated in our contract. Our recommendations for modifications will be included in the monitoring and evaluation plan we are formalizing into a report.

SECTION FOUR
ADMINISTRATIVE INFORMATION

The following data summarize RAP's estimated level of effort and expenditures to date.

Contract Data: Total level of effort: 330.8 person-months
Total estimated contract cost: \$5,096,645

| | |
|--------------------------------------|---------------------|
| Level of effort (last three months): | 20.6 person-months |
| Cumulative level of effort: | 128 person-months |
| Unused level of effort: | 202.8 person-months |
| Expenditures (last three months): | \$366,954 |
| Cumulative expenditures to date: | \$1,655,653 |
| Remaining unexpended balance: | \$3,440,992 |

ANNEX A
RAP COMPONENT OUTPUTS

RAP COMPONENT OUTPUTS

Upon its completion in 1997, RAP expects to have achieved the outputs presented below.

MARKET INFORMATION SERVICES

RAP will have improved the market information available to Asia Bureau field Missions and Asian agribusinesses concerning key agribusiness products. It will have done so in the following ways:

- Published a bimonthly newsletter (approximately 25 issues over the life of the project);
- Identified sources of public and private market intelligence, and established a way of accessing information on a timely basis;
- Issued market news reports over the life of the project;
- Established capacity for Missions to access the RAP Clearing House electronically; and
- Established a response capability for handling field Mission information requests.

ENVIRONMENTAL SERVICES

- Established a comprehensive environmental database and reference source offering increased and real-time availability of information on environmental and food regulatory issues related to agribusiness development;
- Increased capacity of host-country business associations to respond to clients' need for information on environmental, food safety, and other regulatory concerns;
- Increased understanding among host-country agribusinesses of regulatory requirements for international trade; and
- Increased the capacity of Asian agribusinesses to meet standards for food safety and quality, particularly in qualifying products for entry into export markets.

TRADE AND INVESTMENT SERVICES

RAP will have strengthened commercial linkages and information exchanges with the U.S. private sector and Asian agribusinesses in the following ways:

- Increased the amount of information available on agribusiness investment;
- Increased U.S. investments and transactions in Asia;

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- Organized a senior technical advisory group that will have met 5 to 10 times over the life of the project;
- Improved the coordination of USAID and other U.S. government agencies in trade and investment efforts in Asia; and
- Increased the participation of Asian agribusinesses in the international market.

ANALYTICAL SUPPORT

RAP's agribusiness support services will be maintained and sustained beyond the life of the project by host-country, or regional private or public sector, organizations.

ANNEX B
1995 WORK PLAN

| RAP Year 2 Work Plan Project Activities | LTTA Coordinator | Subcontractor/ Collaborator-STTA | Short-Term Technical Assistance 1995 | | | | | | | | | | | | |
|---|---------------------|---|--------------------------------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|
| | | | NEW LOE PM | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
| RAP Year 2 Work Plan | LTTA | Subcontractor/ Collaborator-STTA | NEW LOE PM | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
| Project Activities | Coordinator | | | | | | | | | | | | | | |
| MARKET INFORMATION | | | | | | | | | | | | | | | |
| Market Asia | | | | | | | | | | | | | | | |
| Publication/Editorial | TK, AMKS | | | #6 | #7 | #8 | #9 | #10 | #11 | | | | | | |
| Sustainability Study | | Fintrac | 0.68 | xxxxx | xxxxxx | | | | | | | | | | |
| Transfer to Private Publisher | TK/JJP | Fintrac | 0.23 | | xxxxx | xxxxxx | xxxxxx | xxxxxx | | | | | | | |
| Reader Survey | TK | | | | | xxxxx | | | | | | | | | |
| ITC MNS Assistance (continuing) | MRM | | | xxxxx | xxxxxxxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx |
| RapNet | | | | | | | | | | | | | | | |
| Publication | TK, AMKS | | | | #2 | #3 | #4 | #5 | | | | | | | |
| Maintenance of User BBS (continuing) | AMKS | | | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx |
| Summary Papers (contingent on user response) | TK, AMKS | | | | | | X | | | | | | | | x |
| Quick Response Service | | | | | | | | | | | | | | | |
| Service Provision (continuing) | TK, AMKS | | | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx |
| Market Information Bulletins | TK, AMKS | | | x | x | x | x | x | x | x | x | x | x | x | x |
| Market Opportunity Surveys | | | | | | | | | | | | | | | |
| Fioriculture | TK | Fintrac | 1.36 | | xx | xxxxx | xx | | | | | | | | |
| Intra-RAP Trade Opportunities | TK | Fintrac | 1.36 | | | | xxxxxx | xxxxxx | | | | | | | |
| Association Strengthening | | | | | | | | | | | | | | | |
| Identification of Counterparts (continuing) | Team | | | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx |
| Establish/Maintain Network (continuing) | TK, JTP | | | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx |
| Service Provision/Training (on demand) | TK | | | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx | xxxxx |
| Identify Market Reporter Training candidates (on trips) | MRM | | | xx | xxxxx | | | xx | xx | | | xx | xx | | |
| ENVIRONMENTAL ANALYSES & INTEGRATION | | | | | | | | | | | | | | | |
| Agribusiness Environment Paper | JB | | | | | | | | | | | | | | |
| Environmental News Bulletin (Market Asia) | JB | DPRA | 0.50 | | xxxxx | | | | | | | | | | |
| Private Sector IPM Case Studies (continuing) | JB | DPRA | 0.5 | | | #8 | | #10 | #11 | | | | | | |
| Cocoa IPM Project | JB | USDA | 0.50 | xxxxxx | xxxxxx | x | | | | | | | | | |
| Food Quality/Safety/Phyto Paper | JB | TAS, DPRA | 1.3, 1.25 | xxxxxx | xxxxxx | xxxxxx | x | | | | | | | | |
| Import Detention Summary | JB | TAS | 0.75 | xx | xxxxxx | xxx | | | | | | | | | |
| Food Plant Sanitation Workshop | JB | DPRA, SUSTAIN | 1.00 | | | | | | | | | | xxx | x | |
| Regional Phytosanitary Workshop | JB | USDA | | | | | | | | xx | | | | | |
| Post Harvest (Packaging) Workshop | JB | AFHB/USDA/SUSTAIN | | | | | | | | | X | | | | |
| Food Laboratory Strengthening Study | JB | TAS/SUSTAIN/USDA | 0.50 | | | X | X | X | X | | | | | | |
| Export Quality Case Studies (contingent on ESC funding) | JB | ESC | | | | | | | xxxxxx | xx | | | | | |
| Philippine GATT Study (contingent on Mission support) | JB | TAS | 1.50 | | | | | xxxxxx | xx | | | | | | |
| Export Quality TA (on demand) | JB | DPRA, TAS | 0.5, 0.5 | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx | xxxxxx |
| Comparison of Seafood HACCP Programs | JB | TAS | 0.50 | | | xxxxx | | | | | | | | | |

KEY: TK-T. Klotzbach; AMKS-Asst. Market Research Specialist; MRM-M. Menegay; JB-J. Bowman; JTP-J. Pietrus; KS-K. Swanberg; ESC-Export Service Center; DAI-Development Alternatives, Inc.

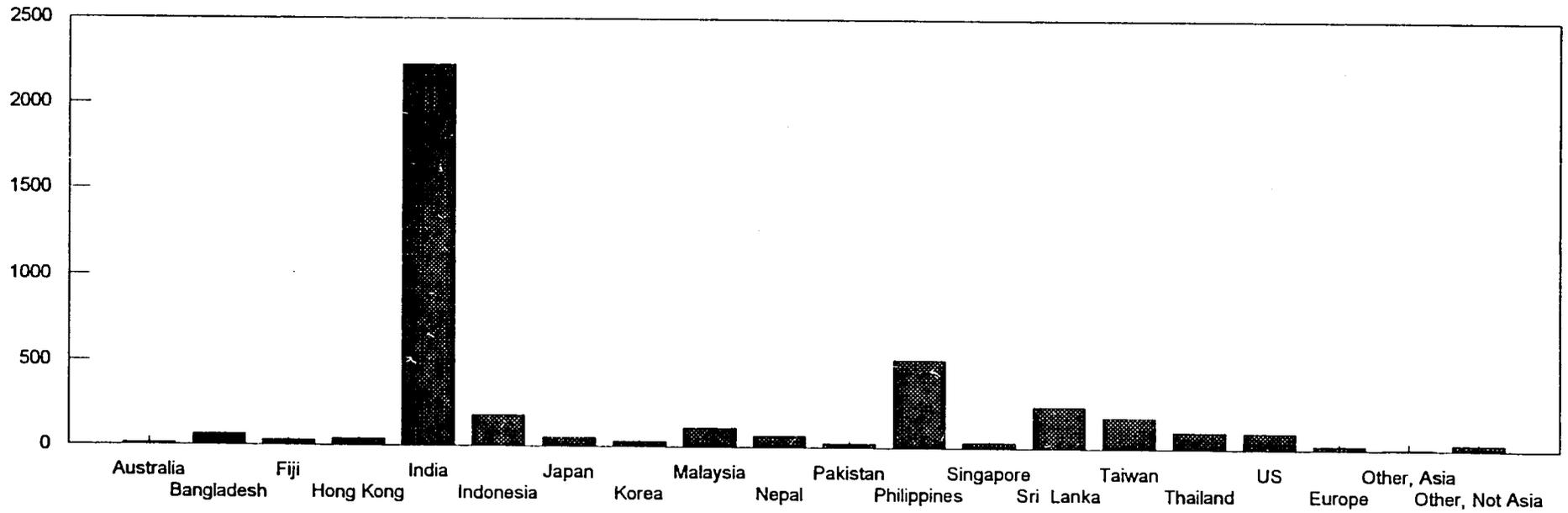
| RAP Year 2 Work Plan Project Activities | LTTA Coordinator | Subcontractor/ Collaborator-STTA | Short-Term Technical Assistance | | | | | | | | | | | | |
|--|---------------------|-------------------------------------|---------------------------------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|
| | | | NEW LOE PM | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
| Semi Annual Review | | | | | | | X | | | | | | | | |
| Year 3 Work Plan | | | | | | | | | | | | | X | | |
| RAP Internal M & E | JTP | DAI | 1.50 | xx | | | xx | xx | | | | | | | X |

NOTE: This plan does not reflect the RAP Conference. In addition to the activities noted the RAP core team will participate in the RAP Conference being organized by the USAID Project Officer.

ANNEX C
MARKET ASIA

Number of Market Asia Subscriptions, Issue 5

By Country



Market Asia

Food and Horticultural Industries

Volume 1 • Issue 6

January/February 1995

Potential for China's Horticultural Trade Grows

As the Chinese economy continues to grow at a rapid rate, both the volume and the mix of its fresh and processed horticultural trade are in transition. Although China has an enormous domestic demand for these products, it is inevitable that, as infrastructure improves and trade is liberalized, more production will be geared toward exports. At the same time, the improving economy will create larger markets for imported goods.

China is the world's largest producer of vegetables and is a

major exporter of fresh mushrooms, garlic, and peas. It also exports large quantities of processed mushrooms, beans, asparagus, and sweet potatoes. Ad-

ditionally, China produces on a large scale citrus fruit, apples, peaches, and pears; most of these products are sold in fresh form

(please turn to p. 16)

INSIDE

3 Indonesia's Vegetable Subsector

4 Changing Structure of Agricultural Demand

5 Methyl Bromide

10 EU Import Market for Fresh-Cut Orchids

15 India Primes Horticultural Subsector

Product Brief: World Trade in Fresh Rambutan

Based on 1992 export statistics for Thailand and Indonesia, and 1991 statistics for Malaysia, world trade in fresh rambutan is estimated at just under 3,700 metric tons (MTs) annually, with an f.o.b. export to value from these countries of \$1.9 million. Malaysia leads all exporters at 1,727 MTs, with Thailand close behind at 1,700 MTs. Rambutan is also grown for export in other countries, notably Australia, Vietnam, and, more recently, Honduras, but export statistics from these locales are unavailable.

In terms of imports, Singapore imported the largest percentage of fresh rambutan in 1992 at 2,261 MTs, or 61 percent of the market. These figures also are based on export statistics for Malaysia, Thailand, and Indonesia. Malaysia, in addition to being the largest export market, was also the

second largest import market for fresh product that year with 759 MTs (or 21 percent of world imports). Other significant importers of fresh rambutan in 1992 included Laos (167 MTs, or 5 percent of world imports), the United Arab Emirates (161 MTs, 4 percent), the Netherlands (113 MTs, 3 percent), Hong Kong (94 MTs, 3 percent), Taiwan (77 MTs, 2 percent), and the United Kingdom (12 MTs, 0.3 percent). No other country imported more than 10 MTs of fresh rambutan in 1992, the most recent year for which such statistics are available.

Because rambutan is highly perishable and difficult to handle, the market for fresh rambutan is concentrated in Asia. However, with improved postharvest methods and demand from immigrant communities, exports to North

(please turn to p. 2)

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Market Asia welcomes comments, suggestions, and contributions. For more information on RAP, or to be included on our mailing list, please write to the editor:

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Rambutan

(continued from p. 1)

America, Europe, and the Middle East have increased. With imports of 161 MTs, the United Arab Emirates was the largest distant market for fresh rambutan in 1992. The United Arab Emirates was the largest importer of fresh rambutan from Indonesia (134 MTs), and also received 26 MTs and 1 MT from Thailand and Malaysia, respectively. According to the International Trade Center's Market News Service (ITC/MNS), importer selling prices varied between dirham (Dh)12.00 and Dh20.00 per kilogram (currently \$1.00 = Dh3.680). In general, Indonesian product imported between November and April sells for between Dh12.00 and Dh14.00 per kilogram, and Thai product imported between May and November sells for Dh16.00 to Dh18.00 per kilogram. (The periods November to April and May to November represent the chief part of the growing seasons for Indonesia and Thailand, respectively.)

Editor's Note

This article was excerpted from the RAP Market Information Bulletin #1, "World Market for Rambutan" (January 1995), by Bob Galinsky (Fintrac Inc.) and Tom Klotzbach (RAP Market Information Specialist). The bulletin provides information on world production and trade in fresh and processed rambutan, including competitor profiles (such as production and seasonality) and market characteristics (for example, imports, prices, and suppliers) for demand centers in North America, Europe, the Middle East, and Asia. Included are four pages of statistical price and trade data, and references to sources of postharvest and production information. To receive a complimentary copy of the bulletin, contact Heather Doyle, RAP, 7250 Woodmont Ave., Suite 200, Bethesda, MD 20814 USA (Tel.: 301-215-7140, Fax: 301-907-2655). Please provide full mailing details. The February 1995 issue will profile the market for fresh asparagus; subsequent issues will feature durian, mango-steens, lychees, longan, passion fruit, baby corn, dendrobium orchids, mangoes, avocados, chilies, and okra. Each issue costs \$10. An annual subscription costs \$100 (payable to Development Alternatives, Inc. in a U.S. dollar check or money order), which includes 12 bulletins and a three-ring binder for convenient storage.

The Netherlands was the largest European importer of fresh rambutan in 1992, with estimated imports of 113 MTs. Indonesia supplied most of this amount, although small quantities also entered the Netherlands from Thailand, Malaysia, Sri Lanka, and Honduras. The Netherlands also re-exports to other European Union states; the Middle East; and, to a lesser extent, Canada. Most major Dutch specialty importers import rambutan, paying from \$3.50 to \$5.00 per kilogram for landed product. Although Indonesian and Thai product are available year-round, importers supplement their summer supply with product from Malaysia and Sri Lanka. The ITC/MNS reports importer selling prices for 1994 at between 9.00 and 13.25 Dutch guilders (Hfl) per kilogram, with an average price of Hfl 10.00 per kilogram (\$5.50). Honduran product arrived in the Netherlands in January and March of last year, and was sold for between \$1.80 and \$2.50 per kilogram. **MA**

Indonesia's Vegetable Subsector— Moving Toward the Future

The Agribusiness Development Project (ADP) of USAID/Indonesia and the Government of Indonesia commissioned several sector-specific papers for background or baseline information during its first year in operation. This article summarizes the findings of an ADP-funded overview of the Indonesian vegetable subsector, the goal of which was to identify major constraints to, and opportunities for, enhancing the subsector's performance, and to outline potential ADP activities for accelerating progress in the subsector.

Indonesia's energetic excursion into the expansion and diversification of its agribusiness sector has been impressive, and has resulted in increasing prosperity in several sectors of the economy as well. However, unexpected side effects always accompany progress, and certain segments of a sector are left behind. This is the case with segments of Indonesia's vegetable subsector.

Indonesia's domestic market for fresh vegetables is very strong, with increased local demand as a result of enhanced prosperity, the expansion of supermarket chains, and strong business in the hotel and restaurant trade. However, domestic production is struggling to meet expanding demand and increased expectations of quality because of the shrinkage of traditional highland production areas resulting from urban expansion, especially near Jakarta. With the shift of

increased vegetable production to newer, interior production sites with less experienced growers, transportation costs increase, high quality becomes more difficult to achieve, and timely information is scarcer.

The marketing system that moves vegetables from growers to consumers in Indonesia has many types of marketers; however, the two main types are the *tengkulaks*, who support the production side, and several types of *grosirs*, who coordinate distribution to and within urban areas. Some *tengkulaks* have contracts to provide supermarkets with special, high-quality vegetables, but most ship vegetables to the urban wholesale markets, where *grosirs* distribute them to retail stalls, vendors, and the like.

Many urban wholesale market facilities have become a major bottleneck to running efficient marketing systems because of overcrowded conditions, physical deterioration, and an inability to handle the increased volume of vegetables moving through these facilities. Furthermore, interisland vessels lack adequate cooling facilities (especially those supplying vegetables to Kalimantan, where consumers pay among the highest retail prices in the country), thus causing deterioration and losses. Additionally, cabbage and potato exports from northern Sumatra enter the lower-quality and lower-price end of the Singapore and Malaysia markets primarily because of inferior varietal charac-

teristics and handling problems. These are among the main problems inhibiting the development of a dynamic and vigorous vegetable subsector in Indonesia.

The main recommendations of ADP's study were as follows:

- Calling for a national working meeting to build a consensus on the vegetable subsector's future direction and strategy;
- Strengthening the information base on which future decisions will be made, including information on prices, harvested area, and interisland shipments of vegetables;
- Re-evaluating technical and financial support for improved urban wholesale market facilities, along with the *Pasar Induk* concept of placing wholesale markets on the outskirts of urban areas;
- Adopting tailor-made extension and marketing programs for new vegetable growers in key production areas;
- Allocating vegetable marketing space in housing estates for farmers markets, to service currently unsatisfied demand; and
- Developing practical cooling techniques for interisland shipments.

Indonesia's new agribusiness office in the Ministry of Agriculture could be at the forefront of designing, implementing, and monitoring these and similar im-

(please turn to p. 5)

The Changing Structure of Agricultural Demand

Rather than trying to choose which sectors of the agricultural economy deserve attention and support, those interested in Asian agricultural development should recognize that all aspects of agro-based industries and services continue to dominate the economic life of these developing countries until they reach economic maturity. Specific programs that promote non-traditional agricultural exports (NTAEs) and take advantage of niche market opportunities have demonstrated their success in stimulating production and export sales for new specialty crops.

However, the total value of these sales generally does not compensate for the recent turn in the terms of trade against traditional export crops produced by these countries. When banana, coffee, or cacao prices fall dramatically, countries heavily involved in their production and trade lose significant export earnings and foreign exchange, often amounting to hundreds of millions of dollars annually. NTAE sales so far have not been enough to act as realistic substitutes for these losses, having reached only slightly less than \$100 million per year in Guatemala and Ecuador, for example, after 10 years of intensive promotion. In this context, it might be worthwhile to consider transforming traditional export commodities into products appropriate for enhanced domestic consumption, to increase local demand for commodities whose

terms of trade are rapidly deteriorating.

Domestic Markets

The economies of most developing Asian countries are in rapid transition, from predominantly agriculturally based economies to economies with large industrial portfolios. The distribution of population in these countries has shifted from rural areas to large urban centers, forcing a complete restructuring of the agricultural sector, from subsistence farming to the selling of surplus commodities to city dwellers.

This transition has generated a great diversity of crops and commodities, and a need for transportation from rural to urban centers. Such change in the required structure of agricultural production and services cannot occur overnight; adjusting the pattern of agricultural production and product transformation to meet these new demands may take a decade or more. To speed the process, countries embarking on this path to change can put to great use the catalytic programs of USAID and other international donors.

External Markets

In addition to the new domestic markets spawned by the large sprawling urban centers of Asia, there is a growing demand for new products and commodities in external markets, within Asia

and in Europe, North America, and the Persian Gulf states. Although customary NTAEs (strawberries, asparagus, mushrooms, grapes, broccoli, cauliflower, cut flowers, and shrimp) are the commodities that many think should be grown for these countries, many less exotic products—fresh or processed—can also find healthy, dynamic, external markets.

Evidence from the PROEXANT project in Ecuador shows that common fruits and vegetables—lettuce, cabbage, tomatoes, passion fruit, onions, potatoes, squash, peas, carrots, and many others—can be produced and exported to local neighboring countries. Interest from some U.S. processors also suggests that, as the distribution systems in these countries and others in the region become more coordinated and sophisticated, the demand for processed and packaged fruits and vegetables will increase because products will be required to last longer and travel farther.

Making the Transition

Traditional production systems developed during the Green Revolution phase I that once provided for subsistence consumption and on-farm needs can no longer satisfy the demands of transitional economies. New crops, new products, new processing systems, new distribution structures, new equipment, and new handling and storage facilities are all needed immediately. The need for a second revolution is at hand, the dawn of a new era, the Green Revolution phase II. Technical assistance programs from donor agencies can assist

(please turn to p. 7)

Methyl Bromide Ban Threatens Plant Quarantine Capability

By 1995 methyl bromide production in the United States is slated to be frozen at 1991 levels, and by 2001 will be completely banned. All imports of the chemical will also be prohibited at that time. The U.S. Environmental Protection Agency took this drastic action in accordance with the Clean Air Act of 1991 and the Montreal Protocol because methyl bromide was found to be damaging to the ozone layer. All signatories to the Montreal Protocol are expected to enact, or already have enacted, similar measures. Currently, Montreal signatories may grant special-use exemptions for quarantine use, but the United States is bound by the Clean Air Act to refrain from granting such exemptions.

Methyl bromide is used by plant inspection/quarantine services throughout the world as a fumigant to kill pests on imported or transported products that may be harmful to local production. Methyl bromide is the most commonly used treatment for infested agricultural products because of its wide-ranging efficacy, ease of use, short treatment time (commonly 2 to 24 hours), and low cost. For many imported products, no proven alternative treatments exist.

Since the 1940s, researchers have tried to find an alternative chemical compound for use in fumigation, but all promising compounds have either failed or lost their registered status. Some chemical treatments have shown limited success but have some major disadvantages: chemical

residues, corrosiveness to structures and metals, long treatment time, high cost, and safety concerns. Physical treatments such as irradiation, heating and cooling, and controlled atmospheres offer the most hope.

Irradiation has been approved for quarantine use in many countries but must overcome consumer skepticism, high cost, and availability problems. Heating and cooling treatments have shown promise but are inconsistent and often damage some products. Lastly, controlled atmospheres have been effective in combating some pests, but take much longer to kill them than does methyl bromide; it, too, damages some products. The most likely technological solutions will be combinations of treatments—for example, heat treatment combined with confinement in a controlled atmosphere. Such combinations would resolve a weakness common to all of the above methods, which is that they either are not, or have not been proven to be, suitable for several products, including temperate fruits (especially grapes and stone fruit), garlic, and yams (which, like garlic, must be fumigated as a precondition to entry).

Alternative treatments to methyl bromide will probably be developed and refined so that most will be as effective as methyl bromide, although they will take longer to work and will cost more. These higher costs, and perhaps a shortage of treatment facilities, will make imports more expensive and less competitive with

domestically produced product of the same seasonality. One solution that would not depend on quarantine technology would be for producers to establish pest-free zones, but this is a costly and unreliable solution at best. Improvements in postharvest handling, packing, shipping, general sanitation, and grading may also lessen dependence on quarantine technologies.

As *Market Asia* went to press, a potential political solution to methyl bromide usage in the United States was developing. With the new U.S. Congress taking office, some have speculated that a special-use exemption may be granted for the use of methyl bromide in quarantining. This development would benefit grape, garlic, and yam imports, for which no effective alternative treatments exist and may not be developed.

Jason Graef, Fintrac Inc. **MA**

Vegetable Subsector

(continued from p. 3)

provements for the agribusiness community within the country's vegetable subsector.

Merle Menegay, RAP

(Based on the research report "An Overview of the Fresh Vegetable Subsector in Indonesia," by Merle Menegay, Budiman Hutabarat, and Masjidin Siregar, Indonesia Agribusiness Development Project Working Paper No. 12, December 1993) MA

News in Brief

Japan

Papayas from the Philippines will now be allowed entry into Japan, provided that they are disinfected against the fruit fly using to-be-installed vapor heat treatment facilities and that they meet various other quality, packing, and labeling standards. Japan imported 4,474 MTs (\$17 million) of fresh papayas in 1993, of which 99.8 percent was sourced from the United States (Hawaii). (*Asia Pacific Food Industry*, November 1994)

Taiwan

The Agriculture Trade Office of the American Institute in Taiwan is sponsoring a 60-booth American Pavilion at the **1995 Taipei International Food Industry Show** (June 23-27, 1995, Taipei World Trade Center Exhibition Hall). The theme of this year's American Pavilion will be "An American Seaport" and will feature a mini-pavilion for U.S. seafood exporters. Other U.S. food and beverage products will also be exhibited, including snack foods, dairy products, pet food, fresh vegetables, and fruit juices. U.S. exporters interested in participating should contact The American Institute in Taiwan, Agricultural Trade Office, 2F, 54 Nan Hai Road, Taipei, Taiwan (Tel.: 886-2-305-4883, Fax: 886-2-305-7073) for additional information.

Taiwan will be reducing its tariffs on a number of fresh **fruit** imports, although the average tariff will still be high (35 percent, down from 50 percent). Fruit imports are still subject to quotas, which will be set annually, and Taiwan may increase tariffs during the domestic season. Fruits covered under the new measures include apples, bananas, citrus, coconuts, guavas, longans, lychees, peaches, pears, persimmons, plums, and pomelos. (*Asia Pacific Food Industry Business Report*, December 1994)

the Thai market. Several remaining issues involving implementation of the protocols are expected to be resolved soon, with trial shipments following shortly thereafter. USDA estimates that U.S. citrus exports to Thailand could reach \$15 million per year, with even greater potential once Thailand reduces its tariffs on oranges by 50 percent, as called for in Thailand's Uruguay Round commitments. (*World Horticulture Trade and U.S. Export Opportunities*, January 1995)

Sweden

Imports of **canned pineapple** increased 31 percent to 656,490 cartons 24/2s for the first nine months of last year. Thailand supplied 58 percent of Swedish imports. (*FoodNews*, December 16, 1994)

Germany

The president of the German Flower Wholesale and Importers Association, Peter Mollor, says German cut-flower importers are interested in expanding direct sourcing from producing countries. Currently, Germany imports only 38 percent of non-Dutch flowers directly, with the rest entering through the Netherlands. Sourcing third-country flowers through the Netherlands has an adverse effect on quality by increasing shipment time, according to Mollor. (*FloraCulture International*, December 1994)

Because of the short supply of domestic fresh garlic, Taiwan's Council of Agriculture called for bids from overseas suppliers to supply 750 MTs of the product. All shipments were to have occurred in January, prior to resumption of domestic supply the following month. Taiwan imported 449 MTs of fresh garlic in 1993, down from 1,011 MTs in 1992 and 2,460 MTs in 1991. China supplied almost all of these imports. (*World Horticulture Trade and U.S. Export Opportunities*, January 1995)

Thailand

The U.S. Department of Agriculture (USDA) reported that Thailand's Minister of Agriculture has approved two phytosanitary protocols allowing U.S. citrus from California and Florida entry into

United States

USDA has announced an aggressive integrated pest management (IPM) initiative to provide farmers with the new tools they need to deal with environmental and economic challenges into the 21st century. This initiative delivers on the Clinton administration's commitment to help U.S. agricultural producers implement IPM methods on 75 percent of total crop acreage by the year 2000. IPM is a systems approach that combines a wide array of crop production practices with close monitoring of pests and their natural enemies. IPM practices include use of resistant crop varieties, carefully timed planting, cultivation, biological controls, and judicious use of pesticides. The USDA initiative focuses research and educational programs on increasing the role of people at the state and local levels in setting priorities and on streamlining the process of funding IPM research and extension programs. In addition, the initiative establishes a new program for research on replacements for pesticides that may be lost through pest resistance or regulation. (*USDA AgNews Fax*, December 1994)

Combined mainland and foreign sales of **anthuriums** from the island of Hawaii decreased 5 percent to 7.6 million stems for the first 10 months of 1994 compared with the same period in 1993. Mainland sales decreased 20 percent to 4.0 million stems, while foreign sales increased 18

percent to 3.6 million stems. Thirty-four percent of mainland sales are destined for the Pacific Coast of the United States, followed by the Middle Atlantic region (19 percent) and the East north-central region (15 percent). Thirty-two percent of mainland sales in 1994 were of medium-sized anthuriums, followed by large (24 percent), small (20 percent), miniature (14 percent), and extra-large (10 percent). (*Hawaii Agricultural Statistics Service* news release, December 12, 1994)

Tropical Fruit Juices/Pulps

FoodNews's final 1994 analysis of the world market for tropical fruit juices and pulps is generally bleak. **Passion fruit** juice prices have remained depressed, although they may recover slightly in 1995 with an expected decrease in yields and stocks. However, the market in 1996 is expected to worsen as newer plantings reach maturity. With production outpacing demand, **banana** pulp prices were low in 1994 and are expected to remain so as two new plants in India and Ecuador begin production. **Mango** pulp prices increased in 1994, primarily because of weather-related crop damage in India, but also because of increased demand in Asia and the Middle East. (*FoodNews*, December 23, 1994)

Pineapple juice prices increased in 1994, with December 1994 quotes for Thai 60/61 brix aseptic juice set at \$800 per MT (f.o.b.

Thailand). Prices are expected to remain strong based on some producers' low current stock and an increase in orange juice prices, which generally set the trend for pineapple juice prices. European demand may be lower in early 1995 because several European countries purchased additional stocks last year to avoid increased tariffs, which take effect in 1995. (*FoodNews*, December 16, 1994) ■

Changing Structure

(continued from p. 4)

Asian economies in developing the new products, technologies, systems, and institutions that this new era requires. Market information can enable growers and processors to assess the needs of the market, and agribusiness people in each country can supply modern technology to farmers to meet these burgeoning demands.

The next several issues of *Market Asia* will profile the USAID projects and programs that are poised to deliver technical assistance, market information, and access to technology for this subsequent stage of the Green Revolution, the Agribusiness Revolution.

Ken Swanberg, RAP ■

Agricultural Technology Showcase

Explosion Puffing Allows Low-Cost Dehydration

USDA scientists have developed a new technology for the dehydration of fruits and vegetables. Dehydration, an ancient food-preservation technology, has until now been achieved primarily through hot-air drying and freeze-drying. Although the hot-air technique is inexpensive, it diminishes product appearance and severely impedes foods' rehydration properties, which are critical because most foods must be rehydrated prior to consumption. Freeze-drying maintains product appearance and enhances rehydration but is not widely used because it involves a large capital investment and high operating costs (primarily for energy). The new technology, Continuous-Explosion Puffing Process (CEPP), allows food processors to produce dehydrated fruits and vegetables at costs equivalent to hot-air processes and to reduce reconstitution time by a factor of six. The result is quality similar to freeze-drying at hot-air dried production costs.

CEPP enables dehydrated fruit and vegetable pieces to rehydrate rapidly so they cook more quickly. The food returns virtually to its original size and shape with little loss in flavor, texture, or nutritional value. In this process, partially dehydrated products are pressurized and exposed to super-heated steam,

prior to full dehydration. The process is known as explosion puffing.

Technology Description

Preparation and Initial Drying. Product is prepared according to desired final product. Preparation methods may include slicing, dicing, coring, and peeling. After preparation, the product is partially dehydrated. The initial drying process varies by food, but is generally halted when the food's internal moisture content has fallen to 20-30 percent of its original level. The semi-dehydrated pieces are transferred to the CEPP machine on stainless steel conveyor belts.

Pressurization, Heating, and Puffing. The product moves into a pre-pressurizing chamber, which equalizes product pressure to the pressure in the main chamber. Inside the main chamber, the partially dried produce is exposed to 30 seconds of superheated steam. The steam, prevented from boiling off by the high pressure in the chamber, expands rapidly as pressure is released from the chamber, and puffing occurs. All remaining water within the food boils off, creating a porous structure that promotes both full drying and quicker rehydration. Inert gas can be

added to the pressure chamber to prevent browning of the finished product by displacing air that contains chemicals that contribute to the browning process.

Case Study: Processing Potatoes

A single CEPP unit, assuming a solids content of 20 percent and average peeling losses, can puff the production yield of a dehydration plant designed to process three tons of raw potatoes per hour, while also yielding a 40 percent savings in drying time over hot-air drying. When operated at a 12-second discharge rate, the CEPP machine will average 3.3 pounds of puffed product per discharge. Additionally, CEPP yields greater consumer satisfaction because of the decreased rehydration time and better taste than from the hot air process.

Stage of Development

The technology has been successfully commercialized by various corporations. Demonstrations of CEPP on potatoes, carrots, apples,

(please turn to p. 14)

Microwave Vacuum Dehydration Technology

The Dried Foods Technology Laboratory at California State University-Fresno (CSUF) has pioneered the development of microwave vacuum (MIVAC) dehydration, a process with multiple applications in food processing. Conventional drying, using the sun or forced air, exposes fresh foods to heat and atmospheric oxygen that can damage flavor, color, and shape. MIVAC technology minimizes exposure.

Technology Description

A vacuum-sealed stainless steel vessel provides the medium for the microwave dehydration process. The vessel is equipped with three drying modules—a liquid-medium pre-drier, a microwave unit, and a radiant heat source. Dehydration under vacuum conditions minimizes product oxidation and lowers the boiling point of water in food, allowing rapid drying at temperatures below 130 degrees Fahrenheit. The dehydration process, which generally takes two to three hours, consists of six steps: preprocessing, entry, pre-drying, microwave drying, finishing, and outfeed.

Preprocessing removes stems, pits, and seeds and also grades by size, ripeness, and density to maintain uniform quality. The food enters through the vessel's airlocks on a conveyor. The pre-drier dries the food by immersing it in a container of liquid submerged in steam-jacket-heated natural gas. This stage removes 50 percent of the food's moisture content in 40 to 60 minutes. In

the microwave drying phase, the food passes through two electrically powered drying zones that remove the food's remaining moisture by providing an initial drying with high heat followed by a cooler drying to prevent overheating. This process lasts about 60 minutes. The finishing zones ensure equal drying through natural-gas-fueled, steam-heated panels, and provide a cool-down with water-filled panels. Finishing also lasts 60 minutes. Product is then transported through the airlock valves to be packaged.

Stage of Development

CSUF researchers are working to refine and standardize equipment, instrumentation, and automated process control systems. The next step will be on-site workshops to train food company plant engineers, managers, and technicians in the operation and maintenance of commercial facilities for advanced food dehydration.

The technology is in the commercialization stage. The Dried Foods Technology Laboratory is collaborating with Pitt-Des Moines to market the technology. The first commercial MIVAC unit is being fabricated for a private U.S. customer, and is expected to be on-line by the second quarter of 1995. CSUF is also conducting final-stage research trials with several other food processors.

Uses and Markets

MIVAC creates puffed dried fruits and vegetables that have

natural flavor essences, the pigmentation and shape of fresh foods, and the crunchy texture of confectionery snacks. The results are lighter products—most foods can be dried to 3 percent of their original moisture content—that are easy to pack and ship and retain nutritional value and quality for two to three months.

Although the original development purpose was the expansion of the market for California seedless grapes and improved grape dehydration, the microwave dehydration process has been applied to more than 40 fresh fruits and vegetables. The potential for application of the process to flowers, meats, poultry, seafood, and liquid foods such as high-solid content juices, purees, and concentrates is very good. Preliminary market research was successful with the product Grape Puffs.[™] Grape Puffs[™] received high consumer approval in market testing, with 50 percent of respondents liking it and many even preferring it to dried fruit.

The MIVAC process allows food processors to produce dehydrated fruits and vegetables at costs equivalent to hot-air processes with quality comparable to freeze-drying. The technology can be applied to potatoes, carrots, apples, onions, peppers, and mushrooms, which are grown throughout Asia and are in strong demand by soup makers in Western countries.

(please turn to p. 15)

EU Import Market for Fresh-Cut Orchids Levels Off

Thailand Continues to Dominate

European Union imports of fresh-cut orchids from non-EU suppliers expanded 72 percent from 1988 to 1993, growing from 60 million stems to 103 million stems (ECU 20.4 million to ECU 25.4 million). Since 1990, however, import growth has stagnated, with 1993 imports 10 percent lower than the five-year high of 115 million stems (ECU 28.7 million) recorded in 1992 (see Figure 1). Thailand continues to dominate the market with a 94 percent import market share (not including shipments from EU member countries), and Singapore accounts for 4 percent of import volume. New Zealand, South Africa, and Brazil round

out the top five non-EU-member suppliers.

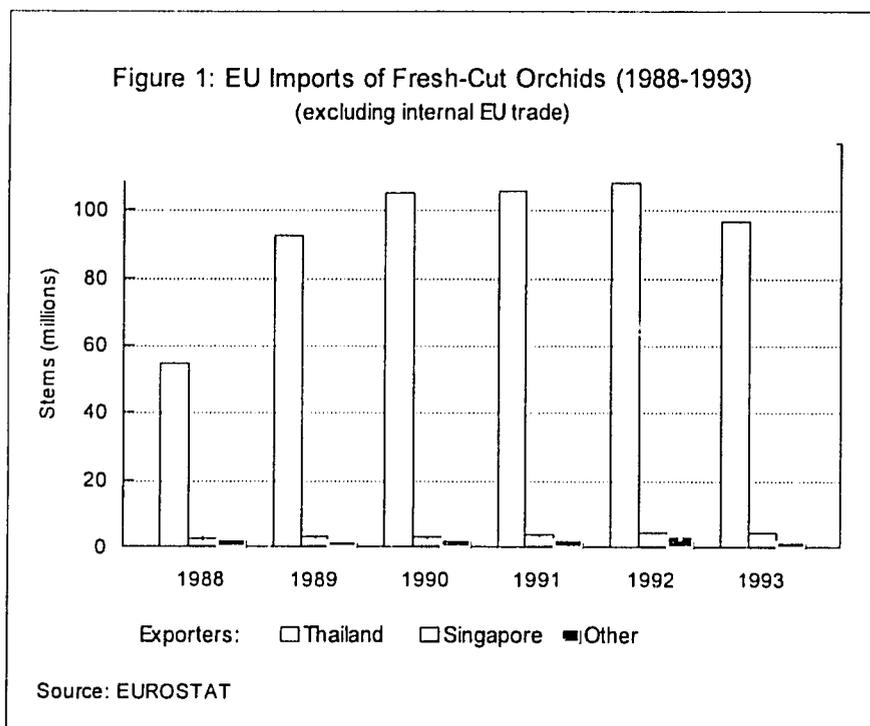
Italy is the largest importer of fresh-cut orchids in the EU, accounting for more than 60 percent of total EU imports, and is the second-largest importer in the world, trailing only Japan. Italy's 1993 imports stood at 65 million stems (ECU 14.1 million), of which 97 percent was supplied by Thailand. In 1993, the Netherlands was the second-largest EU-member importer of fresh-cut orchids grown outside the EU, with 17 million stems (ECU 4.0 million). The country is also the largest European producer of orchids (chiefly cymbidiums in greenhouses), having exported 38 mil-

lion stems of locally produced and re-exported orchids to other EU member states in 1992, the last year for which accurate intra-EU trade statistics are available. Eighty-four percent of Dutch orchid exports that year were destined for Germany.

Germany was the third-largest EU importer of non-EU orchids in 1993, having received 13 million stems (ECU 4.2 million). (See Figure 2.) If imports from the Netherlands are included, however, Germany's total import market is estimated at more than four times this amount. Germany traditionally imports large levels of fresh produce and cut flowers from the Netherlands, including transshipments from overseas suppliers. German importers have recently signaled an eagerness to purchase more of Germany's cut flower imports directly from overseas suppliers (see "News in Brief," page 6).

Figure 3 shows monthly EU import volumes from Thailand and other non-EU suppliers in 1993; the table on the next page gives the importer selling prices of Thai orchids in Italy and Germany for 1994. Prices are generally highest during Christmas, Valentine's Day, Easter, and Mother's Day, with the lowest prices occurring immediately after these holidays. Selling prices in Germany were generally higher than those in Italy during 1994.

Tom Klotzbach, RAP 



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Table: Importer Selling Prices of Thai Orchids, \$/Stem (1994)

| Variety of Orchid | Germany | Italy |
|------------------------|---------------------|------------------|
| Mme Pompadour - Large | 0.39-0.53 (0.46) | no report |
| Mme Pompadour - Medium | 0.29-0.46 (0.40) | no report |
| Sonia - Large | 0.41-0.65 (0.56) | 0.38-0.57 (0.46) |
| Sonia - Medium | 0.30-0.52 (0.43) | 0.34-0.50 (0.40) |
| Big White | 0.49-0.62 (0.55) | 0.43-0.57 (0.48) |
| Mixed Bouquet | 0.67-1.04 (0.83) | 0.63-1.07 (0.82) |
| Oncidium - Large | limited reporting | 0.53-0.59 (0.56) |
| Oncidium - Medium | limited reporting | 0.28-0.46 (0.43) |
| Christina #1 - Large | 0.46-0.75 (0.64)(a) | 0.28-0.49 (0.46) |
| Christina #130 - Large | no reporting | 0.63-0.79 (0.74) |

Note: Prices represent weekly ranges, with annual weekly averages in parentheses
 (a) Reporting occurred only during January-April

Source: ITC Market News Service

Figure 2: Comparative EU Import Market Size (1992)
 (based on stems imported from non-EU suppliers)

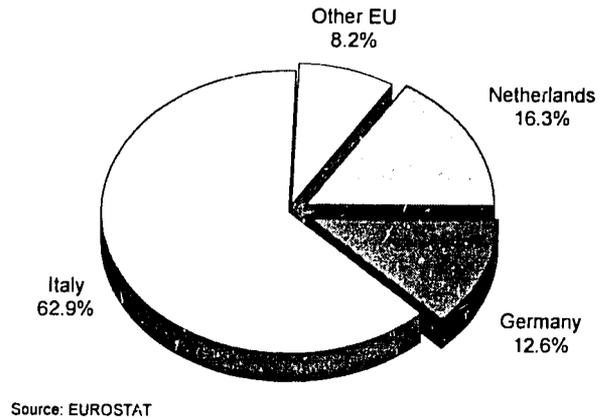
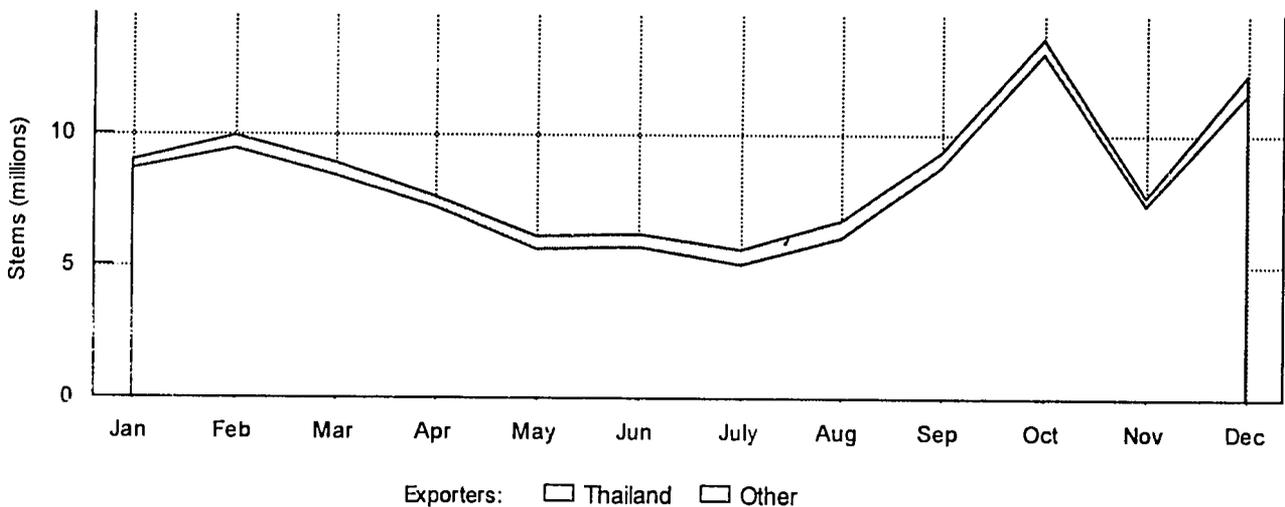


Figure 3: EU Imports of Fresh-Cut Orchids (1993)
 (excluding internal EU trade)



Source: EUROSTAT

Upcoming Events

Trade Show Calendar

ProPak Thailand '95: Bangkok, Thailand, May 18-21. Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB, UK (Tel.: 44-71-486-1951, Fax: 44-71-413-8277).

Tokyo International Seafood Show '95: Tokyo, Japan, June 13-15. JES Ltd., Seshimo Building 3F, 8-8, Kohraku 2-chome, Bunkyo-ku, Tokyo 112, Japan (Tel.: 81-3-38-14-86-55, Fax: 81-3-38-14-86-87) or Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB UK (Tel.: 44-71-486-1951, Fax: 44-71-486-8773).

Super Floral Show: Columbus, Ohio, June 22-24. Meetings and More Inc., 14449 N. 73rd St., Scottsdale, AZ 85260-3133 USA (Tel.: 602-998-3992, Fax: 602-998-7838).

International Food Processing and Packaging Technology Exhibition: Shanghai, China, June 23-27. Gardiner-Caldwell Communications Ltd., 2403 Tung Wai Commercial Building, 109-111 Gloucester Road, Wanchai, Hong Kong (Tel.: 852-519-3083, Fax: 852-519-8072).

International Fancy Food and Confection Show: New York, New York, July 9-12. National Association for the Specialty Food Trade, 8 West 40th St., 4th Floor, New York, NY 10018 USA (Tel.: 212-921-1690, Fax: 212-921-1898).

ProPak China '95: Shanghai, China, August 22-25. Overseas Exhibition Services Ltd.,

International Training Program in New Crops: Aromatic and Medicinal Plants, Purdue University, West Lafayette, Indiana (June 19-30). Sponsored by the Center for New Crops and Plant Products (Purdue University) and the Program for Collaborative Research in Pharmaceutical Sciences (University of Illinois). This second biennial training program in aromatic and medicinal plants focuses on germ plasm collection and preservation, crop production, processing, quality control, and marketing. The program is designed for agricultural scientists and officers, extension specialists and agents, new-crop researchers, industry representatives, government officers, graduate students, and private producers. Traditional-style lectures combined with intensive discussions will be complemented by laboratory, field, greenhouse, and computer sessions. The cost is \$1,800 and includes training manuals and bulletins; field trips; and all laboratory, greenhouse, and field supplies. Lodging is not included and should be reserved in advance. For additional information, contact Continuing Education Business Office, Purdue University, 1586 Stewart Center, Room 116, West Lafayette, IN 47907-1586 USA (Tel.: 317-494-7220, Fax: 317-494-0567).

Division of Agrochemicals Special Conference VI: Molecular Genetics and Ecology of Pesticide Resistance, Yellowstone Conference Center, Big Sky, Montana (June 18-23). Sponsored by the American Chemical Society. The objective of this conference is to examine the phenomenon of increased resistance to synthetic pesticides used in agriculture. Participants will also consider the public health implications of resistance to medicinal antibiotics. Experts from around the world will address the problem broadly by looking at the importance of genetic mechanisms and ecological relationships. For additional information, contact the American Chemical Society, Meetings Department, 1155 16th Street N.W., Washington, DC 20036 USA (Tel.: 202-872-6286, Fax: 202-872-6128).

MegaShow Set for November 4-7 in Chicago

For the first time, Food & Dairy EXPO and the International Exposition for Food Processors are combining forces by jointly sponsoring the MegaShow scheduled for November 4-7 in Chicago, Illinois. The show will exhibit the latest in food and dairy processing equipment and systems, packaging equipment, ingredients, and packaging materials. The organizers expect 750 exhibits and 25,000 attendees from 80 countries. The National Food Processors Association's annual convention and seminar program will be held in conjunction with the show, as will the Food MegaTrends Conference, featuring daily seminars by food and dairy industry leaders and hourly demonstrations on the show floor of new products and technologies. For additional information, contact MegaShow, 5505 Connecticut Ave., N.W., Washington, DC 20015-2601 USA (Tel.: 703-684-1080, Fax: 202-637-0588).

Cornell University International Agriculture Program, Ithaca, New York (Summer 1995). This program will offer the following summer courses in 1995: Southeast Asia Food Executive Program (April 30-May 5; \$1,200); China Business Executive Program (May 15-23; \$1,200); Development Communication (May 31-June 23 and June 26-August 7; contact Cornell University for cost information); Communication Planning and Strategy for Health, Nutrition, Agriculture and Environmental Programs (June 28-July 18; \$2,950); Biotechnology for International Economic Development and Sustainability (July 10-21; \$1,500); Postharvest Loss Reduction of Perishable Crops (dates are flexible with overseas training sites; fees are negotiated); and Seed Analyst Training Program (dates are flexible; fees are negotiated). For additional information, contact James E. Haldeman, Assistant Director/Training Officer, International Agriculture Program, P.O. Box 14, Kennedy Hall, Cornell University, Ithaca, NY 14853-5901 USA (Tel.: 607-255-2283, Fax: 607-255-1005). **MA**

International Conference on Horticulture Announces Speakers

Producers and exporters will be attending a conference in Bombay, India, that will address changing consumer trends, new technologies, and market niches in Europe and the United States for Indian horticultural products. The conference will focus on fresh specialties, medicinal herbs, processed foods, food derivatives, and cut flowers.

Industry specialists from Chile, Thailand, Israel, Europe, and the United States will provide participants with technical advice aimed at improving quality and export performance, augmented by specially prepared product profiles and country case studies. Speakers include Misha Solomon, Marketing Director of Agrexco; Louis Kriel, Managing Director of Unifruco; Anthony Wylie, Director General of Fundación Chile; and the senior executives of four industry groups (the Fresh Produce Exporters Association of Kenya; the Philippines-based Bali Fruit and Vegetable Cooperative; Flodec b.v. of the Netherlands; and the U.S.-based sea transport company, Special Commodities Services Inc.). A food chemist, an international trade and regulatory expert, and James Duke, world-renowned medicinal herbs specialist of the U.S. Department of Agriculture, are also featured.

"The International Conference on Horticultural Development: Sharing Experiences with Winners" will be held at the Taj Mahal Hotel in Bombay on March 2 and 3. The conference is sponsored by USAID and the Industrial Credit and Investment Corporation of India under the auspices of the USAID-funded Agricultural Commercialization and Enterprise Program (ACE). ACE was created to promote agribusiness innovations and diversity within India while fostering the development of Indo-U.S. business linkages. A one-day version of the conference will also be held with the joint sponsorship of the Agricultural and Processed Food Products Export Development Authority in New Delhi on March 4, directly preceding the India Horticultural Expo (March 7-10). For more information, contact conference representative Claire Starkey at Fintrac Inc., 1802 Belmont Rd., N.W., Washington, DC 20009 USA (Tel.: 202-462-8475, Fax: 202-462-8478) or S.R. Salunke at MITCON, Kubera Chambers, Shivajinagar, Pune 411 005, India (Tel.: 323309, Fax: (0212) 323206).

Calendar (continued)

Manchester Square, London W1M 5AB, UK (Tel.: 44-71-486-1951, Fax: 44-71-413-8212/486-8773).

AGF-Totaal: Rotterdam, Netherlands, September 8-10. De Loosa, Nieuwerkerk Aan Denijssel, Netherlands (Tel.: 31-18-031-5588, Fax: 31-18-031-6814).

PFP Expo, Foodtech '95: Ho Chi Minh City, Vietnam, September 12-16. Adsale Exhibition Services Ltd., 14/F Devon House, Taikoo Place, 979 King's Rd., Quarry Bay, Hong Kong (Tel.: 852-2811-8897, Fax: 852-2516-5024).

National Frozen Food Convention and Exposition: San Francisco, California, October 8-11. National Frozen Food Association, 4755 Linglestown Rd., Suite 300, Harrisburg, PA 17112 USA (Tel.: 717-657-8601, Fax: 717-657-9862).

Produce Marketing Association Convention: San Diego, California, October 13-17. Connie Akin, Produce Marketing Association, 1500 Casho Mill Rd., Newark, DE 19714 USA (Tel.: 302-738-7100, Fax: 302-731-2409).

AsiaPack '95: Singapore, October 17-20. Reed Exhibitions Pte Ltd., 1 Maritime Square #12-01, World Trade Center, Singapore 0409 (Tel.: 65-3710753, Fax: 65-2767106).

FMI AsiaMart '95: Hong Kong, October 18-20. FMI AsiaMart '95, 800 Connecticut Ave., N.W., Washington, DC 20006-2701 USA (Tel.: 202-452-8444, Fax: 202-429-4519). **MA**

Showcase: Explosion Puffing

(continued from p. 8)

onions, peppers, mushrooms, blueberries, celery, strawberries, cranberries, and many other foods have been positive. The Georgia Blueberry Cooperative Association was the first to set up an explosion-puffing plant for blueberries. The CBC Corporation in Modesto, California, has commercialized the technology for carrots. The technology is also being used commercially for potatoes in Canada.

CEPP has also been recently extended to product sterilization, with specific application in spice preservation. This advancement will be reviewed in the next issue of *Market Asia*.

Uses and Markets

Research has shown that explosion puffing improves the texture, appearance, and taste of food. Because explosion-puffed foods are porous, they can be dehydrated quickly.

Generally, cooking time for fruits and vegetables can be cut by as much as 80 percent over conventionally air-dried products. In five minutes, the food can be cooked and ready to eat. Some of the puffed foods can even be eaten as a crunchy snack, without cooking.

Equipment Specifications

The CEPP unit includes all equipment required to puff partially dehydrated products. The puffed products can then be air dried. Each CEPP machine requires 750 pounds per hour of clean processing steam. Required pressure is

80 pounds per square inch gauge (psig), heated electrically to 425 degrees Fahrenheit. CEPP also requires 300 pounds per hour of regular steam at 120 psig for external heating of the main chamber. Electrical requirements are 30 kilowatts. Air cylinder and pneumatic valve operation requires 50 standard cubic feet per minute of compressed air at 90 psig, and 50 standard cubic feet per minute of oil-free compressed air at 80 psig. Batch explosion-puffing units with a capacity of 10 pounds are also available. Processing time required for puffing each batch varies by product but is generally 15 minutes.

Equipment Cost

The cost of a CEPP unit capable of processing 2,000 pounds per

hour (0.9 metric tons per hour) is approximately \$400,000. Batch explosion-puffing units that can process 10 pounds at a time are approximately \$100,000.

Contact Information

Market information on dehydrated vegetables is available from various sources, including Machine Technology, Inc.; USDA; the *Journal of Food Science*; and *Food Technology*.

For more information on CEPP, contact Phil Giagnacova, Jr., Machine Technology, Inc., 3275 Penn Ave., Hatfield, PA 19440 USA (Tel.: 215-723-5700, Fax: 215-723-5728).

Keith Sunderlal, The GIC Group 

Editor's Note

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The GIC Group is a consulting firm with practices in market intelligence, international finance, technical support, distribution, and economics. GIC's mission is to add economic value to the private sector in emerging markets through the mobilization of ideas and technology, the promotion of trade, and the structuring of investments.

For additional information, contact Keith Sunderlal, The GIC Group, 208 North Washington St., Alexandria, VA 22314 USA (Tel.: 703-684-1366, Fax: 703-684-1369, E-mail: gicgroup@aol.com).

Showcase: Microwave Vacuum

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Patent Information

The design of the MIVAC equipment is patented by McDonnell Douglas. The process for production of MIVAC-dried grapes, Grape Puffs,TM carries a joint patent by McDonnell Douglas and CSUF. Other patents are pending.

Equipment Cost and Specifications

Commercial-sized MIVAC units have been designed with output capacities ranging from 250 to 1,000 pounds per hour. The units are capable of reducing product moisture content from as high as 90 percent to 7 or 8 percent. The price of these units ranges from \$3.2 to \$4.5 million. This cost does not include front-end handling, cleaning, or dicing equipment or back-end packaging equipment.

Contact Information

Market information on dehydrated vegetables is available from various sources. For two perspectives on MIVAC, contact Dr. Carter D. Clary, MIVAC Project Manager, Viticulture and Enology Research Center, California State University, Fresno, CA 93740-0089 USA (Tel.: 209-278-2089, Fax: 209-278-2998) and Robert Swinderman, Pitt-Des Moines, Inc., 3400 Grand Ave., Pittsburgh, PA 15225 (Tel.: 412-331-3000, Fax: 412-331-7751). 

India Primes Horticultural Subsector

After achieving self-sufficiency in food grain production more than a decade ago, India has focused on increasing horticultural production to generate employment during the off seasons and to meet the nutritive requirements of its population. A wide range of fruits and vegetables are now grown on an estimated 7 percent of the total cultivable area of the country, with very favorable climatic conditions providing an excellent production base. India has become the biggest producer of bananas and mangoes in the world, and is the second-largest producer of vegetables and fruits.

Still, India's postharvest losses are estimated at 30 to 40 percent, caused by transportation inefficiencies, inferior packing methods, and a lack of adequate cold chain infrastructure. To respond to these problems, the government and the scientific and private sector communities have launched a series of efforts.

- The liberalization of the economy in 1991 made it possible to import technology and machinery on more favorable terms, and significant breakthroughs with grape and mango exports have led to regular overseas shipments by reefer containers.
- Thirty modern precooling and packing units have been set up, with many more to follow; a fast train for perishables carrying reefer containers from Delhi to Bombay has been started; a cargo complex near Bombay is being planned.
- The government is providing subsidies for construction of modern markets for perishables.
- The National Horticultural Board is providing soft loan and other monies for the establishment of packing houses and the purchase of reefer trucks and precooling units. It has also initiated a market information program to disseminate produce arrival and price data to growers and exporters through print and electronic media. In addition, the Agricultural Processed Food Products Export Development Authority, in the Ministry of Commerce, provides export promotion and development services in support of fresh and processed produce and other agricultural products.
- Scientists with the Indian Council of Agricultural Resource Centres are working on technology improvement, varietal selection, and new propagative methods in the horticultural subsector.

These measures come at a critical juncture because the GATT agreement to which India is a signator virtually guarantees increased export competition worldwide in terms of quality, packing, and service. We anticipate being able to meet the challenge.

R.K. Shukla is a former agricultural marketing advisor to the Government of India, and a frequent contributor to industry journals in Europe and the United States. 

China Horticulture

(continued from p. 1)

to the domestic market, and in canned form to the export market.

Currently, most Chinese horticultural exports are in processed form, because of a lack of adequate transportation and cold storage facilities required for fresh produce exports. It was estimated in 1988, for example, that 20 percent of all food in China spoiled before reaching the customer. Although China has considerable work to do before becoming a major exporter of fresh products, industry analysts point out that, in view of China's enormous production volume, only a fraction would have to be devoted to exports to alter considerably world trade flows. Some American apple farmers in Washington state are concerned about Chinese competition because of China's growing production of Fuji apples. The farmers are also worried about China's efforts to improve its infrastructure to enable the country to export this popular product to other Asian markets.

China has had success in the processed vegetable market. In fact, its top horticultural export is canned mushrooms (\$148 million in 1992), with canned asparagus and bamboo shoots not far behind. The Chinese government has actively backed the growth of the country's fruit and vegetable processing industry, which grew at an annual rate of 8 percent between 1986 and 1990. As part of China's Eighth Five-Year Plan (1991-1995), \$200 million has been invested in 180 projects to upgrade food processing facilities and develop new food products.

The Japanese Market

China's primary export market for horticultural products is Japan. In 1992 China exported \$500 million worth of fresh, dried, and processed vegetables to Japan, out of a total of \$1.3 billion in vegetable exports. In 1993, Chinese exports of all fresh and processed horticultural products to Japan were valued at more than \$1 billion. China's largest export item to Japan that year was mushrooms, at a value greater than \$200 million for fresh and dried product (Table 1). In 1992 China also supplied Japan with \$126.6 million worth of canned bamboo shoots, \$100 million in dried and frozen beans, and \$78 million in chestnuts.

In 1993 China was Japan's leading supplier of fresh garlic, leeks, and other alliaceous vegetables; peas; and radishes. That year, China was also Japan's top supplier of frozen spinach; provisionally preserved cucumbers, gherkins, and eggplant; and fresh or dried sweet potatoes, arrowroot, and other high-starch tubers. Finally, in 1993 China was Japan's leading supplier of "other vegetables," a category that comprises fresh, frozen, provisionally preserved, and dried vegetables.

The European Market

The European Union is a large market for Chinese horticultural products; EU imports of Chinese fresh, dried, and frozen fruits and vegetables were valued at more than ECU 350 million in 1993. Fresh and dried vegetables made up the largest category, valued at ECU 230 million—down from

ECU 291 million two years earlier, but well above the 1988 total of ECU 188 million. Italy is the largest EU buyer of Chinese vegetables, importing ECU 83 million worth in 1993.

China's biggest export item to the EU is dried beans. The country exported more than ECU 50 million worth of this product to the EU in 1993, of which ECU 46 million were broad or kidney beans. The next largest items were dried sweet potatoes (ECU 46 million) and fresh or dried manioc (ECU 29 million), which are used primarily for cattle feed. EU member countries also imported ECU 23 million worth of dried mushrooms and ECU 5.6 million worth of frozen mushrooms from China in 1993. In addition, EU statistics show that ECU 11.5 million and ECU 10.8 million worth of "other dried" and "other frozen" vegetables, respectively, were imported from China in 1993.

EU imports of fresh garlic from China soared in 1993, to 22 MTs and ECU 14.3 million, causing the EU to restrict imports of Chinese garlic to 10 MTs per year. The move was taken to protect the Spanish garlic industry and has garnered mixed reviews from the European produce industry.

European imports of fresh, frozen, and dried Chinese fruit stood at ECU 26 million in 1993, twice the value of 1988 imports. Nuts accounted for ECU 22 million of this amount, of which ECU 11 million was for walnut imports. Dried apples and dried peaches accounted for an additional ECU 3 million. The United Kingdom was the largest importer of fruit and nuts from China in 1993.

Table 1: Major Chinese Horticultural Exports to Japan (1993)

| Product | Japan Import Volume (MT) | | | Japan Import Value (\$1,000) | | |
|--|--------------------------|---------|--------|------------------------------|---------|--------|
| | World | China | Share | World | China | Share |
| Garlic, fresh or chilled | 16,371 | 15,255 | 93.2% | 11,758 | 9,955 | 84.7% |
| Leeks and other allioaceous veg., fresh or chilled | 7,460 | 7,074 | 94.8% | 11,886 | 10,252 | 86.3% |
| Peas, fresh or chilled | 7,491 | 6,663 | 88.9% | 15,682 | 12,912 | 82.3% |
| Salad beetroot, radishes, and other edible roots, fresh or chilled | 541 | 531 | 98.1% | 687 | 665 | 96.8% |
| Mushrooms, fresh or chilled | 17,966 | 16,540 | 92.1% | 197,523 | 128,160 | 64.9% |
| Other vegetables, fresh or chilled | 9,014 | 5,339 | 59.2% | 21,724 | 8,704 | 40.1% |
| Potatoes, frozen | 1,079 | 207 | 19.2% | 1,354 | 150 | 11.1% |
| Peas, frozen | 21,897 | 6,543 | 29.9% | 25,054 | 9,736 | 38.9% |
| Beans, frozen | 23,597 | 9,606 | 40.7% | 31,035 | 10,125 | 32.6% |
| Soya beans, frozen | 51,249 | 11,088 | 21.6% | 93,759 | 17,554 | 18.7% |
| Spinach, frozen | 15,781 | 13,283 | 84.2% | 13,455 | 9,692 | 72.0% |
| Other vegetables, frozen | 47,572 | 23,098 | 48.6% | 74,409 | 27,996 | 37.6% |
| Cucumbers and gherkins, provisionally preserved | 60,840 | 55,675 | 91.5% | 29,566 | 26,589 | 89.9% |
| Eggplant, provisionally preserved | 22,651 | 21,635 | 95.5% | 20,555 | 19,259 | 93.7% |
| Other vegetables, provisionally preserved | 94,201 | 88,019 | 93.4% | 92,649 | 83,553 | 90.2% |
| Mushrooms, dried | 9,439 | 8,701 | 92.2% | 92,703 | 83,301 | 89.9% |
| Bamboo shoots, dried | 3,506 | 1,529 | 43.6% | 45,857 | 15,045 | 32.8% |
| Other vegetables, dried | 18,228 | 15,948 | 87.5% | 56,786 | 38,272 | 67.4% |
| Beans, dried | 166 | 99 | 59.6% | 128,150 | 90,967 | 71.0% |
| Sweet potatoes, fresh or dried | 796 | 796 | 100.0% | 150 | 150 | 100.0% |
| Arrowroot and similar tubers, fresh or dried | 10,701 | 10,565 | 98.7% | 8,253 | 7,822 | 94.8% |
| Bitter almonds, shelled, fresh or dried | 5 | 5 | 100.0% | 18 | 18 | 100.0% |
| Chestnuts, fresh or dried | 33,191 | 31,388 | 94.6% | 88,627 | 78,061 | 88.1% |
| Other nuts, fresh or dried | 3,413 | 3,340 | 97.9% | 15,712 | 15,377 | 97.9% |
| Guavas, mangoes, and mangosteens, dried | 65 | 49 | 75.4% | 208 | 130 | 62.5% |
| Persimmons, dried | 5,531 | 5,449 | 98.5% | 7,576 | 6,793 | 89.7% |
| Strawberries, frozen | 22,915 | 3,324 | 14.5% | 36,282 | 3,604 | 9.9% |
| Papayas, mangoes, and lychees, frozen | 1,836 | 514 | 28.0% | 4,501 | 874 | 19.4% |
| Peaches and pears, frozen | 1,033 | 787 | 76.2% | 946 | 494 | 52.2% |
| Other fruits and nuts, frozen | 6,427 | 1,968 | 30.6% | 20,075 | 5,591 | 27.9% |
| Tomato puree or paste, canned | 31,246 | 4,715 | 15.1% | 26,876 | 3,149 | 11.7% |
| Beans, canned | 32,186 | 23,960 | 74.4% | 28,920 | 19,822 | 68.5% |
| Asparagus, canned | 5,928 | 5,664 | 95.5% | 14,468 | 13,430 | 92.8% |
| Bamboo shoots, canned | 100,154 | 79,321 | 79.2% | 149,509 | 126,635 | 84.7% |
| Citrus fruit, canned | 13,526 | 9,297 | 68.7% | 16,890 | 8,955 | 53.0% |
| Peaches, canned | 55,350 | 13,155 | 23.8% | 60,037 | 12,014 | 20.0% |
| Apricots, preserved by sugar | 390 | 389 | 99.7% | 1,104 | 1,094 | 99.1% |
| Total | 753,743 | 501,518 | 66.5% | 1,444,746 | 906,899 | 62.8% |

Source: Japanese Tariff Association

China supplied the EU with processed fruits and vegetables other than frozen or dried worth ECU 116 million in 1993, ECU 30 million less than in 1992. Germany was the largest importer of this category of product, followed by the Netherlands. The largest single item China exported among this group was asparagus, which accounted for ECU 51.6 million. Canned mushroom imports from China were valued at ECU 30.7 million, and canned fruit and nuts (mostly various nuts, citrus fruit, peaches, and pears) at ECU 20 million.

The U.S. Market

In 1993 the United States imported \$116 million worth of fresh, dried, and processed fruits and vegetables from China, of which \$102 million was in fresh and processed vegetables and the largest single item was canned mushrooms. Canned mushrooms, most of which are used in the pizza-making trade, accounted for \$21 million of this sum. This represents only a third of the 1989 value, but since that time Chinese shipments have been restricted because of contamination. The United States also

imported \$7 million worth of dried mushrooms from China in 1993.

Other products that China sent to the United States in large volumes in 1993 include fresh and dried garlic (\$16 million), canned water chestnuts (\$18 million), pears (\$7.4 million), canned bamboo shoots (\$2.5 million), canned asparagus (\$1.5 million), and dried beans and peas (\$1.7 million).

Chinese Imports

Much of China's recorded import trade in horticultural products is

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China Horticulture

(continued from p. 17)

with neighboring Asian countries, especially Burma (Table 2, page 19). In proportion to its exports, China officially imports a small amount of horticultural products, the largest categories of which are dried beans and manioc. Burma and Indonesia are the country's largest suppliers of these products. Nuts constitute China's largest fresh horticultural import item, especially cashews and pistachios. According to official statistics, China imported more than 30,000 MTs (\$22 million worth) of fresh nuts in 1993, more than half of which were cashews. In 1993 the United States exported almost \$5 million worth of unshelled pistachios to China, making the product by far the largest single U.S. horticultural export to China (the next largest being raisins).

Because of Chinese restrictions on the import of fresh produce, unofficial trade in these commodities has prospered, especially in South China bordering Hong Kong. It is through this mechanism that fresh products from many countries enter China. Officials of the U.S. Department of Agriculture estimate that as much as one-third of U.S. produce entering Hong Kong ends up in China. American apples, oranges, and grapes can be found in abundance in South China. Partly in recognition of this fact, Chinese officials officially have agreed to open their market to U.S. apples this year, after years of wrangling. On a positive note, China did abandon quotas on imports of most major fruits in 1994.

The United States is by no means the only country sending produce to China through Hong Kong. Thailand's large exports of dainty bananas, mangosteens, durian, longan, and other fresh fruit to Hong Kong relative to its population indicate that some of this produce must be making its way to China. Countries wishing to enter the Chinese market would do well to penetrate the Hong Kong market, in view of the fact that in just over two years Hong Kong will be part of China.

A Sign for Optimism

From the evidence available, it appears that Chinese imports of both fresh and processed horticultural products are on the rise. Dried beans, peas, nuts, and manioc still lead the list of official imports and undoubtedly will remain large items in the future. However, there is reason to believe that, as China's trade and agriculture are liberalized, Chinese consumers will develop a taste for (and the income to spend on) imported products. The fact that U.S. fresh horticultural exports to China have more than tripled (\$2.1 million to \$7.1 million) in the last five years alone is a sign for optimism—even if this is mostly the result of efforts by the pistachio industry. U.S. processed fruit and vegetable exports to China have also more than tripled in the last five years, from \$448,000 to \$1.5 million. Total Chinese imports of fresh items such as bananas, apples, grapes, and vegetables have grown steadily in the past three years, as well.

China's investment in fruit and vegetable processing will mean not only that the country will be able to expand its processed horticultural exports, but also that China's domestic consumers will become more habituated to buying processed foods and that a larger import market thus will be created for these products. Chinese imports of juices and frozen vegetables have already been on the rise in recent years.

China's potential as a large fresh exporter of more than beans, peas, garlic, and mushrooms is enormous. With the necessary investment in infrastructure and trade liberalization, China could conceivably overtake the United States as the world's largest vegetable exporter. The enormous production volumes of China's fruit sector (Table 3) suggest that, even if a small portion of this amount were geared toward exports, the United States and other fruit-exporting countries would be in for serious competition as well.

Bob Galinsky, Fintrac Inc. 

Table 3: Sown Area and Output of Fruit Crops in China (1992)

| Fruit | Sown Area, Hectares | Output, MT |
|--------------|---------------------|------------|
| Apples | 1,914,550 | 6,556,000 |
| Bananas | 182,000 | 2,451,000 |
| Citrus fruit | 1,087,000 | 5,160,000 |
| Dates | -- | 488,000 |
| Grapes | 139,000 | 1,125,000 |
| Pears | 521,000 | 2,846,000 |
| Persimmons | -- | 724,000 |

Source: China Statistical Yearbook, 1993

Table 2: Selected Chinese Horticultural Imports (1991-1993)

| Product | Supplier | 1991 Volume (MT) | 1992 Volume (MT) | 1993 Volume (MT) | 1991 Value US\$ (000) | 1992 Value US\$ (000) | 1993 Value US\$ (000) |
|--|---------------|------------------------|------------------------|------------------------|-----------------------------|-----------------------------|-----------------------------|
| Legumes, dried, shelled | Total | N/A | 69,745 | 34,785 | N/A | 18,254 | 9,700 |
| | Burma | | 31,640 | 32,502 | | 8,381 | 8,600 |
| | United States | | 36,394 | 212 | | 9,243 | 96 |
| | Other | | 1,711 | 2,071 | | 630 | 1,004 |
| Other vegetables, fresh or chilled (a) | Total | N/A | 1,952 | 4,484 | N/A | 1,940 | 3,478 |
| | United States | | 821 | 2,906 | | 702 | 2,241 |
| | Hong Kong | | 672 | 257 | | 655 | 107 |
| | Other | | 459 | 1,321 | | 583 | 1,130 |
| Vegetables, frozen | Total | 134 | 287 | 566 | 159 | 246 | 579 |
| | United States | 90 | 201 | 407 | 102 | 156 | 335 |
| | Other | 44 | 86 | 159 | 57 | 90 | 244 |
| Manioc, dried | Total | 174,601 | 229,881 | 134,682 | 14,683 | 16,955 | 9,831 |
| | Indonesia | 108,215 | 68,818 | 93,386 | 9,043 | 5,316 | 6,829 |
| | Thailand | 60,558 | 161,053 | 41,204 | 5,109 | 11,637 | 2,973 |
| | Other | 5,828 | 10 | 92 | 531 | 2 | 29 |
| Other roots and tubers, fresh or dried | Total | 1,353 | 739 | 415 | 860 | 322 | 316 |
| | Burma | 1,349 | 594 | 278 | 853 | 265 | 121 |
| | Other | 4 | 145 | 137 | 7 | 57 | 195 |
| Apples, fresh | Total | 241 | 688 | 1,049 | 278 | 716 | 1,329 |
| | Canada | 140 | 542 | 629 | 141 | 518 | 837 |
| | New Zealand | 89 | 87 | 47 | 120 | 155 | 71 |
| | United States | 3 | 17 | 204 | 2 | 6 | 150 |
| | Other | 9 | 42 | 169 | 15 | 37 | 271 |
| Avocados, guavas, mangoes, and mangosteens, fresh or dried | Total | 3,959 | 9,885 | 8,850 | 1,301 | 3,739 | 3,701 |
| | Burma | 3,802 | 9,334 | 7,531 | 1,125 | 3,046 | 2,446 |
| | Other | 157 | 551 | 1,319 | 176 | 693 | 1,255 |
| Bananas, fresh or dried | Total | 9,371 | 20,475 | 29,576 | 3,200 | 5,301 | 7,739 |
| | Colombia | 5,528 | 3,305 | 0 | 1,959 | 1,354 | 0 |
| | Ecuador | 3,500 | 13,355 | 7,382 | 1,096 | 3,422 | 2,627 |
| | Vietnam | 0 | 3,179 | 17,003 | 0 | 243 | 3,341 |
| | Other | 343 | 636 | 5,191 | 145 | 282 | 1,771 |
| Grapes, fresh | Total | 51 | 20 | 535 | 15 | 67 | 492 |
| | Thailand | 27 | 4 | 23 | 8 | 13 | 25 |
| | New Zealand | 8 | 0 | 30 | 3 | 24 | 67 |
| | United States | 2 | 0 | 227 | 1 | 0 | 306 |
| | Other | 14 | 16 | 255 | 3 | 30 | 94 |
| Oranges, fresh or dried | Total | 6,594 | 65 | 219 | 1,678 | 47 | 105 |
| | Cuba | 6,594 | 0 | 0 | 1,668 | 0 | 0 |
| | Other | 4 | 65 | 219 | 10 | 47 | 105 |
| Raisins | Total | 1,400 | 1,889 | 2,820 | 1,081 | 1,634 | 1,810 |
| | Turkey | 500 | 501 | 4 | 539 | 541 | 6 |
| | Iran | 139 | 701 | 1,300 | 60 | 542 | 968 |
| | United States | 371 | 535 | 1,330 | 255 | 366 | 634 |
| | Other | 390 | 152 | 186 | 227 | 185 | 202 |
| Cashew nuts, fresh or dried | Total | 18,537 | 20,431 | 16,454 | 14,482 | 16,270 | 12,856 |
| | Vietnam | 6,692 | 5,896 | 8,327 | 4,477 | 4,074 | 7,626 |
| | Thailand | 4,069 | 4,702 | 1,043 | 2,716 | 3,659 | 526 |
| | Indonesia | 3,512 | 5,984 | 1,317 | 3,217 | 5,420 | 921 |
| | Other | 4,264 | 3,849 | 5,767 | 4,072 | 3,117 | 3,783 |
| Pistachio nuts | Total | N/A | 5,405 | 6,899 | N/A | 3,904 | 5,315 |
| | United States | | 5,108 | 6,270 | | 3,446 | 4,756 |
| | Other | | 297 | 629 | | 458 | 559 |
| Other edible nuts, fresh or dried (b) | Total | 1,389 | 5,405 | 3,195 | 2,035 | 3,904 | 1,864 |
| | North Korea | 719 | 1,691 | 762 | 1,006 | 2,485 | 609 |
| | United States | 441 | 372 | 1,299 | 664 | 274 | 635 |
| | Other | 229 | 3,342 | 1,134 | 365 | 1,145 | 620 |
| Orange juice | Total | 615 | 363 | 984 | 729 | 380 | 841 |
| | Brazil | 175 | 111 | 298 | 306 | 178 | 379 |
| | United States | 111 | 58 | 110 | 170 | 75 | 177 |
| | Hong Kong | 224 | 169 | 440 | 165 | 100 | 191 |
| | Other | 105 | 25 | 136 | 88 | 27 | 94 |
| Juices of other fruits or vegetables (c) | Total | N/A | 6,597 | 10,807 | N/A | 5,467 | 9,523 |
| | Philippines | | 2,686 | 4,385 | | 2,553 | 4,484 |
| | Hong Kong | | 1,829 | 1,726 | | 1,470 | 1,180 |
| | Thailand | | 200 | 1,965 | | 111 | 1,642 |
| | Other | | 1,882 | 2,731 | | 1,333 | 2,217 |

(a) Excluding potatoes and tomatoes

(b) Excluding coconuts, brazil nuts, almonds, hazelnuts, filberts, walnuts, and chestnuts

(c) Excluding grapefruit and other citrus, pineapple, apple, grape, and tomato

Source: Chinese Customs Agency

Publications of Interest

Urner Barry Publications, Inc., based in Toms River, New Jersey, provides extensive current market and technical information on the seafood industry. The following list describes selected Urner Barry publications.

Foreign Trade Data provides detailed information on each shipment of frozen seafood imported into the United States, including importer and exporter of record, commodity code, commodity name, volume of trade, origin point, foreign port, and date of arrival. The data are stored in a Windows-based software package, which allows sorting and searching in all fields. Data are updated weekly via either diskette or modem. \$140 monthly (paper copies of *Foreign Trade Data* are also available for \$125 per month).

Shrimp: Supply, Products and Marketing in the Aquaculture Age. Ian Doré. This book provides an overview of world shrimp production. It includes a complete list of all commercial shrimp species and a description of the aquaculture production process. Also covered are quality aspects of the shrimp business, regulations regarding packaging and labeling, and a description of the product distribution chain. 1993. 368 pages. \$79.00.

Understanding Shrimp Futures: Reducing Risk and Increasing Marketing Power in Volatile Markets. Ian Doré and Mark Bowman. 1993. 98 pages. \$29.00.

An Illustrated Guide to Shrimp of the World. Claus Frimodt and Ian Doré. 1987. 229 pages. \$79.00.

Seafood Scams and Frauds and How to Protect Yourself. Ian Doré. 1992. 160 pages. \$39.00.

The European Fishing Handbook is a directory of seafood companies in Western Europe. 1993. 669 pages. \$99.00.

Fish Price Book provides five-year historical wholesale prices for fresh and frozen fin fish and shellfish. 1994. Updated annually. 160 pages. \$34.00.

The New Frozen Seafood Handbook: A Complete Reference for the Seafood Business. Ian Doré. 1989. 360 pages. \$80.00.

Who's Who in the Fish Industry USA lists more than 5,500 industry participants, including processors, importers, and exporters. \$85.00.

Who's Who in the Fish Industry Canada lists more than 1,200 processors, importers, exporters, and others. \$45.00.

Seafood Price-Current provides complete market price reports on shrimp, salmon, lobster tails, fish blocks, fresh fillets, and more. Published each Tuesday and Thursday. \$336 per annual mail subscription to foreign addresses (fax subscriptions are also available).

For additional ordering information, contact Urner Barry Publications, Inc., P.O. Box 389, Toms River, NJ 08754-0389 USA (Tel.: 908-240-5330, Fax: 908-341-0891).

New On-Line Network for Plant Pathologists

The American Phytopathological Society (APS) recently inaugurated a new server, APSnet, on the Internet. APSnet allows users to receive through their computers a variety of up-to-the-minute information from APS. Information available on APSnet includes titles of forthcoming APS journal articles and meeting programs, the APS membership directory, and on-line discussion groups allowing networking among plant pathology colleagues around the world. APS has plans to add premium services on APSnet, including on-line subscriptions to APS journals such as *Plant Disease*, *Phytopathology*, and *Molecular Plant-Microbe Interactions*.

To avail themselves of APSnet services, users will need a PC, Macintosh, or Unix workstation; direct Internet access (through the user's company, organization, or institution); E-mail software; and WorldWideWeb browser software such as NCSA's Mosaic. The cost of a basic subscription for APS members is \$25 annually. For additional information, contact Maureen Mullin, APSnet Coordinator, the American Phytopathological Society, 3340 Pilot Knob Rd., St. Paul, MN 55121-2097 USA (Tel.: 612-454-7250, Fax: 612-454-0766, e-mail: apsnet@scisoc.org).

Market Asia

Food and Horticultural Industries

Volume 2 • Issue 1

March/April 1995

Conference in India Highlights Export Successes

The two-day "International Conference on Horticultural Development: Sharing Experience with Winners," held in Bombay on March 2-3, attracted 350 participants from the Indian agribusiness sector. The conference, sponsored by the United States Agency for International Development and the Industrial Credit and Investment Corporation of India Limited under the auspices of the USAID-funded Agricultural Commercialisation and Enterprise Programme, was organized by Fintrac Inc. in associa-

tion with Chemonics International and MITCON.

Industry leaders from Chile, Israel, South Africa, Kenya, the Philippines, Europe, and the United States identified factors inherent to success in exporting fresh and processed fruits and vegetables, cut flowers, and medicinal herbs.

The following points emerged from the conference:

- The single most important element to successful exporting, according to all top performers in the horticultural industry, is quality.
- Collaboration among researchers, government officials, and members of the private sector is essential to consistent export performance.
- Penetrating a given export market is only the first hurdle; maintaining market share requires attention to quality, reliability, and responsiveness to changing market demands.
- Ongoing investment in research and development (R&D) for improved cultivars, production and postharvest techniques, and transportation technologies is necessary to maintain competitiveness.

- Private industry should contribute to the cost of R&D.
- R&D must be linked to farmers and the marketplace to ensure its responsiveness to commercial needs.

- All the technical aspects of postharvest handling, from grading and packing through cold-chain infrastructure and

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Taiwan's Market Expands

Taiwan imported US\$201 million worth of fresh fruit and vegetables in the first 10 months of 1994. Although this amount is small compared with imports by other countries, it is already 13 percent more than Taiwan imported in all of 1993. Industry sources expect imports to supply an ever-increasing percentage of domestic demand. More producing countries are looking seriously at Taiwan as an expanding market for their fresh fruits and vegetables.

Several factors explain this trend. Domestic production costs,

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The views and interpretations contained in this issue should not be attributed to USAID or to the contracting institutions. Reproduction of contents is permitted with an acknowledgment of the source.

Market Asia welcomes comments, suggestions, and contributions. For more information on RAP, or to be included on our mailing list, please write to the editor:

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Reader Survey Gets Results

Market Asia subscribers continue sending in reader surveys, with nearly 300 received as this issue went to press and more arriving daily. The publishers of *Market Asia* are grateful to subscribers for their overwhelming response to the survey, the preliminary results of which appear below.

Profile of Respondents

Country. More than 80 percent of readers responding to the survey were located in Asia, primarily in the Philippines, Malaysia, India, Sri Lanka, Taiwan, Pakistan, and Indonesia (see table below). The majority of respondents outside of Asia were from the United States, followed by Australia and Europe.

| Country Profile of Respondents | | |
|--------------------------------|----------------|----|
| Region | Country | % |
| Asia | Philippines | 29 |
| | Malaysia | 10 |
| | India | 9 |
| | Sri Lanka | 8 |
| | Other Asia | 25 |
| Non-Asia | United States | 11 |
| | Europe | 2 |
| | Australia | 2 |
| | Other Non-Asia | 3 |

Title. Sixty-eight percent of respondents were managers in their organizations, more than 30 percent in top management positions. Twenty-three percent were professional or technical staff.

Product Sector. Many respondents' organizations were involved in more than one agribusiness sec-

tor. Sixty-eight percent of the organizations were involved in fresh or processed fruits and vegetables. Other prominent sectors included agricultural inputs, herbs and spices, staple food crops, floriculture, aquaculture, and beverage crops (see table on page 18).

Organization Type/Size. Some organizations responding to this question classified themselves in more than one area. Twenty-five percent of organizations were exporters, followed by government organizations, processors, farmers/producers, and importers (see table on page 19). Fifty-nine percent of organizations had more than 50 employees, and 24 percent had from 11 to 50 employees.

Respondents' Evaluation of *Market Asia*

General Responses. All but two respondents wished to continue subscribing to *Market Asia*. An overwhelming majority found the newsletter pertinent to their organization. A similar number found the statistical tables and charts valuable. Approximately half the respondents answered the questions on whether they wanted more market statistics provided in the publication and whether they preferred *Market Asia* to be published monthly (it is currently a bimonthly publication). Ninety-seven percent wanted more statistics, and 72 percent wanted the newsletter to be published monthly. Most subscribers reported that others in their organizations read *Market*

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Asparagus Producers Now Span the Globe

Asparagus traditionally has been a Northern Hemisphere crop. Now, however, it is also grown in the Southern Hemisphere, as many developing countries have dramatically increased production in the last decade to take advantage of the growing market for this high-value vegetable crop. Green asparagus, long favored in the United States, is gaining more popularity in continental Europe, where white asparagus was once preferred, and is the most popular variety in Japan, the largest Asian market for imported asparagus.

Production

An estimated 140,000 hectares worldwide are devoted to asparagus production—40 percent of this total in Europe, 31 percent in North America, 14 percent in Asia, and the remainder in South America and Africa. The United States and Peru are the world's largest asparagus producers; each country harvested about 100,000 MTs in 1994. Approximately 95 percent of total Peruvian production goes to export (both fresh and processed), making Peru the largest asparagus exporter in the world.

The next largest producers in the world are Spain and France. Spain produced 86,000 MTs of asparagus in 1993, and France about 50,000 MTs. Greece is the only other European country that produces asparagus for export in substantial volumes. In South

and Central America, Chile, Argentina, Ecuador, Mexico, Guatemala, and Costa Rica also produce asparagus for export. Countries of the Maghreb and Southern Africa produce asparagus; Morocco and South Africa both exported 550 MTs of product to Europe in 1993, and Egypt, Zimbabwe, Zambia, and Tunisia exported small quantities (less than 100 MTs each) to the European Union.

China is a large Asian producer of asparagus and Europe's largest supplier of canned product. Taiwan produces 20,000 MTs annually, a substantial percentage of which goes to export. Thailand grows green and white asparagus, and supplies the Japanese

and European markets with the gamut of asparagus products—green and white, fresh and processed, whole and tips. Indonesia produces 2,100 MTs of asparagus per year, much of which is white and exported in canned form to Europe. The Philippines exports fresh product to Japan, as do Australia and New Zealand.

U.S. Market

The United States imported 31,439 MTs (US\$49.7 million) of asparagus in 1993, mostly from Mexico. Most U.S. imports arrived between September and March, the off-season in the United States for asparagus production. Suppliers other than Mexico included Peru, Chile, Guatemala, Argentina, and Ecuador. New York wholesale prices in 1993 for 11-pound boxes of imported green asparagus ranged

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Editor's Note

This article was excerpted from RAP Market Information Bulletin #2, "World Market for Fresh Asparagus" (February 1995, 12 pages), by Bob Galinsky (Fintrac Inc.) and Tom Klotzbach (RAP Market Information Specialist). The bulletin provides information on world production and trade in fresh asparagus, including competitor profiles (detailing production and seasonality) and market characteristics (for example, imports, prices, and suppliers) for demand centers in North America, Europe, the Middle East, and Asia. Included are five pages of statistical price and trade data, and references to sources of postharvest and production information. Future issues will cover durian, mangosteens, lychees, longan, passion fruit, baby corn, dendrobium orchids, mangoes, avocados, chillies, and okra. An annual subscription costs \$100 (payable to Development Alternatives, Inc. in a U.S. dollar check or money order), which includes 12 bulletins and a three-ring binder for convenient storage. Individual issues cost \$10. Complimentary copies of RAP Market Information Bulletin #1, "World Market for Rambutan" (January 1995, 8 pages), are available on request.

Total European Union Imports of Fresh Asparagus, by Supplier (1988-1993, MTs)

| Supplier | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|-----------------------|---------------|---------------|---------------|---------------|---------------|--------------|
| France | 10,653 | 10,935 | 6,153 | 5,859 | 6,704 | (a) |
| Belgium/Lux | 164 | 195 | 318 | 328 | 441 | (a) |
| Netherlands | 4,782 | 4,669 | 5,820 | 5,979 | 8,158 | (a) |
| Germany | 132 | 285 | 464 | 226 | 549 | (a) |
| Italy | 99 | 131 | 308 | 232 | 700 | (a) |
| Greece | 4,399 | 7,685 | 9,418 | 11,069 | 12,242 | (a) |
| Portugal | 1 | 13 | 27 | 277 | 825 | (a) |
| Spain | 10,613 | 11,674 | 13,662 | 19,232 | 19,086 | (a) |
| Poland | 305 | 593 | 839 | 709 | 934 | 927 |
| Hungary | 100 | 67 | 69 | 65 | 132 | 113 |
| Morocco | 81 | 129 | 215 | 384 | 321 | 566 |
| South Africa | 521 | 486 | 405 | 272 | 238 | 593 |
| USA | 1,933 | 1,366 | 1,597 | 1,716 | 1,561 | 1,344 |
| Mexico | 228 | 219 | 194 | 227 | 243 | 239 |
| Ecuador | 12 | 28 | 40 | 113 | 80 | 34 |
| Peru | 196 | 289 | 695 | 460 | 830 | 997 |
| Chile | 637 | 682 | 831 | 753 | 759 | 487 |
| Argentina | 507 | 411 | 413 | 449 | 631 | 153 |
| Thailand | 21 | 70 | 129 | 121 | 150 | 147 |
| Other Intra-EU | 29 | 10 | 33 | 70 | 76 | (a) |
| Other Extra-EU | 287 | 182 | 283 | 277 | 276 | 331 |
| Total Intra-EU | 30,872 | 35,597 | 36,203 | 43,272 | 48,781 | (a) |
| Total Extra-EU | 4,828 | 4,522 | 5,710 | 5,546 | 6,155 | 5,931 |
| Total World | 35,697 | 40,119 | 41,914 | 48,827 | 54,940 | (a) |

(a) Because of reporting errors, intra-EU trade was not reported in 1993.

Source: EUROSTAT

Japanese Imports of Fresh Asparagus, by Supplier (1991-1993, kg and US\$)

| Supplier | Volume (kg) | | | Value (US\$) | | |
|--------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|
| | 1991 | 1992 | 1993 | 1991 | 1992 | 1993 |
| China | 23,665 | 27,729 | 180,848 | 100,760 | 92,168 | 526,017 |
| Thailand | 1,645,581 | 1,836,670 | 2,029,926 | 9,060,904 | 9,946,032 | 10,773,768 |
| Philippines | 908,717 | 1,713,825 | 2,874,627 | 2,567,056 | 4,415,344 | 8,597,141 |
| Netherlands | | 1,990 | 1,020 | | 32,168 | 20,129 |
| Belgium | | | 92 | | | 2,527 |
| France | 870 | 2,985 | 6,774 | 12,216 | 33,520 | 71,930 |
| USA | 3,132,392 | 4,630,714 | 5,619,874 | 15,451,936 | 20,912,472 | 26,435,374 |
| Mexico | 2,323,340 | 2,517,530 | 2,829,943 | 11,736,880 | 12,693,144 | 14,444,569 |
| Guatemala | | | 770 | | | 5,135 |
| Ecuador | | | 870 | | | 5,548 |
| Peru | 400,010 | 42,690 | 135,368 | 337,552 | 294,736 | 951,093 |
| Chile | 4,477 | 10,797 | 15,560 | 33,560 | 80,216 | 95,402 |
| Australia | 2,909,182 | 3,047,436 | 3,458,142 | 17,895,456 | 16,084,936 | 20,323,409 |
| New Zealand | 1,493,385 | 1,213,581 | 1,161,030 | 9,007,912 | 6,616,896 | 6,934,836 |
| Total | 12,841,619 | 15,045,947 | 18,314,844 | 66,204,232 | 71,201,632 | 89,186,879 |

Source: Japan Tariff Association

Asparagus Market

(continued from p. 3)

from \$10.50 to \$33.00. During the peak import period from August to February, prices ranged from \$15.00 to \$33.00, mostly \$20.00 to \$25.00 per 11-pound box. Pyramid cartons from Mexico sold for between \$29.00 and \$37.50.

European Market

Since 1989, most European countries have sourced their asparagus from Greece and Spain, and the large growth in the asparagus import market between 1988 (117 million ECUs) and 1992 (180 million ECUs) has resulted largely from increased exports by these two countries. The main Greek and Spanish seasons run concurrently, from March to June, and it is during this period (especially during April and May) that European Union fresh asparagus imports are highest. Europeans generally prefer asparagus with large stalks and, with the excep-

tion of the United Kingdom, have traditionally consumed white, rather than green, asparagus. However, green asparagus has been making inroads into the European market in the last five years, and now most off-season fresh asparagus imports are of green, rather than white, asparagus.

Between 1988 and 1993, imports of fresh asparagus by European Union countries from non-European Union countries increased from 4,828 MTs (14 million ECUs) to 5,931 MTs (17.9 million ECUs). Germany is Europe's largest importer of fresh asparagus, and accounted for a third of these imports. Most of this growth was fueled by increased exports to Europe by Peru, Morocco, and Poland. Thailand has also found a niche in the European Union market, increasing its asparagus export earnings from 91,000 ECUs to 920,000 ECUs over the past six years. Other off-season suppliers include South Africa, Mexico, Guatemala, Ecuador, and Zimbabwe.

Asian Market

Japan is by far the largest import market for fresh asparagus in Asia, and is one of the largest asparagus importers in the world. Japan's imports of fresh asparagus have increased from 12,842 MTs (US\$66.2 million) in 1991 to 18,315 MTs (US\$89.2 million) in 1993. The largest supplier to the Japanese market in 1993 was the United States, followed by Australia, the Philippines, Mexico, Thailand, and New Zealand; all these countries sent at least 1,000 MTs of product to Japan that year. Japan imports asparagus year round, although imports are highest from September to April (Japanese production is during the summer months).

Taiwan and South Korea are small import markets for asparagus. Taiwan imported only 16 MTs of fresh asparagus from New Zealand in 1993. South Korea imported only 35 MTs of product in 1993, mostly from the United States.

Bob Galinsky, Fintrac Inc. 

Business Opportunities

In response to reader surveys (see article on page 2), *Market Asia* will now list limited trade and other business opportunities. These opportunities are not endorsed by Market Asia or its publishers. Those interested in advertising business opportunities should send descriptions of 40 words or less containing contact information to the editor, who reserves the right to withhold material and is not responsible for any errors in publication.

Fruit Plantation Development

Established Indian fruit exporter seeks experienced technical and management expertise to plan and implement phased development of 300 acres into export-oriented strawberry, grape, mango, and pomegranate plantation. Requires residency at project site. Interested parties should send curriculum vitae and salary history to Joseph T. Pietrus at the RAP Clearinghouse.

Trade

Radish seed. Approximately 14 metric tons Mino Early variety available in June from a test growing operation in Nepal. Interested buyers should contact Heather Doyle at the RAP Clearinghouse.

News in Brief

Europe

Spanish garlic producers are appealing to the European Union for stricter entry prices and protective legislation. Without these measures, producers are afraid they will be overwhelmed by lower-priced product, primarily from China. (*Eurofruit*, March 1995)



French chefs are upset about an "invasion" of **Chinese mushrooms** masquerading as truffles. Truffles, a special variety of mushroom available only during a limited winter season, are a high-priced delicacy item. (*Washington Post*, February 12, 1995)

India

The **H.J. Heinz Company** of Pittsburgh, Pennsylvania, reports increasing volume of infant food sales in Europe and Asia. Pursuing a global strategy of increasing its **infant food** market, Heinz acquired the Family Products Division of Glaxco India, Ltd. (*Food Production Management*, February 1995)



Maxworth Orchards has had success attracting **investment in high-yield crops**. The Indian company, whose stock is now trading on the Bombay Exchange,

claims to have convinced 5,000 middle-class investors to buy 4,350 acres of guavas, pomegranates, mangoes, tamarinds, sapotas, and vegetables, with a promise of a tax-free 100 percent annual return on their investment after 12 years. (*Far Eastern Economic Review*, March 2, 1995)

Japan

American apples reportedly were selling briskly in retail outlets in Japan, following an historic shipment of 450 metric tons of Red and Golden Delicious product in January. The American apples are priced well below their Japanese competition in an apple market worth US\$1 billion per year. (*Eurofruit*, February 1995)

Philippines

Malaysia is planning to invest US\$700 million in **palm oil production** in the Philippines, mostly in Mindanao province. Expansion in Malaysia is proving difficult because of labor shortages. (*Asia Pacific Food Industry*, January/February 1995)

Taiwan

U.S. potatoes are no longer barred from the Taiwanese market. Imports of potatoes from Washington, Oregon, Idaho, and California are now permitted.

The value of this market for the United States is projected to reach \$3.0 million a year by 1996. (*The Grower*, January 1995)

Thailand

Although Thailand's agribusiness sector is one of the strongest in Asia, many of Thailand's **small farmers** feel they have been left behind. In early February, the government agreed to reschedule debts owed by small farmers (largely incurred on the bad advice of government extension workers); sort out land tenure uncertainty, which has left hundreds of thousands of rural Thais without any legal claim to their land; and meet regularly with the Small Farmers' Assembly, a group of 10,000 that had threatened to demonstrate in Bangkok. (*Far Eastern Economic Review*, February 16, 1995)

United States

More than a year's worth of rain in just a few weeks caused **flooding in northern and southern California**, severely damaging fruit and vegetable production. Ventura County reports crop losses of US\$22.7 million in strawberries, lettuce, celery, broccoli, and citrus. Orange County lost 80 percent of its strawberries. The Napa Valley's vegetable product is reported to be a total loss. The U.S. government declared 34

counties disaster areas. (*American Vegetable Grower*, February 1995)

Vietnam

Vietnam is mandating **inspection of all exported products**, including all fresh and processed food, seafood, and primary produce. Inspection will cover quality, specifications, quantity, and volume. Inspections will be carried out by independent bodies authorized by the Ministry of Trade. (*Asia Pacific Food Industry*, January/February 1995)

Pineapple

World pineapple production is expected to drop sharply this year as a result of unfavorable climatic conditions, and prices for raw fruit destined for canneries are already rising. (*Food News*, February 24, 1995)

Trade Agreements

Chile is slated to be the newest member of the **North American Free Trade Area**. Preliminary negotiations are currently under

way, with formal negotiations to begin in May. In related news, the United States and 34 other Western Hemisphere countries are planning for a **Free Trade Area of the Americas**, which will include North and South America and be the largest free trade zone in the world. Purchasing power for this trading block is estimated to be US\$13.0 trillion. (*The American Vegetable Grower*, January 1995) **MA**

Postharvest Corner

The following production and postharvest technical articles have recently been published on tropical and subtropical fruits.

'Mauritius' Lychee Fruit Development and Reduced Abscission after Treatment with the Auxin 2,4,5-TP by R. A. Stern, J. Kigel, E. Tomer, and S. Gazit (*Journal of the American Society for Horticultural Science*, Vol. 120, No. 1, January 1995, pp. 65-70).

Application of DNA Fingerprints for Identification and Genetic Analyses of Mango (*Mangifera indica*) Genotypes by A. Adato, D. Sharon, U. Lavi, J. Hillel, and S. Gazit (*Journal of the American Society for Horticultural Science*, Vol. 120, No. 2, March 1995, pp. 259-264).

Performance of Avocado (*Persea americana* Mill.) and Mango (*Mangifera indica* L.) Seedlings Compared with Their Grafted Trees by E. Lahav, E. Tomer, S. Gazit, and U. Lavi (*Journal of the American Society for Horticultural Science*, Vol. 120, No. 2, March 1995, pp. 265-269).

Identifying Lychee Cultivars by Isozyme Analysis by C. Degani, A. Beiles, R. El-Batsri, M. Goren, and S. Gazit (*Journal of the American Society for Horticultural Science*, Vol. 120, No. 2, March 1995, pp. 307-312).

Movement Influences Carambola Leaflet Chlorophyll Fluorescence and Temperature under Sunny Conditions by T. E. Marler and P. D. Lawton (*Journal of the Ameri-*

can Society for Horticultural Science, Vol. 120, No. 2, March 1995, pp. 360-361).

Ultrastructural Studies of 'Kensington' Mango (*Mangifera indica* Linn.) Heat Injuries by K. K. Jacobi and D. Gowanlock (*HortScience*, Vol. 30, No. 1, February 1995, pp. 102-103).

A Novel Method for Rapid Micropropagation of Pineapple by E. Kiss, J. Kiss, G. Gyulai, and L.E. Heszky (*HortScience*, Vol. 30, No. 1, February 1995, pp. 127-129).

'Gil': A New Avocado Cultivar by E. Lahav, U. Lavi, S. Mhameed, C. Degani, D. Zamet, and S. Gazit (*HortScience*, Vol. 30, No. 1, February 1995, p. 158). **MA**

Upcoming Events

Trade Show Calendar

ProPak Thailand '95: Bangkok, Thailand, May 18-21. Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB, UK (Tel.: 44-71-486-1951, Fax: 44-71-413-8277).

Tokyo International Seafood Show '95: Tokyo, Japan, June 13-15. JES Ltd., Seshimo Building 3F, 8-8, Kohraku 2-chome, Bunkyo-ku, Tokyo 112, Japan (Tel.: 81-3-38-14-86-55, Fax: 81-3-38-14-86-87) or Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB UK (Tel.: 44-71-486-1951, Fax: 44-71-486-8773).

Super Floral Show: Columbus, Ohio, June 22-24. Meetings and More Inc., 14449 N. 73rd St., Scottsdale, AZ 85260-3133 USA (Tel.: 602-998-3992, Fax: 602-998-7838).

International Food Processing and Packaging Technology Exhibition: Shanghai, China, June 23-27. Gardiner-Caldwell Communications Ltd., 2403 Tung Wai Commercial Building, 109-111 Gloucester Road, Wanchai, Hong Kong (Tel.: 852-519-3083, Fax: 852-519-8072).

International Fancy Food and Confection Show: New York, New York, July 9-12. National Association for the Specialty Food Trade, 8 West 40th St., 4th Floor, New York, NY 10018 USA (Tel.: 212-921-1690, Fax: 212-921-1898).

ProPak China '95: Shanghai, China, August 22-25. Overseas Exhibition Services Ltd.,

17th ASEAN Seminar on Grain Postharvest Technology, Lumut, Malaysia (July 1995, two days, exact dates to be determined). Organized by the ASEAN Food Handling Bureau, with support from the National Paddy and Rice Company of Malaysia, the Australian Center for International Agricultural Research, and the International Development Research Center. The main objective of the seminar is to allow participants to exchange experiences and address current issues facing the grain industry in ASEAN countries, such as drying, mycotoxin contamination, and socioeconomic aspects of the paddy and rice industry. The registration fee is RM350 per participant (discounts for groups of three or more are available), with an additional transport cost of RM120 (US\$50) for return travel between Subang International Airport and Lumut. For additional information, contact Koh Siew Hua, Executive Officer, ASEAN Food Handling Bureau, Level 3 Block C14 & 15 (North), Damansara Town Center, 50490 Kuala Lumpur, Malaysia (Tel.: 03-2544199/2551088/2525041, Fax: 03-2552787).

3rd National Symposium on New Crops: New Opportunities, New Technologies, Indianapolis, Indiana (October 22-25). Organized by the Indiana Center for New Crops and Plant Products (Purdue University), Indiana Business Modernization and Technology Corporation, and the Association for the Advancement of Industrial Crops. Cosponsors include the U.S. Department of Agriculture, the American Society for Horticultural Science, and the Society for Economic Botany. The symposium seeks to identify new crops and strategies for their commercialization. Product-specific sessions will cover aromatics, spices, and medicinals (ginseng, bioactive tropicals); vegetables (oriental vegetables, specialty mushrooms, hot peppers); ornamentals; cereals; fiber crops; forages and grain legumes; and industrial and oil crops. A session on international opportunities will feature presentations on China, the United Kingdom, the Netherlands, Australia, and Israel. Early registration (prior to July 15) costs US\$190 per person; the registration fee after that date is US\$225 per person. For additional information, contact Jules Janick, Indiana Center for New Crops and Plant Products, Purdue University, 1165 Horticulture Building, West Lafayette, IN 47907-1165 USA (Tel.: 317-494-1329, Fax: 317-494-0391).

International Symposium on Postharvest Science and Technology of Horticultural Crops (ISPSTHC '95), Beijing, China (June 27-July 1). Cosponsored by the American Society for Horticultural Science, the Chinese Society for Horticultural Science, and the Asian Vegetable Research and Development Center. For additional information, contact the American Society for Horticultural Science, 113 South West Street, Suite 400, Alexandria, VA 22314 USA (Tel.: 703-836-4606, Fax: 703-836-2024).

International Symposium on Medicinal and Aromatic Plants, Amherst, Massachusetts (August 27-30). Cosponsored by the American Society for Horticultural Science, the International Society for Horticultural Science, and the University of Massachusetts. For additional information, contact Lyle E. Craker, Department of Plant and Soil Sciences, University of Massachusetts, Amherst, MA 01003 USA (Tel.: 413-545-2347).

Horticultural Crop Production and Marketing Towards the Year 2000, Chelmsford, United Kingdom (July 3-14). Sponsored by the British Council. This seminar, which will focus on trends in European horticulture, will include presentations on new production technologies and techniques; pesticide issues, including the use of integrated pest management; postharvest technology; and changes in European demand for horticultural products. For additional information, contact the International Seminars Department, The British Council, 10 Spring Gardens, London, SW1A 2BN, United Kingdom (Tel.: 44-171-389-4264/52/26, Fax: 44-171-389-4154).

Saudi Agriculture 95, Riyadh, Saudi Arabia (October 8-12). Organized by Saudi Arabia's Ministry of Agriculture and Water. This trade show has just been expanded to include Saudi ProPak and Saudi Water-Tech. Agribusiness technology exhibits will cover livestock, crop production and protection, food processing, irrigation, packaging, storage, aquaculture, and farm equipment. Attendance in 1994 was 14,500, with 100 Saudi manufacturing and trading companies and more than 500 companies from 20 other countries participating. For more information, contact Bechara Nacouzi, Riyadh Exhibitions Company Ltd., P.O. Box 56010, Riyadh 11554, Saudi Arabia (Tel.: 966-1-454-1448, Fax: 966-1-454-4846). **MA**

ASEAN Food Handling Bureau to Lead Fishery Study Tour to Norway

The ASEAN Food Handling Bureau, in collaboration with the Norwegian Trade Council, is organizing a study tour in August and September 1995 to Norway. The study tour will enable participants to view the design and construction of fishing vessels, fishing nets and equipment, on-board cold storage facilities, and fish-landing-complex activities (including grading, auctioning, fish transportation, cold storage facilities, retail facilities, and fish-processing plants).

The cost per person is US\$6,000 (includes airfare to Norway, accommodations, and internal transport in Norway) for participants from ASEAN member countries. For additional information, contact Koh Siew Hua, Executive Officer, ASEAN Food Handling Bureau, Level 3 Block C14 & 15 (North), Damansara Town Center, 50490 Kuala Lumpur, Malaysia (Tel.: 03-2544199/2551088/2525041, Fax: 03-2552787).

Calendar (continued)

Manchester Square, London W1M 5AB, UK (Tel.: 44-71-486-1951, Fax: 44-71-413-8212/486-8773).

AGF-Totaal: Rotterdam, Netherlands, September 8-10. De Loosa, Nieuwerkerk Aan Denijssel, Netherlands (Tel.: 31-18-031-5588, Fax: 31-18-031-6814).

PFP Expo, Foodtech '95: Ho Chi Minh City, Vietnam, September 12-16. Adsale Exhibition Services Ltd., 14/F Devon House, Taikoo Place, 979 King's Rd., Quarry Bay, Hong Kong (Tel.: 852-2811-8897, Fax: 852-2516-5024).

National Frozen Food Convention and Exposition: San Francisco, California, October 8-11. National Frozen Food Association, 4755 Linglestown Rd., Suite 300, Harrisburg, PA 17112 USA (Tel.: 717-657-8601, Fax: 717-657-9862).

Produce Marketing Association Convention: San Diego, California, October 13-17. Connie Akin, Produce Marketing Association, 1500 Casho Mill Rd., Newark, DE 19714 USA (Tel.: 302-738-7100, Fax: 302-731-2409).

AsiaPack '95: Singapore, October 17-20. Reed Exhibitions Pte Ltd., 1 Maritime Square #12-01, World Trade Center, Singapore 0409 (Tel.: 65-3710753, Fax: 65-2767106).

FMI AsiaMart '95: Hong Kong, October 18-20. FMI AsiaMart '95, 800 Connecticut Ave., N.W., Washington, DC 20006-2701 USA (Tel.: 202-452-8444, Fax: 202-429-4519). **MA**

Taiwan's Market

(continued from p. 1)

led by land and labor, continue to rise. Investments by Taiwanese in the horticulture sectors of other Asian countries, particularly Vietnam and Indonesia, have spurred increased imports from these suppliers. Taiwan is allowing increased imports during domestic supply shortages. A strong surge in fresh vegetable imports in 1994 was at least partially caused by a harsh typhoon season that affected domestic production in the summer months, the period when fresh vegetable imports are historically strongest. A shortage of domestically grown garlic in early 1995 has resulted in first-time imports of this product.

Taiwan is also beginning to reduce its tariff and nontariff barriers to trade in fresh horticultural product as the country proceeds with negotiations that government sources believe may be concluded within the year to join the General Agreement on Tariffs and Trade. Import regulations and requirements have been greatly simplified. The Customs authorities have initiated procedures that have sped up clearance of landed fresh product. Strict import licensing requirements have been relaxed. In July 1994, the government established a negative list, replacing the previously more restrictive positive list. Tariffs, now as high as 50 percent for some fresh products, are expected to be reduced significantly in the near future.

Notwithstanding these moves toward greater openness, barriers still exist in the Taiwanese market. Although import certificates are now required only for goods



The largest fruit and vegetable wholesale market in Taiwan and one of the largest in Asia, the Taipei City Wholesale Market handled 519,359 MTs in 1993 and is one of 70 fruit and vegetable wholesale markets serving Taiwan and one of two serving Taipei. The market operates under an auction system. Imports often bypass the wholesale markets, with importers selling directly to retailers and other distributors.



A vegetable stand in the Nan Meng (South Gate) market, the largest traditional market in Taipei

on the negative list, the list still covers 15 percent of all items. Phytosanitary regulations continue to be restrictive, although authorities have expressed a willingness to work with producing-country counterparts in establishing procedures to enable exported product to meet these regulations. Tariffs remain high, seriously affecting the competitiveness of many imported products, even with higher domestic production costs.

Vegetable imports will continue to be most competitive during periods of higher prices—typically during the summer, when poor weather causes production problems. Imports consist chiefly of onions, cabbage, celery, cauliflower and broccoli, lettuce, and peppers. The United States accounted for 46 percent of total 1993 import volume, primarily consisting of onions, celery, and

lettuce. Other major suppliers in 1993 included Indonesia (32 percent, mostly cabbage and shallots), New Zealand (6 percent, mostly onions), and Australia (6 percent, mostly celery, cabbage, cauliflower, and broccoli). Because Taiwanese consumers are very quality conscious and do not accept inferior produce even at cheaper prices, U.S. success in penetrating the Taiwanese market is largely the result of high quality, relatively low prices, and excellent supply reliability. New suppliers seeking to penetrate this market will need to be able to provide similar guarantees.

Fresh fruit imports totaled US\$183 million for the first 10 months of 1994. Top fruit imports include apples, miscellaneous fruits (including rambutan, durian, and dragon fruit), plums, mangoes, oranges, grapes, grape-

fruit, and kiwifruit. The United States supplied 81 percent of total imported volume in 1993, mostly of temperate and citrus fruits, followed by Thailand (6 percent, mostly mangoes, rambutan, durian, and other tropicals) and New Zealand (4 percent, mostly kiwifruit and apples).

Best current export prospects from Southeast Asian developing countries to Taiwan are for vegetables that require labor-intensive production and for exotic fruits. Exotic fruits that have enjoyed rapidly increasing demand include rambutan; mangoes; and, to a lesser extent, durian. Mango imports, for instance, have increased from 964 metric tons (MTs) in 1990 to 7,859 MTs in 1994 (first 10 months only). Vegetable imports from Southeast Asia are dominated by cabbage (primarily sourced from Indonesia, although Vietnam's exports to Taiwan increased significantly in 1994), used mainly by Chinese dumpling manufacturers for filling; the variety exported by Indonesia is not popular with consumers of fresh cabbage because of its toughness.

The tables on the following pages provide detailed information on the Taiwanese fresh fruit and vegetable import market. Table 1 gives average monthly wholesale prices for a range of fresh produce at the Taipei Wholesale Market. Table 2 shows monthly volume of fresh fruits and vegetables at all of Taiwan's wholesale markets. Table 3 provides domestic production trends. Tables 4 and 5 give import seasonality and supplier information, respectively.

Tom Klotzbach, RAP 



Thai rambutan for sale in the Nan Meng market, Taipei

Table 1: Average Monthly Wholesale Prices for Horticultural Product, Taipei City Market (1993, NT\$/kg)

| Product | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Banana | 10.13 | 9.65 | 11.40 | 12.04 | 10.16 | 13.11 | 9.97 | 10.02 | 10.86 | 10.61 | 10.42 | 10.77 |
| Ponkan | 14.53 | 16.55 | 21.03 | 25.09 | | | | | 19.04 | 15.26 | 13.37 | 14.31 |
| Wentan Pomelo | 10.68 | | | | | | | 19.60 | 18.62 | 11.58 | 9.31 | 9.19 |
| Lychee | | | | 58.16 | 51.51 | 31.49 | 22.63 | 23.36 | | | | |
| Carambola | 19.73 | 17.80 | 17.70 | 19.19 | 20.14 | 22.37 | 18.00 | 13.07 | 15.23 | 17.44 | 16.96 | 14.84 |
| Nijusseiki Pear | 66.09 | 55.07 | 44.82 | 38.86 | 57.30 | 50.06 | 44.74 | 49.34 | 50.89 | 52.04 | 51.03 | 56.51 |
| Wax Apple | 54.08 | 40.14 | 37.85 | 35.28 | 20.32 | 17.97 | 19.27 | 19.42 | 22.36 | 28.60 | 47.75 | 43.85 |
| Big Watermelon | 9.01 | 9.14 | 9.88 | 8.90 | 8.74 | 6.07 | 8.41 | 6.03 | 4.89 | 7.31 | 7.01 | 8.16 |
| Cantaloupe | 18.91 | 24.46 | 30.00 | 27.16 | 16.54 | 20.72 | 18.70 | 11.42 | 24.19 | 15.05 | 14.30 | 21.46 |
| Carrot | 8.43 | 8.47 | 8.07 | 8.19 | 8.87 | 9.30 | 8.71 | 10.17 | 12.68 | 11.99 | 10.98 | 9.43 |
| Onion | 7.21 | 8.08 | 7.22 | 6.98 | 8.12 | 12.18 | 11.88 | 12.48 | 23.97 | 12.50 | 10.40 | 12.90 |
| Leek | 16.30 | 19.22 | 18.67 | 14.29 | 15.48 | 19.49 | 18.66 | 20.04 | 33.28 | 22.69 | 19.48 | 27.01 |
| Garlic | 23.90 | 28.82 | 20.91 | 26.68 | 33.92 | 33.56 | 28.25 | 32.53 | 46.13 | 37.26 | 35.88 | 29.18 |
| Dry Ginger | 24.93 | 10.70 | 10.99 | 12.48 | 11.94 | 12.26 | 14.95 | 16.32 | 16.99 | 20.27 | 21.39 | 21.30 |
| Chinese Cabbage | 10.58 | 9.83 | 11.32 | 8.79 | 8.34 | 20.19 | 10.50 | 17.73 | 7.50 | 14.41 | 19.94 | 23.47 |
| Water Convulvulus | 14.54 | 13.95 | 12.58 | 8.83 | 8.81 | 17.28 | 6.68 | 9.56 | 6.99 | 12.94 | 13.61 | 31.24 |
| Spinach | 12.72 | 10.32 | 9.20 | 15.62 | 18.60 | 27.85 | 18.76 | 28.15 | 37.97 | 22.57 | 21.28 | 31.93 |
| Leaf Mustard | 9.91 | 11.91 | 9.77 | 8.47 | 7.13 | 16.84 | 7.49 | 13.02 | 6.71 | 6.76 | 13.77 | 19.03 |
| Cucumber | 12.96 | 24.13 | 23.01 | 8.89 | 8.28 | 24.14 | 7.79 | 7.88 | 7.23 | 9.35 | 18.37 | 35.45 |
| Wax Gourd | 8.15 | 8.09 | 8.11 | 7.16 | 5.60 | 5.59 | 7.93 | 8.27 | 8.18 | 6.23 | 6.02 | 6.85 |
| Squash | 9.22 | 9.07 | 9.43 | 6.87 | 5.72 | 7.19 | 7.38 | 8.03 | 8.04 | 7.49 | 9.20 | 14.95 |
| Calabash Gourd | 7.10 | 11.62 | 19.47 | 8.20 | 5.46 | 16.90 | 5.47 | 6.52 | 3.76 | 6.21 | 11.37 | 23.69 |
| Tomato | 8.93 | 10.10 | 12.34 | 12.25 | 9.99 | 11.72 | 25.07 | 32.62 | 26.48 | 18.59 | 14.21 | 14.10 |
| Pea | 49.16 | 37.95 | 41.34 | 48.66 | 45.44 | 78.21 | 83.77 | 85.57 | 85.44 | 82.22 | 60.23 | 69.67 |
| Kohlrabi | | | | | | | | | | | | |

Source: Department of Agriculture and Forestry, Provincial Government of Taiwan

Table 2: Taiwan Wholesale Markets' Monthly Volume (1993, MTs)

| Product | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|------------------------|--------|--------|--------|--------|--------|-------|-------|-------|-------|--------|--------|--------|---------|
| Banana | 1,994 | 2,332 | 2,685 | 2,829 | 2,481 | 1,628 | 1,418 | 1,463 | 1,755 | 2,022 | 2,530 | 2,626 | 25,763 |
| Pineapple | 2,525 | 1,321 | 1,813 | 3,252 | 4,205 | 4,288 | 3,730 | 3,338 | 1,859 | 1,188 | 867 | 812 | 29,296 |
| Ponkan | 9,476 | 5,816 | 1,909 | 457 | 102 | 6 | 1 | 0 | 111 | 4,490 | 11,755 | 13,315 | 47,140 |
| Citrus Lincheng | 7,521 | 6,983 | 7,421 | 5,269 | 2,466 | 895 | 365 | 19 | 234 | 2,622 | 5,796 | 9,018 | 48,608 |
| Wentian Pomelo | 15 | 2 | 0 | 0 | 2 | 0 | 2 | 863 | 6,489 | 1,046 | 158 | 148 | 8,726 |
| Papaya | 1,548 | 1,316 | 1,783 | 1,601 | 1,826 | 1,838 | 1,865 | 2,333 | 4,004 | 8,768 | 6,795 | 3,848 | 37,353 |
| Lychee | 2 | 73 | 0 | 6 | 73 | 4,432 | 3,279 | 37 | 0 | 0 | 1 | 1 | 7,829 |
| Laquet | 2 | 73 | 1,014 | 1,020 | 89 | 2 | 0 | 0 | 1,075 | 1,910 | 2,582 | 2,175 | 15,874 |
| Carambola | 1,557 | 1,841 | 2,128 | 1,097 | 179 | 108 | 342 | 881 | 1,075 | 1,910 | 2,582 | 2,175 | 15,874 |
| Heng Shan Pear | 39 | 58 | 78 | 78 | 54 | 209 | 596 | 1,431 | 1,860 | 840 | 26 | 147 | 5,394 |
| Nijusseiki Pear | 306 | 157 | 72 | 33 | 274 | 1,038 | 3,194 | 2,499 | 6,444 | 2,937 | 1,335 | 485 | 18,774 |
| Guava | 2,459 | 2,929 | 2,820 | 4,075 | 3,144 | 1,621 | 2,360 | 2,661 | 3,157 | 3,732 | 4,474 | 5,130 | 38,531 |
| Wax Apple | 1,825 | 2,926 | 6,015 | 4,324 | 5,151 | 1,592 | 1,294 | 161 | 20 | 71 | 772 | 1,974 | 26,123 |
| Grapes | 1,083 | 641 | 182 | 93 | 348 | 1,569 | 3,248 | 2,584 | 778 | 1,806 | 1,763 | 2,043 | 15,943 |
| Big Watermelon | 548 | 1,393 | 3,168 | 6,481 | 8,958 | 9,270 | 7,052 | 7,996 | 6,877 | 3,747 | 1,157 | 695 | 57,342 |
| Muskmelon | 2 | 26 | 65 | 429 | 3,824 | 1,850 | 4,027 | 4,854 | 1,734 | 2,503 | 848 | 152 | 19,814 |
| Cantaloupe | 4,340 | 4,368 | 5,217 | 5,269 | 6,599 | 3,250 | 3,742 | 4,654 | 2,860 | 5,024 | 4,787 | 2,412 | 52,522 |
| Radish | 5,690 | 3,747 | 3,644 | 3,023 | 2,763 | 2,088 | 1,891 | 2,304 | 3,041 | 3,958 | 4,395 | 4,728 | 41,293 |
| Carrot | 1,469 | 1,281 | 1,502 | 1,294 | 1,283 | 1,335 | 1,587 | 1,687 | 1,698 | 1,664 | 1,565 | 1,443 | 17,808 |
| Potato | 705 | 641 | 711 | 682 | 821 | 585 | 604 | 825 | 574 | 589 | 600 | 727 | 7,675 |
| Onion | 578 | 796 | 990 | 703 | 754 | 784 | 709 | 433 | 312 | 296 | 296 | 442 | 7,127 |
| Scallion | 1,995 | 1,699 | 2,091 | 2,012 | 2,203 | 1,833 | 1,812 | 2,188 | 1,861 | 2,169 | 2,410 | 2,030 | 24,394 |
| Leek | 524 | 486 | 644 | 63 | 616 | 652 | 630 | 650 | 501 | 582 | 526 | 554 | 6,997 |
| Leek Flower | 532 | 563 | 604 | 1,148 | 909 | 855 | 829 | 792 | 829 | 655 | 570 | 458 | 8,642 |
| Garlic | 1,711 | 1,374 | 1,514 | 895 | 435 | 344 | 352 | 363 | 291 | 387 | 601 | 958 | 9,226 |
| Bamboo Shoot | 41 | 32 | 81 | 807 | 784 | 1,286 | 1,334 | 1,170 | 1,101 | 732 | 344 | 132 | 7,673 |
| Dry Ginger | 128 | 162 | 204 | 220 | 184 | 182 | 258 | 328 | 257 | 370 | 346 | 426 | 3,065 |
| Cabbage | 12,988 | 10,804 | 12,685 | 12,142 | 10,518 | 7,810 | 7,137 | 5,568 | 6,648 | 11,189 | 19,805 | 10,642 | 121,712 |
| Chinese Cabbage | 1,246 | 1,424 | 1,648 | 2,034 | 2,338 | 1,208 | 2,247 | 1,748 | 2,404 | 2,225 | 1,786 | 1,686 | 21,996 |
| Headed Chinese Cabbage | 10,715 | 7,102 | 5,750 | 5,788 | 5,751 | 3,282 | 5,208 | 6,927 | 7,955 | 8,545 | 8,704 | 7,339 | 83,575 |
| Water Convulvulus | 540 | 595 | 1,433 | 1,900 | 2,436 | 2,173 | 2,898 | 2,946 | 2,481 | 1,501 | 1,455 | 630 | 20,988 |
| Celery | 2,174 | 1,802 | 2,223 | 1,913 | 1,666 | 945 | 1,010 | 876 | 1,068 | 1,408 | 1,886 | 1,813 | 18,561 |
| Spinach | 2,281 | 2,826 | 3,244 | 1,445 | 781 | 580 | 743 | 482 | 308 | 88 | 1,355 | 1,638 | 16,600 |
| Lettuce | 1,199 | 1,388 | 2,158 | 1,882 | 1,840 | 1,160 | 1,405 | 1,428 | 1,691 | 1,522 | 1,402 | 1,433 | 18,518 |
| Leaf Mustard | 1,725 | 1,069 | 1,354 | 1,293 | 1,273 | 900 | 1,134 | 1,069 | 1,175 | 1,333 | 1,288 | 1,330 | 14,943 |
| Garlicflower | 5,452 | 6,630 | 5,970 | 5,970 | 2,110 | 1,062 | 1,685 | 2,351 | 3,984 | 4,885 | 4,651 | 4,681 | 49,398 |
| Cucumber | 1,396 | 813 | 913 | 2,701 | 3,417 | 1,844 | 3,391 | 3,353 | 2,995 | 2,234 | 1,317 | 666 | 25,041 |
| Pickling Cucumber | 1,118 | 582 | 868 | 1,189 | 1,741 | 1,319 | 2,320 | 2,030 | 1,747 | 1,282 | 802 | 691 | 15,710 |
| Wax Gourd | 408 | 823 | 1,184 | 1,410 | 2,152 | 2,401 | 1,452 | 1,165 | 1,121 | 974 | 862 | 1,257 | 15,207 |
| Luffa Sponge | 245 | 346 | 563 | 1,232 | 2,788 | 1,959 | 3,182 | 2,787 | 2,265 | 1,174 | 705 | 405 | 17,641 |
| Squash | 37 | 68 | 89 | 126 | 103 | 233 | 140 | 84 | 76 | 88 | 70 | 73 | 1,187 |
| Balsam Pear | 781 | 548 | 670 | 1,033 | 2,934 | 2,528 | 3,174 | 2,506 | 2,047 | 1,647 | 1,341 | 742 | 19,959 |
| Calabash Gourd | 271 | 334 | 689 | 1,336 | 1,797 | 1,022 | 1,254 | 1,456 | 1,220 | 741 | 502 | 325 | 10,949 |
| Eggplant | 766 | 767 | 840 | 2,092 | 1,412 | 1,412 | 1,412 | 1,351 | 1,503 | 1,228 | 1,333 | 1,228 | 16,188 |
| Tomato | 2,037 | 2,372 | 2,407 | 2,191 | 2,160 | 1,523 | 844 | 824 | 1,044 | 1,489 | 1,960 | 2,214 | 21,066 |
| Sweet Pepper | 655 | 624 | 995 | 872 | 1,139 | 825 | 760 | 618 | 544 | 570 | 630 | 567 | 8,790 |
| Pea | 1,562 | 1,797 | 1,206 | 505 | 144 | 38 | 27 | 37 | 41 | 172 | 644 | 799 | 6,973 |
| Kidney Bean | 49 | 32 | 134 | 480 | 1,085 | 1,163 | 1,157 | 1,426 | 942 | 473 | 306 | 167 | 7,394 |

Source: Department of Agriculture and Forestry, Provincial Government of Taiwan

Table 3: Domestic Production of Selected Fruits and Vegetables in Taiwan (1984, 1989-1993, MTs)

| Product | 1984 | 1989 | 1990 | 1991 | 1992 | 1993 |
|--------------------------|---------|---------|---------|---------|---------|---------|
| Bananas | 203,281 | 198,442 | 201,440 | 196,663 | 195,970 | 212,478 |
| Pink Pineapples | 230,738 | 230,738 | 234,629 | 241,477 | 225,279 | 277,283 |
| Ponkans | 114,147 | 179,365 | 161,304 | 174,401 | 172,281 | 162,741 |
| Pink Pineapples | 230,738 | 230,738 | 234,629 | 241,477 | 225,279 | 277,283 |
| Wentan Pomelos | 8,636 | 25,905 | 27,422 | 36,441 | 44,054 | 53,151 |
| Pal Pomelos | 1,503 | 3,871 | 4,778 | 6,385 | 6,871 | 7,389 |
| Valencia Oranges | 2,765 | 2,169 | 2,144 | 2,199 | 1,974 | 1,949 |
| Linchens | 10,627 | 218,599 | 207,019 | 190,868 | 165,357 | 140,281 |
| Lemons | 10,627 | 11,749 | 13,292 | 12,039 | 13,123 | 12,760 |
| Other Citrus | 14,333 | 28,118 | 27,817 | 29,329 | 31,571 | 34,082 |
| Mangoes | 94,937 | 122,192 | 112,531 | 144,730 | 123,834 | 216,745 |
| Guavas | 138,892 | 106,719 | 94,823 | 105,102 | 106,874 | 108,679 |
| Grapes | 70,798 | 104,384 | 102,692 | 113,610 | 129,433 | 165,241 |
| Plums | 36,107 | 97,327 | 95,455 | 92,000 | 76,978 | 72,402 |
| Persimmons | 9,525 | 16,404 | 15,457 | 14,935 | 14,636 | 16,380 |
| Lychees | 111,981 | 134,035 | 114,922 | 135,672 | 98,096 | 98,443 |
| Carambolas | 26,646 | 44,171 | 41,814 | 34,711 | 35,738 | 32,861 |
| Apples | 13,326 | 17,959 | 12,607 | 16,889 | 12,624 | 8,128 |
| Jujubes | 8,214 | 10,842 | 13,075 | 13,946 | 13,268 | 14,472 |
| Passion Fruit | 13,804 | 6,842 | 6,110 | 6,648 | 4,525 | 5,397 |
| Radishes | 186,292 | 122,074 | 128,404 | 118,119 | 152,302 | 124,643 |
| Other Root Crops | 20,531 | 5,864 | 7,233 | 5,633 | 10,563 | 19,219 |
| Taros | 62,405 | 84,709 | 76,361 | 69,735 | 76,215 | 55,638 |
| Scallion Bulbs | 20,237 | 25,105 | 13,067 | 11,656 | 9,602 | 11,618 |
| Garlic | 46,057 | 38,862 | 32,596 | 32,272 | 36,067 | 30,205 |
| Water Chestnuts | 6,141 | 1,226 | 1,802 | 1,204 | 1,058 | 601 |
| Bamboo Shoots | 307,489 | 401,152 | 394,671 | 382,933 | 352,065 | 395,466 |
| Water Bamboo | 32,874 | 54,642 | 48,515 | 41,518 | 49,480 | 57,734 |
| Other Stem Vegetables | 84,271 | 41,053 | 52,409 | 41,737 | 40,543 | 44,211 |
| Leaf Mustard | 99,049 | 77,478 | 69,947 | 63,323 | 68,649 | 66,920 |
| Water Cornonulus | 45,870 | 45,011 | 47,880 | 57,675 | 49,911 | 51,240 |
| Celery | 18,372 | 12,704 | 21,927 | 23,744 | 28,167 | 26,083 |
| Chinese Cabbage | 145,746 | 128,836 | 113,409 | 115,034 | 110,644 | 101,281 |
| Celery Cabbage | 78,886 | 75,724 | 72,418 | 73,205 | 69,012 | 59,772 |
| Other Leaf Vegetables | 150,320 | 155,443 | 127,552 | 141,372 | 170,446 | 164,714 |
| Cauliflower | 121,819 | 87,748 | 88,558 | 82,189 | 67,503 | 67,341 |
| Lily Flowers | 902 | 1,125 | 1,049 | 869 | 812 | 767 |
| Original Pickling Melons | 1,252 | 4,311 | 4,448 | 11,244 | 10,431 | 11,997 |
| Cucumbers | 67,911 | 51,435 | 47,809 | 49,923 | 49,939 | 51,714 |
| White Gourds | 20,925 | 13,809 | 12,423 | 17,855 | 21,632 | 25,202 |
| Bitter Gourds | 20,925 | 28,743 | 30,547 | 33,927 | 33,102 | 36,559 |
| Eggplant | 36,127 | 29,442 | 29,698 | 24,910 | 24,447 | 22,828 |
| Tomatoes | 641,127 | 298,997 | 257,920 | 215,728 | 151,062 | 143,962 |
| Kidney Beans | 54,934 | 30,501 | 27,516 | 27,419 | 24,618 | 25,130 |
| Peas | 20,121 | 32,213 | 31,388 | 24,787 | 22,477 | 18,324 |
| Vegetable Soybeans | 37,201 | 54,392 | 59,219 | 68,000 | 77,419 | 79,180 |
| Other Fruit Vegetables | 11,855 | 79,081 | 79,159 | 89,061 | 82,728 | 90,814 |
| Watermelons | 238,452 | 327,893 | 255,371 | 350,038 | 337,100 | 350,579 |
| Cantaloupes | n/a | 54,510 | 64,935 | 106,442 | 111,905 | 121,138 |
| Seedling Melons | 17,422 | 422 | 137 | 183 | 14 | 30 |
| Strawberries | 5,553 | 4,745 | 4,834 | 4,713 | 3,792 | 5,016 |

Source: Department of Agriculture and Forestry, Provincial Government of Taiwan

Table 5: Taiwan Imports of Fresh Fruits and Vegetables, by Supplier (1993, Jan-Oct 1994, MTs)

| Product | Australia | Canada | Chile | Indonesia | Japan | Korea | Malaysia | Neth. | N.Z. | Phil. | S. Afr. | Thailand | USA | Vietnam | Other | Total 1993 | Jan-Oct 94 |
|---|-----------|--------|-------|-----------|-------|-------|----------|-------|-------|-------|---------|----------|---------|---------|-------|------------|------------|
| Onions | 263 | | | 1,816 | 456 | 942 | 282 | | 2,125 | (65) | 81 | 11,098 | 15,166 | 10 | | 15,166 | 17,091 |
| Leeks | | | | | | | | | | | | | 1,872 | 4 | 4 | 1,872 | 2,371 |
| Culinary Herbs (Broccoli) | 498 | | | | | | | | | | | | 610 | 4 | | 610 | 1,654 |
| Brussel Sprouts | 1 | | | | | | | | | | | | | 4 | | | 4 |
| Cauliflower | 302 | | | 155 | | 641 | 0 | 5 | 12 | 26 | 210 | 204 | 1,835 | 64 | | 1,835 | 2,207 |
| Kohlrabi, Kale, Similar Brassica | 28 | | | 10,002 | | 38 | 50 | | | | | 204 | 10,628 | 64 | | 10,628 | 17,756 |
| Cabbage | 3 | | | | | 3 | | | | | | 1,540 | 1,546 | | | 1,546 | 1,855 |
| Other Lettuce | 30 | | | | | 20 | | | | | 18 | 1,084 | 1,155 | 2 | 0 | 1,155 | 1,498 |
| Wheat Chloay | | | | | | 9 | | | | | | | 10 | 0 | 0 | 10 | 7 |
| Other Chicory | | | | | | | | | | | 1 | | 1 | | | 1 | |
| Other Beans, Peas, Lentils, Fava Beans | | | | | 120 | 56 | | | | | | | 176 | | | 176 | 53 |
| Cucumbers/Gherkins | | | | | | | | | | | | | | | | | 17 |
| Pods (Edible) | | | | 11 | | | | | | 0 | | | 15 | 3 | | 15 | 58 |
| Beans (Vigna spp., Phaseolus spp.) | | | | | | | | | | 2 | | | 2 | | | 2 | 4 |
| Other Leguminous Vegetables | | | | | | | | | 5 | | | | 11 | 11 | | 11 | 32 |
| White Asparagus | | | | | | | | | 11 | | | | 5 | | | 5 | 19 |
| Green Asparagus | | | | | | | | | 11 | | | | 11 | | | 11 | 2 |
| Aubergines | | | | | | | | | | | | | | | | | 2 |
| Other Vegetables | 647 | | | | | | | | | | | | 3,308 | 1 | | 3,308 | 5,825 |
| Capsicum, Pimenta | | | | 57 | | 6 | | | 3 | | 355 | 0 | 424 | 1 | | 424 | 1,087 |
| Solanum | | | | | | | | | | | | | | | | | 3 |
| Sweet Corn | | | | | | | | | | | | | | | | | 87 |
| Bamboo Shoots | | | | | | 349 | | | | | | | 359 | | 10 | 359 | 68 |
| Pumpkins, Squash | | | | | | | | | | | | | 2 | | | 2 | 53 |
| Other Vegetables | 3 | | | | 54 | | | 1 | 0 | 0 | 16 | 3 | 85 | 8 | 0 | 85 | 153 |
| Avocados | | | | | | | | | | | | 11 | 15 | | | 15 | 8 |
| Mangoes | | | | | | 130 | | | 1 | | | 11 | 5 | | | 5 | 8 |
| Oranges | | | | 243 | | | | | | | 470 | 12,601 | 13,071 | 8 | | 13,071 | 22,104 |
| Lemon/Lime | | | | | | | | | | | | 97 | 97 | | | 97 | 43 |
| Grapefruit | | | | | | | | | | | 462 | 18,339 | 18,801 | | | 18,801 | 18,653 |
| Other Citrus Fruit | | | | | | | | | | | | | | | | | 33 |
| Grapes | | | | | | | | | | | | 13,597 | 13,597 | | | 13,597 | 10,160 |
| Watermelons | | | | | | 125 | | | | 681 | 28 | 1,728 | 1,728 | | 4 | 1,728 | 2,891 |
| Seedless Watermelons | | | | | | 2,830 | | | | 305 | 27 | 5,828 | 3,163 | | | 3,163 | 5,828 |
| Honeydew Melon | | | | | | 7 | | | | 63 | | 89 | 138 | | | 138 | 1,917 |
| Other Fresh Melons | | | | | | | | | | | | | | | | | 12 |
| Apples | 488 | 1,840 | 6,492 | 211 | | | | 2,561 | | 491 | | 94,835 | 106,917 | | | 106,917 | 91,072 |
| European Pears | 194 | | 46 | | | | | | | | 0 | 5,327 | 5,568 | | | 5,568 | 6,525 |
| Apples | 68 | 1 | | | 14 | | | 207 | | | | 3 | 2,313 | | 4 | 2,313 | 2,700 |
| Cherries | | | | | | | | | | | | | | | | | 17 |
| Peaches | | | | | | | | | | | | | | | | | 2,891 |
| Nectarines | 126 | | 16 | | 26 | | | 254 | | | | 2 | 2,276 | | | 2,276 | 7,876 |
| Plums | | | | | 17 | | | | | | | 1 | 15,503 | | | 15,503 | 26,933 |
| Strawberries | | | | | | | | | | | | | | | | | 3 |
| Kiwifruit | 117 | | 61 | | | | | 4,817 | | | | 3,242 | 8,132 | | 76 | 8,132 | 8,555 |
| Persimmons | | | | | | | | | | | | 37 | 37 | | | 37 | 4 |
| Other Fruit | | | | 30 | | 7 | | | 1 | | 8,219 | 298 | 11,137 | 2,582 | 3 | 11,137 | 20,795 |

Source: Taiwan Customs Department

Conference

(continued from p. 1)

operations, are crucial to providing the quality demanded by the import markets.

- In-depth knowledge of a targeted export market is required to penetrate the market and maintain market share. One needs to identify consumer trends versus fads, understand the importance of seasonality for the import market's domestic production, and be able to anticipate phytosanitary regulations in response to legislative climates and economic concerns.
- Minimum standards should be established, because reputation is everything. Countries with the best success ratios often enforce minimum export standards pegged to the most stringent standards in the country of import.
- The establishment of strong growers' associations, preferably product-specific associations, provides a united industry platform.

An abbreviated one-day version of the Horticultural Conference followed in New Delhi on March 3, cosponsored by USAID, ICICI, and the Agricultural and Processed Food Products Export Development Authority. *Market Asia* will publish technical excerpts from conference presentations in upcoming issues (the adjacent box gives an illustrative list of conference speakers).

Claire Starkey, Fintrac Inc. 

Speaker Quotes from the International Conference on Horticultural Development

"The challenge for Chile and other successful exporting countries is to move from comparative to competitive advantages through increased productivity, product promotion, market diversification and expansion, and local research and development." *Anthony Wylie, Director General, Fundacion Chile*

"Key elements in adjusting to the export market are quality, constant supply, reliability, and seasonality. These should always be taken into consideration when changing cultivars and developing postharvest treatments. The market regulates standards." *Amos Blumenfeld, Head, Institute of Horticulture, Israel*

"Herb markets can appear and disappear overnight, so diversification is important. Quality is the key to producing for the herb market, and the larger companies involved in import are interested in longer-term relationships that emphasize stabilizing quality, availability, and cost." *Robert McCaleb, President, The Herb Research Foundation, United States*

"The three main elements our company looks for in establishing long-term relationships with cut-flower suppliers are top quality, the right varieties, and constant supply." *C.M. Elkhuisen, Director, Flodac b.v., Netherlands*

"Based on several years of working in India with local producers, we recommend improvement of export management skills such as timing and consistency, optimizing the use of natural resources to increase competitiveness, and initiating cooperation among producers to achieve maximum strengths and present a 'united' front." *Bengt Brag, Senior Technician, Flodac b.v., Netherlands*

"We are an exporting company, and 20 percent of our customers account for 80 percent of our business. Quality, consistency, and service are everything. Reputation is always determined by the lowest common denominator, not the highest. Our recommendations for India's fresh produce trade are to identify priority markets and their requirements, establish product-specific growers' associations that can serve as a "mouthpiece" for the industry, determine priority growing regions and establish minimum requirements for them, determine uniform minimum quality standards and net handling procedures, establish procedures for quality inspection and control, and identify and evaluate 'horses for courses' (ongoing R&D)." *Louis Kriel, Managing Director, Unifruco, South Africa*

"In the processed foods industry, you must do your research and be able to provide full information on your product, keep consistent with price and delivery, be transparent in your pricing, and not underprice. Trends in this industry are toward low-fat foods, fruit juices, fiber ingredients, and natural colors and flavors. In the ethnic niche market, Indian food is a rising star." *Veronique LaGrange, Vice President, TJP & Associates, United States*

"The image of a country, not an individual exporter, needs to be enhanced; to this end, Kenya has recently signed the International Plant Breeders' Rights Agreement, and our organization is working on establishing a quality standards and grades minimum including pesticide residue levels." *David Gray, Chief Executive, Fresh Produce Exporters' Association of Kenya*

"A cohesive relationship among researchers, producers, and exporters is essential to success; the combination of our caraboa mango cultivar and geographic proximity to the Hong Kong market has proven key to our company's growth." *Manual Boniao, President, Bali Fruit and Vegetable Corporation, Philippines*

Survey

(continued from p. 2)

Asia. The table on page 19 provides a statistical breakdown of survey results.

Specific Comments. Many of the respondents provided additional detail on their preferences for additional market and product coverage. The most frequently mentioned items are listed in below in descending order.

Market Coverage

Europe
China
Japan
United States
Korea
Taiwan

General

Price Statistics
New Technologies
Other Statistics
Trade Opportunities
Importer/Supplier
Directories

Product Coverage

Fresh Fruit and Vegetables
Fish/Seafood/Aquaculture
Processed Foods
Processed Fruits and Vegetables
Cut Flowers, Ornamentals
Livestock/Meat
Rice
Herbs/Spices
Cereals/Grains/Wheat/Flour
Poultry
Dairy/Milk
Beverage Crops/Tea
Medicinal/Aromatic Plants

Results

Readers' suggestions are much appreciated, and we have already

begun expanding our coverage to include the areas mentioned by survey respondents:

Market Coverage. In our last issue, we profiled the expanding horticultural industry in China, and we will provide additional information on Chinese producers and market opportunities in future issues. In this issue, we provide statistical data on the fresh fruit and vegetable market in Taiwan, a market that is expected to open up in the near future. We will also expand coverage on both regional and distant markets for Asian producers.

General Coverage. In our last two issues, we ran a feature highlighting new agribusiness technologies. *Market Asia* and the Regional Agribusiness Project are also supporting the development of a weekly fresh horticultural product price reporting service being developed by the International Trade Centre's Market News Service (additional information on this service and price summaries will be provided in future issues).

Additionally, we have been listing limited trade opportunities in recent issues. Those wishing to publish trade opportunities in *Market Asia* are welcome to send a brief description (of not more than 40 words) with contact information. The Editor reserves the exclusive right to withhold material and is not responsible for any errors in publication. Any trade opportunities printed in the newsletter are for information purposes only and are not endorsed by *Market Asia* or its publishers.

Product Coverage. *Market Asia*, in the past, has been heavily fo-

cused on the markets for fresh horticultural products, the primary industry sector for the majority of our readers. Our reader survey, however, reveals that many of our readers are involved in other agribusiness subsectors. Therefore, we are beginning to expand product coverage, especially coverage of floriculture and processed fruits and vegetables. Other industry sectors will be added based on additional reader feedback.

We encourage readers who have not yet responded to the survey to do so. Please photocopy and complete the survey on page 20, and fax or mail it to *Market Asia* Reader Survey; Regional Agribusiness Project; Development Alternatives, Inc.; 7250 Woodmont Ave., Suite 200; Bethesda, MD 20814 USA (Fax: 301-907-2655). **MA**

| Industry and Organization Profile of Respondents | |
|--|----|
| Industry | % |
| Fresh Fruit/Vegetables | 68 |
| Processed Fruit/Vegetables | 68 |
| Agri. Inputs | 39 |
| Herbs/Spices | 37 |
| Staple Food Crops | 36 |
| Floriculture | 35 |
| Aquaculture | 33 |
| Beverage Crops | 26 |
| Other | 23 |
| Organization Type | % |
| Exporter | 25 |
| Government | 21 |
| Processor | 20 |
| Farmer/Producer | 18 |
| Importer | 13 |
| Consulting Firm | 10 |
| R&D Firm | 5 |
| University | 5 |
| Other | 16 |

Note: Based on percentage of respondents who answered question. Many respondents identified more than one answer to each question.

| Responses to Selected Questions | | | | |
|--|---------------|-----|----------|-----|
| Question | Response Rate | Yes | Somewhat | No |
| Do you want to continue your subscription? | 100% | 99% | | 1% |
| Is Market Asia pertinent to your organization? | 92% | 86% | 13% | <1% |
| Are charts/statistics of value? | 89% | 82% | 17% | <1% |
| Would you prefer a monthly publication? | 47% | 72% | | 28% |
| Do others in your organization read Market Asia? | 88% | 86% | | 14% |

Recommended Reading

Dried Dehydrated Tropical Fruit, A Survey of the Major Markets contains information on the main import markets for these products, including market characteristics and access, channels of distribution, regulations, and lists of importers. Copies are available in English, French, and Spanish from the International Trade Centre, UNCTAD/GATT, Geneva, Switzerland.



The following two publications are available from the Asian Vegetable Research and Development Center, Book Distribution Section, Box 42 Shanhua, Tainan 74199, Taiwan, ROC. A complete list of publications is provided on request.

Field Guide to Insect Pests of Selected Vegetables in Tropical and Subtropical Asia contains

detailed descriptions of common insect pests in Asia (with color plates). Cost is US\$5 for developing countries, US\$8 for developed countries.

Vegetable Research and Development in Bangladesh is a compilation of proceedings of a national symposium held to mark 25 years of vegetable research in Bangladesh; the work is expected to contribute to policy making for sound and sustainable development.



The following publications are available from the Center for Agricultural Export Development, 301 Bradley Hall, University of Kentucky, Lexington, KY 40506-0058 USA (Fax: 606-323-1026). A complete list of publications is provided on request.

Important Aspects of the Japanese Food Market (1990)

Taiwan as a Market for U.S. Agricultural Products (1990)

Aspects of the Hong Kong and Singapore Markets Important to U.S. Agricultural Exporters (1990)

An Overview of Pakistan's Economy and Export Sector (1991)

Exporting Hardwood Products to Japan (1991)

White Corn: A World Market Overview (1992)

Japanese Market for Meat (1994) 

Market Asia Reader Survey

1. Would you like to continue receiving *Market Asia* on a complimentary basis?

Yes, please keep me on your distribution list. My contact information is:

Name: _____ Title: _____

Organization: _____

Address: _____

Country: _____ Tel.: _____ Fax: _____

Please discontinue my subscription (include name, organization, and country above)

2. Please check all that are applicable to your organization:

Product Sector: Fresh Fruit & Vegetables Processed Fruit & Vegetables Floriculture
 Herbs & Spices Beverage Crops Staple Food Crops Aquaculture Agricultural Inputs
 Other (specify)

Organization Type: Importer Exporter Farmer/Producer Processor Association
 Government University Other (specify)

Organization Size (Number of Employees): 1 to 10 11 to 50 over 50

3. Do you find the articles in *Market Asia* pertinent to your activities (of interest to you and your organization)?

Yes Somewhat No Comments: _____

4. What additional market coverage would you like to see? (provide comments on separate page)

5. What additional product coverage would you like to see? (provide comments on separate page)

6. Are the charts and statistical information of value? Yes Somewhat No

Would you like to see more or less?

7. Would you prefer having *Market Asia* published monthly (currently bimonthly)? Yes No

8. Do others in your organization read *Market Asia*? Yes No

9. How do you currently receive *Market Asia*? Directly from *Market Asia*/Regional Agribusiness Project

From another organization (name: _____) From a colleague

If you do not currently receive *Market Asia* directly from the publisher and would like to do so, check here

Please return this questionnaire by mail or fax it to: Asia Regional Agribusiness Project (RAP), Editor, *Market Asia*, 7250 Woodmont Avenue, Suite 200, Bethesda, Maryland 20814 USA, Tel.: 301-215-7014; Fax: 301-907-2655

ANNEX D
QUICK RESPONSE SERVICE REQUESTS LOG

RAP Clearing House Information Request Activity Log

| Date In | Request Description | Contact Information | Response | Date Out |
|---------|--|-------------------------------------|--|----------|
| 1/26 | Vegetable production and prices in Central American countries. | David Midmore | Contacted the FAS in six Central American countries; compiled information from the FAO statistical yearbooks. Sent information via email. | 2/13 |
| | | AVRDC | | |
| 1/26 | Supplier contact information and samples of pepperoncini seed. | William Balthazaar | Sent a U.S. supplier name and pricing information; sent along additional contact information in Greece and Italy. | 2/20 |
| | | Pickle Packers, Ltd. | | |
| 2/1 | Trade show information. | Kasuku Farms | Compiled trade show information from PMA, AgExport Service, and NTDB. Sent information. | 2/1 |
| | | Kenya | | |
| 2/1 | Packaging technology information for fruit transportation/samples requested. | John Mitchell | Contacted packaging institutions, companies, associations, USDA, and trade show catalogues. Sent a "net sleeve" sample. | 3/12 |
| | | USAID/Nepal | | |
| 2/2 | Environmental hazards of gherkin cultivation in Sri Lanka. | Seneviratne Samarakoon | Contacted Henry Harmon (ADP), Jane Gleason (DAI), and Martin West (AGENT). Sent information. | 3/1 |
| | | AgriDev | | |
| 2/2 | Information on treatment of wastewater for food industries/aerobic process and treatment/various uses of treated effluent. | E.K. Jaytanarayanan | Compiled information from Sanders International, Agriculture Library, DAI reports, EPA, USAID reports, and the Environmental Health Project. Sent information. | 2/15 |
| | | Mohair Meakin Limited | | |
| 2/5 | Market information and export contacts for cabbage in Taiwan. | Ricardo Frohmader | Compiled information obtained from Fintrac and trade publications. | 2/15 |
| | | ASAP | | |
| 2/6 | Suppliers of banana chips made with canola oil only. | Adrian Jose Nadora | Contacted the commercial ministries of Indonesian, Sri Lanka, Philippines, Nepal, Malaysia, and India. Sent information. | 3/1 |
| | | Philippines Exporters Confederation | | |
| 2/20 | Information on aquaculture and pond construction. | Qamrul Islam | Contacted aquaculture experts and sent information as well as publications. | 3/31 |
| | | Crescent Farming Complex | | |
| 2/27 | Information on dairy effluent discharge and dairy equipment. | Tony Dalgleish | Contacted dairy organizations, associations, dairy equipment suppliers, APHIS, USDA, FDA, and EPA for information; obtained articles from the Agriculture Library. | 3/2 |
| | | Agent | | |
| 3/2 | Information on food drying equipment for pineapple, mango, and other fruits; brochures needed. | Ranjit Perera | Contacted equipment companies; compiled and sent information. | 3/20 |
| | | AgriDev | | |
| 3/10 | Market and contact information for pineapple processors. | Andrew McGregor | Compiled information from the Thomas Food Registry, export and import handbooks, Food Institute reports, Catalogue of Canned, Dried Processors. Sent information. | 3/12 |
| | | USAID/Fiji | | |

| | | | | |
|------|---|------------------------|---|------|
| 3/27 | Historical and current price and volume data for fresh fruit market in Japan. | Agland Investments | Contacted the Japanese Embassy and JETRO. Compiled statistics and faxed information. | 3/29 |
| 4/1 | Information on okra seed varieties used in the U.S. and worldwide. | A.K. Bakshi | Contacted ASTA, South Carolina Foundation Seed Association, Southern Frozen Foods and publications. Sent information. | 4/5 |
| | | Himalaya International | | |

ANNEX E
MARKET INFORMATION BULLETINS

World Market for

RAMBUTAN

January 1995

RAP MARKET INFORMATION BULLETIN

No. 1 (\$10)

The rambutan is a small, globe-shaped, red-skinned fruit with hairlike protrusions. It is a close relative of the lychee, and its flesh is translucent, sweet, and succulent. The rambutan is still best known in Southeast Asia, and most production and trade are concentrated there. However, with demand from Asian immigrants, imports into North America, Europe, and the Middle East have increased. New producers such as Australia and Honduras are also entering the market, supplementing traditional supplies from Thailand, Malaysia, and Indonesia. With increased production, improved postharvest handling for long-distance transport, and anticipated cross-over demand in temperate markets, world demand and competition are expected to increase.

PRODUCTION

Rambutans are cultivated most extensively in Thailand, Malaysia, and Indonesia, although they are also grown for export in Australia, Sri Lanka, Vietnam, and Central America, and for domestic consumption in other tropical countries.

Thailand's production was estimated at 430,000 metric tons (MTs) on 60,000 hectares in 1984. Some rambutan farmers there have been switching production to higher-value durian. The rambutan season extends from February to September, peaking between May and August. Production from eastern Thailand (February-June) reaches the market before that from the south (May-August).

Indonesia's production was estimated at 273,425 MTs in 1992, up from 148,000 MTs (on 43,000 hectares) in 1984. Rambutan trees generally fruit from November to February throughout Indonesia, except in North Sumatra, where the season runs from June through September.

Rambutan was produced on 20,000 hectares in **Malaysia** in 1984. Rambutan is harvested twice yearly, with the main season lasting from July to November.

Production area in the **Philippines** is estimated at only 500 hectares. Fruit is available from July through October, peaking in August and September.

Although rambutan was produced on 700 hectares in **Singapore** in 1981, production area has rapidly diminished with urban expansion. Singapore harvests the primary crop June to August, and a secondary crop between November and January.

Rambutan production in 1995 is predicted to increase to 1,140 MTs in **Australia**, and to 1,210 MTs in 1996. Production is highest during November and December.

Rambutan was produced by only 30 farmers on a combined area of 60 acres in **Hawaii** in 1993. Production totaled 2,273 kilograms, down from 3,091 kilograms in 1992. Production for 1994 is expected to be significantly higher as new planting begins to bear. Farm prices in Hawaii increased from \$3.26 per pound in 1992 to \$4.00 per pound in 1993, with total farm sales in 1993 at only \$20,000. Overseas markets for

Hawaiian product are limited because of phytosanitary restrictions on imports to the U.S. mainland and strong competition by regional producers in Asian markets. Production statistics for other producers, namely **Vietnam** and **Honduras**, are not available.

EXPORTS

Most official national trade statistics do not provide details on imports of rambutan. Therefore, world trade is estimated using export statistics of three of the largest supplying countries: Thailand (1992, fresh and canned), Malaysia (1991, fresh), and Indonesia (1992, fresh). Tables 1 and 2 itemize by importer the canned and fresh exports of all three countries by volume and value, respectively.

Total annual exports for fresh and canned rambutan from these three suppliers was \$3.9 million (f.o.b.) in 1991/1992, composed of \$1.9 million of fresh product (3,691 MTs) and \$2.0 million of canned product (1,558 MTs).

Thailand is the world's largest exporter of canned rambutan, and exported only slightly less fresh product in 1992 than Malaysia did in 1991. Although Malaysia is the largest exporter of fresh product, 99 percent of its exports in 1991 (1,726 MTs) were destined for Singapore. Thailand exported its 1,700 MTs to several destinations: Malaysia (45 percent), Singapore (32 percent), Laos (10 percent), Hong Kong (5 percent), and Taiwan (4 percent). Thai exports have more than tripled since 1982.

Unlike Malaysia and Thailand, which send exports mainly to nearby consuming nations, Indonesia sends the vast majority of its exports of 265 MTs to distant markets, most notably those of the United Arab Emirates (51 percent) and the Netherlands (41 percent).

MARKETS

Because of its high perishability and its handling difficulty, the markets for fresh rambutan are concentrated in Asia. Markets for canned product are more evenly distributed throughout the world.

Singapore accounted for 61 percent of total apparent world imports of fresh rambutan in 1992 (based on export statistics of Thailand, Malaysia, and Indonesia). Singapore's imports amounted to 2,261 MTs. Malaysia, the largest exporter, was also the second-largest importer of fresh product with 759 MTs (or 21 percent of apparent world imports). Other significant importers of fresh rambutan included Laos (167 MTs, 5 percent of apparent world imports); the United Arab Emirates (161 MTs, 4 percent), the Netherlands (113 MTs, 3 percent), Hong Kong (94 MTs, 3 percent), Taiwan (77 MTs, 2 percent), and the United Kingdom (12 MTs, 0.3 percent). No other country imported more than 10 MTs of fresh product in 1992.

Although the United States imported only 6 MTs of fresh production (according to Thai export statistics) in 1992, it was the largest importer of canned rambutan (371 MTs). Other major importers of canned product included Singapore (212 MTs), Japan (152 MTs), Malaysia (102 MTs), Hong Kong (96 MTs), France (95 MTs), Australia (80 MTs), Saudi Arabia (71 MTs), and the Netherlands (54 MTs). No other country imported more than 50 MTs in 1992, although nine others

imported more than 10 MTs (United Kingdom, Taiwan, Canada, Germany, Cambodia, Indonesia, Sweden, Israel, and Brunei). Worldwide, 50 countries imported canned rambutan from Thailand.

North America

Estimating demand in North America is difficult because statistics are unavailable. However, it is apparent from the export statistics of producing nations that a large amount of canned rambutan is imported by the **United States**.

Thai exports to the United States were estimated at 371 MTs (\$451,500 f.o.b.), making the United States the largest market for canned product from this supplier. Canned rambutan is distributed in the United States mainly through Chinese, Vietnamese, and other ethnic groceries. Rambutan is grown in Hawaii, but it is not exported to the mainland. Fresh rambutan is not permitted into the United States from Southeast Asia, but a limited amount of frozen product does arrive. Fresh rambutan (either thawed or contraband from Canada), retails in Chinatown, New York City, for as much as \$5.00 per pound, a price that reflects the fruit's inaccessibility.

According to Asian export statistics, **Canada** imported just less than 3 MTs of fresh rambutan from Malaysia in 1991. Canadian importers reported receiving production between September and December and in April for restaurants, caterers, and some retailers. Demand from the ethnic market was highest during the summer months. Demand is limited, and there has been little cross-over appeal to the general population. Importers interviewed in 1994 reported receiving some fresh product from Thailand and the Netherlands (re-exports). Primary consumers of rambutan in Canada are the Asian

community (the fastest-growing minority group in Canada) and hotels and caterers, who use the unique fruit for its decorative quality during the holidays. Toronto wholesalers reported prices ranging from C\$4.40-C\$7.50 per kilogram, and Montreal wholesalers reported a similar range (C\$6.00-C\$8.00 per kilogram). Imports of Thai canned rambutan, which supplies the market when fresh product is not available, totaled 35 MTs in 1992.

Europe

The **Netherlands**, because of its colonial experience, has a large population of Indonesians, who are the main consumers of rambutan. The Netherlands was the largest European importer of fresh rambutan in 1992. It imported an estimated 113 MTs, supplied mostly by Indonesia, with small amounts also entering from Thailand, Malaysia, Sri Lanka, and Honduras. The Netherlands also imported 54 MTs of Thai canned rambutan in 1992. The Netherlands is a re-exporter to other European Union members, the Middle East, and to a lesser extent Canada. All the major Dutch specialty importers, including Exotimex, Bud, and FTK, import rambutan. These importers said that they paid \$3.50-\$5.00 per kilogram for landed product. Although Indonesian and Thai product is available year-round, importers supplemented their summer supply with product from Malaysia and Sri Lanka. Importer prices for 1993-1994 reported by the International Trade Centre (ITC) of the United Nations (Table 3) show importers selling rambutan from Indonesia and Thailand for between Hfl9.00 and Hfl13.00 per kilogram, with an average price of Hfl 10.00 per kilogram (\$5.50). Honduran product arrived in January and March of 1994, and was sold for between \$1.80 and \$2.50 per kilogram.

France, with its large Vietnamese, Cambodian, and Thai populations, led the list of European importers of Thai rambutan in 1992, although most of this volume is canned. Producing nations reported exports of fresh rambutan to France in 1992 at only 5.5 MTs, almost all of which was sourced from Indonesia, with some also entering from Thailand. These statistics reflect only a portion of the fresh market, however; France also obtains imports from Vietnam from May to October. Canned rambutan imports from Thailand stood at 95 MTs (\$128,600 f.o.b.) in 1992. French importers sell fresh product for an average of FF42 (\$8.09) per kilogram (see Table 3). The highest prices paid in the last year were during May and June, when the average price was FF48 (\$9.24) per kilogram.

According to Thai statistics for 1992, the **United Kingdom** was the largest European importer of fresh Thai rambutan in that year (8.2 MTs) and imported 1.8 MTs from Malaysia. U.K. imports of canned product from Thailand amounted to just less than 40.5 MTs (valued at \$77,100 f.o.b.). Indonesia, since 1992, has also been supplying the U.K. market. British importers complain that high airfreight charges and perishability prevent them from supplying rambutan, a complaint echoed by importers in other countries. Importer selling prices ranged from £4.50 per kilogram to £6.25 per kilogram, and Thai product was sold for an average of £6.00 per kilogram (\$9.20), according to 1993/1994 ITC price reports (see Table 3).

Middle East

The oil-producing countries of the Middle East count thousands of Southeast Asians among their guest-worker populations, and import rambutan mainly for these consumers.

The **United Arab Emirates** was the largest importer of fresh rambutan from Indonesia in 1992 (133.7 MTs) and also received 26.2 MTs and 0.6 MTs from Thailand and Malaysia, respectively. According to the Market News Service of the ITC (see Table 4), importer selling prices varied between Dh12.00 and Dh20.00 per kilogram (currently \$1.00=Dh 3.68). In general, Indonesian product imported between November and April sells for Dh12.00-Dh14.00 per kilogram, whereas Thai product imported between May and November sells for Dh16.00-Dh20.00 per kilogram.

Table 4 also shows that **Kuwait** receives most of its product from Australia, the Netherlands (re-exports), and Malaysia. Australian product was sold by importers for KD3.00-KD4.75 per kilogram, although since May the price has been relatively stable at KD3.50 per kilogram (currently \$1.00=KD 0.30). Dutch-supplied product sold for KD2.70-KD4.75 per kilogram in 1994, with prices normally in the KD3.00-KD3.50 per kilogram range. Importers sold Malaysian rambutan for KD2.25-KD4.40 per kilogram (mostly KD2.75-KD3.00 per kilogram) between July and October.

Thailand is the largest supplier of rambutan to **Bahrain**, providing 6.2 MTs of fresh product in 1992. ITC reports importer selling prices for Australian rambutan in Bahrain for 1993/1994 mostly at BD4.00 per kilogram (currently \$1.00=BD 0.38). Indonesia and Malaysia also occasionally supply this market, with prices ranging from BD1.50 to BD2.50 per kilogram. Thai rambutan was sold by Bahrain importers for BD2.00-BD3.20 per kilogram (mostly BD2.00-BD2.50 per kilogram).

Saudi Arabia imported 8.7 MTs from Indonesia (5.2 MTs), Thailand (1.3 MTs), and Malaysia (2.3 MTs) in 1992. Saudi Arabia also imported

71.0 MTs of canned Thai product in 1992.

Asia

Trade in rambutan is concentrated in Asia, where consumers (principally Thai, Malay, and ethnic Chinese) are most familiar with the fruit. Malaysia and Laos, Thailand's neighbors, were the first- and third-largest importers of fresh Thai rambutan in 1992, with large amounts also sent to Singapore, Hong Kong, and Taiwan. Singapore and Japan were the second- and third-largest importers of canned Thai product, respectively. Thai export statistics for the first six months of 1993 show Hong Kong imports of canned product at almost 200 MTs, double the amount for all of 1992, and imports by China, negligible in 1992, jumped to 100 MTs for the same period.

Singapore is the largest importer of fresh rambutan in the world, importing 1,710 MTs from Malaysia in 1991 and 550 MTs from Thailand in 1992. Singapore receives supply from both Thailand and Malaysia packed in rattan baskets. Australia ships some product by air to Singapore during the off season in single-layer, five-kilogram cartons, but its price is too high for many importers. Thai rambutan, by contrast, is quite inexpensive. Importers and wholesalers at Pasar Panjing Wholesale Market report that wholesale prices range from S\$20-S\$25 per 15-kilogram carton, or \$0.95-\$1.20 per kilogram. Singapore was the second largest market for Thai canned rambutan, importing 212 MTs in 1992.

Taiwan imported 77.2 MTs of fresh rambutan from Thailand (74.3 MTs), Indonesia (2.3 MTs), and Malaysia (0.7 MTs) in 1992 figure for (figures do not add because of rounding). Taipei importers sell Thai rambutan for \$1.50-\$2.00 per kilogram.

Taiwan imported 40 MTs of canned rambutan from Thailand in 1992.

Hong Kong imported 94 MTs of fresh and 96 MTs of canned rambutan in 1992. Thailand supplied the majority (90 MTs) of fresh imports, and a small amount (4 MTs) entered from Malaysia. In April 1994, observers reported Thai product selling at \$2.50 per kilogram.

Japan imported only 8 MTs of fresh rambutan in 1992, supplied by Indonesia (6 MTs) and Thailand (2 MTs). Japan, however, was the third-largest market for canned rambutan from Thailand, importing 152 MTs in 1992.

EXPORT GRADES AND STANDARDS

There are no formal published grades for international trade in fresh rambutan, although export markets have similar importer preferences. Draft standards for Thai rambutan (Rong-rien and Sea-chompoo varieties) were developed by the Chanthaburi Horticultural Research Center (see Table 5). Only the highest-quality fruit should be exported. Following are general standards obtained through published technical articles and interviews with importers in Asia, Europe, and the United States. Exporters should follow specific guidelines provided by their importers.

General: Free of bruises and other defects, insects, and disease; clean; attractive "hairs" (spinterns)

Size: Medium to large (generally greater than 30 grams each)

Stem: Not more than 1 centimeter in length

Color: Good red color

Internal: Thick, firm aril that easily separates from seed; small seed; 18 percent soluble solids

Packing: Bamboo baskets used within ASEAN region; extraregional exports should be in corrugated fiberboard cartons (3.5-10.0 kilograms in capacity) for better appearance and protection.

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Table 1: Rambutan Exports of Thailand, Malaysia, and Indonesia, by Volume, 1991 and 1992 (kg)

| Exporter Importer | Thailand (1992) | | Malaysia (1991) | Indonesia (1992) | Total Fresh |
|----------------------------|------------------|------------------|------------------|------------------|------------------|
| | Canned | Fresh | Fresh | Fresh | |
| Australia | 79,860 | | | | |
| Austria | 978 | | | | |
| Bahrain | 1,901 | 6,176 | | | 6,176 |
| Belgium | 5,839 | 2,907 | | 1,640 | 4,547 |
| Brazil | 339 | | | | |
| Brunei | 11,857 | 489 | | | 489 |
| Burma | 6,670 | | | | |
| Canada | 35,234 | | 2,610 | | 2,610 |
| Chile | 136 | | | | |
| China | 5,443 | | | | |
| Cyprus | 1,018 | | | | |
| Denmark | 4,274 | 134 | | | 134 |
| Finland | 2,710 | 1,716 | | | 1,716 |
| France | 94,912 | 206 | | 5,287 | 5,493 |
| Fr.Polynesia | 814 | | | | |
| Gabon | 1,550 | | | | |
| Germany | 24,515 | 1,931 | | | 1,931 |
| Greece | 1,230 | | | | |
| Hong Kong | 96,365 | 89,533 | 4,000 | | 93,533 |
| Iceland | 2,097 | | | | |
| India | | | 200 | | 200 |
| Indonesia | 17,146 | | | | |
| Israel | 12,950 | | | | |
| Italy | 4,204 | | | | |
| Côte d'Ivoire | 407 | | | | |
| Jamaica | 814 | | | | |
| Japan | 152,224 | 2,104 | | 6,000 | 8,104 |
| Kampuchea | 24,504 | | | | |
| Kuwait | 1,356 | | | 96 | 96 |
| Laos | 3,204 | 166,600 | | | 166,600 |
| Macau | 68 | | | | |
| Malaysia | 101,921 | 758,640 | | | 758,640 |
| Maldives | 3,051 | | | | |
| Netherlands | 53,783 | 3,591 | 1,800 | 107,245 | 112,636 |
| New Caledonia | 1,627 | | | | |
| New Zealand | 7,601 | | | | |
| Norway | 8,379 | | | | |
| Oman | 606 | | | | |
| Papua New Guinea | 160 | | | | |
| Philippines | 4,068 | | | | |
| Saudi Arabia | 71,181 | 1,295 | 2,280 | 5,163 | 8,738 |
| Sierra Leone | | | 250 | | 250 |
| Singapore | 211,849 | 550,000 | 1,710,440 | 700 | 2,261,140 |
| South Africa | 54 | | | | |
| Spain | 1,153 | | | | |
| Sweden | 14,991 | | | | |
| Switzerland | 9,204 | 40 | 160 | 740 | 940 |
| Syria | | | | 102 | 102 |
| Taiwan | 39,855 | 74,281 | 660 | 2,271 | 77,212 |
| Thailand | | | 1,970 | | 1,970 |
| USA | 371,168 | 5,775 | | | 5,775 |
| J.A.E. | 7,594 | 26,243 | 630 | 133,709 | 160,582 |
| J.K. | 40,477 | 8,231 | 1,840 | 1,560 | 11,631 |
| J.S. Pacific Isl.Territory | 407 | | | | |
| J.S.S.R. | 5,075 | | | | |
| Other | 9,021 | | | | |
| Total | 1,557,844 | 1,699,892 | 1,726,840 | 264,513 | 3,691,245 |

Source: Government statistical reports

Table 2: Rambutan Exports of Thailand, Malaysia, and Indonesia, by Value, 1991 and 1992 (\$)

| Exporter Importer | Thailand (1992) | | Malaysia (1991) | Indonesia (1992) | Total Fresh |
|-----------------------------|------------------|----------------|------------------|------------------|------------------|
| | Canned | Fresh | Fresh | Fresh | |
| Australia | 105,509 | | | | |
| Austria | 1,834 | | | | |
| Bahrain | 2,552 | 3,166 | | | 3,166 |
| Belgium | 7,791 | 3,519 | | 4,185 | 7,704 |
| Brazil | 463 | | | | |
| Brunei | 18,084 | 248 | | | 248 |
| Burma | 5,924 | | | | |
| Canada | 44,806 | | 19,629 | | 19,629 |
| Chile | 209 | | | | |
| China | 7,808 | | | | |
| Cyprus | 1,335 | | | | |
| Denmark | 6,544 | 481 | | | 481 |
| Finland | 3,778 | 918 | | | 918 |
| France | 128,610 | 105 | | 11,673 | 11,778 |
| Fr.Polynesia | 1,150 | | | | |
| Gabon | 2,817 | | | | |
| Germany | 34,575 | 4,879 | | | 4,879 |
| Greece | 1,619 | | | | |
| Hong Kong | 134,681 | 26,142 | 5,850 | | 31,992 |
| Iceland | 2,851 | | | | |
| India | | | 1,510 | | 1,510 |
| Indonesia | 19,696 | | | | |
| Israel | 16,271 | | | | |
| Italy | 4,506 | | | | |
| Côte d'Ivoire | 584 | | | | |
| Jamaica | 1,423 | | | | |
| Japan | 201,235 | 4,539 | | 5,880 | 10,419 |
| Kampuchea | 34,212 | | | | |
| Kuwait | 1,625 | | | 124 | 124 |
| Laos | 5,661 | 63,962 | | | 63,962 |
| Macau | 155 | | | | |
| Malaysia | 101,311 | 147,672 | | | 147,672 |
| Maldives | 3,858 | | | | |
| Netherlands | 70,851 | 6,347 | 8,654 | 166,175 | 181,176 |
| New Caledonia | 2,677 | | | | |
| New Zealand | 10,835 | | | | |
| Norway | 13,261 | | | | |
| Oman | 676 | | | | |
| Papua New Guinea | 240 | | | | |
| Philippines | 5,987 | | | | |
| Saudi Arabia | 76,895 | 1,078 | 9,732 | 9,904 | 20,714 |
| Sierra Leone | | | 2,048 | | 2,048 |
| Singapore | 274,547 | 53,204 | 944,065 | 373 | 997,642 |
| South Africa | 94 | | | | |
| Spain | 1,807 | | | | |
| Sweden | 24,079 | | | | |
| Switzerland | 14,589 | 181 | 624 | 2,062 | 2,867 |
| Syria | | | | 168 | 168 |
| Taiwan | 53,233 | 84,110 | 4,803 | 3,000 | 91,913 |
| Thailand | | | 11,040 | | 11,040 |
| USA | 451,463 | 7,289 | | | 7,289 |
| U.A.E. | 10,638 | 16,958 | 2,996 | 206,822 | 226,776 |
| U.K. | 77,104 | 5,031 | 15,593 | 3,977 | 24,601 |
| U.S. Pacific Isl. Territory | 622 | | | | |
| U.S.S.R. | 6,377 | | | | |
| Other | 13,368 | | | | |
| Total | 2,012,819 | 429,829 | 1,026,544 | 414,343 | 1,870,711 |

Source: Government statistical reports

Table 3: European Importer Selling Prices for Fresh Rambutan, 1993-1994

| Importer: | France (FF/kg) | | Germany (DM/kg) | Netherlands (Hfl/kg) | | | UK (£/kg) | | | |
|-----------|----------------|----------|-----------------|----------------------|-----------|-----------|-----------|-----------|----------|----------|
| | Indonesia | Thailand | Vietnam | Thailand | Indonesia | Sri Lanka | Thailand | Indonesia | Malaysia | Thailand |
| 1993 | | | | | | | | | | |
| Nov 4 | | | | 9.50 (a) | 10.00 | | | | | 6.00 |
| Nov 18 | | | | | | | | | | |
| Nov 25 | 40.00 | | | 12.00 (a) | 9.75 | | | | | 6.00 |
| Dec 2 | 37.00 | | | | 10.00 | | | | | 6.00 |
| Dec 9 | | | | | | | | | | |
| Dec 16 | | | | | | | | | | |
| Dec 23 | | | | | | | | | | |
| Dec 30 | | | | | | | | | | |
| 1994 | | | | | | | | | | |
| Jan 6 | | | | | | | | 6.25 | | |
| Jan 13 | | | | | 9.50 | 5.50 (b) | | | | |
| Jan 20 | 36.50 | | | | 9.50 | | | | | |
| Jan 27 | 36.50 | | | | 9.50 | | | | | 6.00 |
| Feb 3 | | | | | 9.50 | | | | | 6.00 |
| Feb 10 | 39.00 | | | | 9.50 | | | | | 5.00 |
| Feb 17 | 39.00 | | | | 9.50 | | | | | 6.00 |
| Feb 24 | | | | | | | | | | |
| Mar 3 | | | | | | | | | | |
| Mar 10 | 37.00 | | | | 10.00 | 4.00 (b) | | | | 6.00 |
| Mar 17 | 40.00 | | | | 10.00 | | | 6.00 | | |
| Mar 23 | | | | | | | | | | |
| Mar 31 | | | | | 9.50 | | 9.85 | 6.00 | | |
| Apr 7 | | | | | 9.50 | | | | | |
| Apr 14 | | | | | 9.00 | | | | | 6.00 |
| Apr 21 | | | | | | | | | | |
| Apr 28 | | 38.00 | | | 9.25 | | | | | 6.00 |
| May 5 | | | | | | | | | | |
| May 13 | | 50.00 | | | | | | | | 5.25 |
| May 19 | | 36.00 | 48.00 | | | | | | | 5.50 |
| May 25 | | 51.00 | 49.00 | | 10.00 | | 10.00 | | | 6.00 |
| Jun 1 | | | | | 10.00 | | 12.00 | | | 5.00 |
| Jun 9 | | 46.00 | | 12.00 | 10.00 | | 12.00 | | | 6.00 |
| Jun 15 | | 52.00 | | 12.25 | 11.50 | | 11.25 | | | 6.00 |
| Jun 22 | | 52.00 | | | | | | | | 6.00 |
| Jun 29 | | | | | | | | | | |
| Jul 6 | | | | | | | 11.50 | 4.50 | | |
| Jul 14 | | | 40.00 | | 11.00 | | 11.50 | 4.50 | | |
| Jul 21 | | | | | | | | | | |
| Jul 28 | | | 40.00 | | | | 9.50 | 5.00 | | 6.00 |
| Aug 3 | | | 40.00 | | | | 10.00 | | 5.00 | 6.00 |
| Aug 8 | | | | | 10.00 | | 10.25 | 4.50 | | 5.50 |
| Aug 17 | | | 41.00 | | | 10.00 | 9.50 | | | 6.00 |
| Aug 24 | | | 41.00 | | | 11.00 | 10.50 | | | 5.00 |
| Aug 31 | | | 41.00 | 11.50 | | 10.50 | 11.00 | | | 5.00 |
| Sep 7 | | | 40.00 | | | 11.00 | 11.80 | | | 6.00 |
| Sep 14 | | 40.00 | | | | | 11.00 | | | 4.50 |
| Sep 22 | | 40.00 | | 11.25 | | | | 5.00 | | 5.00 |
| Sep 28 | | | | | | | 11.50 | 6.00 | | 6.00 |
| Oct 5 | | | 40.00 | | | | 13.00 | | | 6.00 |
| Oct 13 | | | | | | | 12.25 | 5.50 | | |
| Oct 20 | 40.00 | | 40.00 | | | | 13.00 | 6.00 | | 6.00 |
| Nov 3 | | | | | | | | | | 5.50 |
| Nov 11 | | | | | 11.50 | | | | | |

(a) Indonesia
 (b) Honduras
 (c) Malaysia
 Source: ITC/MNS

Table 4: Middle East Importer Selling Prices for Fresh Rambutan, 1993-1994

| Importer: | UAE (Dirham/kg) | | Qatar (Riyal/kg) | | Bahrain (Dinar/kg) | | | Kuwait (Dinar/kg) | | |
|-----------|-----------------|----------|------------------|----------|--------------------|-----------|----------|-------------------|----------|-------------|
| | Indonesia | Thailand | Indonesia | Thailand | Australia | Indonesia | Thailand | Australia | Malaysia | Netherlands |
| 1993 | | | | | | | | | | |
| Nov 10 | | | | | 4.80 | | 2.30 | 3.50 | | |
| Nov 17 | | | | | | | | | | |
| Nov 24 | 19.00 | | | | 4.00 | 2.50 (c) | | 3.50 | | |
| Dec 1 | 14.00 | | | | 4.00 | | | | | |
| Dec 9 | 16.00 | 12.00 | | | | | 2.40 | | | |
| Dec 16 | | 12.00 | | | 4.00 | | 2.75 | 3.25 | | |
| Dec 23 | | | | | | | | | | |
| Dec 30 | | | | | | | | | | |
| 1994 | | | | | | | | | | |
| Jan 6 | | | | | | | | | | |
| Jan 12 | 13.00 | | | | 4.00 | | 2.75 | | | |
| Jan 19 | 12.00 | | | | 4.00 | | 2.75 | 3.25 | | |
| Jan 26 | 12.00 | | | | | 2.25 | | | | 3.40 |
| Feb 2 | 14.00 | | | | | | 2.30 | | | 4.00 |
| Feb 9 | 15.00 | | | | | | 2.30 | 4.75 | | |
| Feb 17 | 13.00 | | | | | | 2.30 | | | 3.75 |
| Feb 23 | 13.00 | | | | | | 2.40 | | | 3.50 |
| Mar 2 | 13.00 | | | | | | 2.40 | 3.40 | | 4.75 |
| Mar 8 | 13.00 | | | | | | 2.30 | | | 4.00 |
| Mar 17 | | | | | | | | | | |
| Mar 23 | | | | | | 1.50 | 2.50 | 3.25 | | |
| Mar 30 | 16.00 | | | | | 1.75 | 2.00 | | | 3.15 |
| Apr 5 | | | | | | | | | | |
| Apr 12 | 18.00 | | | | | 1.75 | 2.00 | 4.25 | | 3.00 |
| Apr 19 | 12.00 | | | | | | 2.25 | | | 4.75 |
| Apr 26 | | | | | | | | | | |
| May 3 | 12.00 | | | | | | 2.25 | 3.50 | | 3.50 |
| May 11 | | 18.00 | | | | | 2.00 | 3.50 | | 3.00 |
| May 18 | | 16.00 | | | | | 2.00 | | | 2.70 |
| May 25 | | | | | | | 2.25 | | | |
| May 31 | | 18.00 | | | | | 2.00 | | | 3.50 |
| Jun 9 | | 18.00 | | | | | 2.00 | 3.50 | | 3.25 |
| Jun 14 | | 18.00 | | | | | 2.00 | 3.50 | | 3.50 |
| Jun 21 | | 20.00 | | | | | 2.20 | 3.50 | | 3.00 |
| Jun 29 | | 18.00 | | | | | 2.20 | 3.50 | | 3.00 |
| Jul 6 | | | | | | | | | | |
| Jul 13 | | 18.00 | | | | | 2.20 | 3.25 | | 3.50 |
| Jul 21 | | | | | | | | | | |
| Jul 27 | | 18.00 | | | | | 2.10 | 3.00 | 3.00 | |
| Aug 3 | | | | | | | | | | |
| Aug 10 | | 18.00 | | | | | 2.20 | 3.50 | 2.75 | |
| Aug 16 | | 18.00 | | | | | 3.20 | 3.50 | 3.10 | |
| Aug 23 | | 16.00 | | | | | 2.20 | | 3.00 | |
| Aug 30 | | 16.00 | | | | | 2.20 | | 3.00 | |
| Sep 6 | | | | | | | | | | |
| Sep 13 | | | | | | | | | | |
| Sep 20 | | 16.00 | | | | | 2.50 | | 4.00 | |
| Sep 27 | | 16.00 | | | | | | | 2.25 | |
| Oct 4 | | 17.00 | | | | | | | 2.80 | 4.75 |
| Oct 11 | | | | | | | | | 4.40 | 3.50 |
| Oct 18 | | 16.00 | | | | | | 3.50 | 2.60 | 3.50 |
| Oct 25 | | | | | | | | 3.50 | | |
| Nov 2 | 16.00 | | | | | 4.00 | | 3.50 | | |
| Nov 9 | 13.00 | | | | | 2.50 | | 3.50 | | |

(a) Indonesia
 (b) Honduras
 (c) Malaysia
 Source: ITC/MNS

Table 5: Draft Thai Standards for Rong-rien and Sea-chompoo Rambutan Varieties

| Standard | Class | | |
|--|---|---|---|
| | Extra | I | II |
| <u>External</u> Fruit appearance No. of fruit per kg | true to type not to exceed 25 (28)* | true to type not to exceed 28 (32)* | true to type not to exceed 32 (36)* |
| <u>Plant health</u> | <ul style="list-style-type: none"> • free from disease and insects • slight defects not affecting the general appearance of the fruit or the internal quality | <ul style="list-style-type: none"> • free from disease and insects • slight defects not exceeding 10% by number | <ul style="list-style-type: none"> • free from disease and insects • slight defects not exceeding 10% by number |
| <u>Color</u> | uniform and true to type | uniform and true to type | uniform and true to type |
| <u>Spoiled fruit</u> | none | none | none |
| <u>Remarks:</u> | <p>All classes should be bright in color and have fresh spinterns.</p> <p>Extra class: 5 percent by number or weight of rambutan not satisfying the requirements of the class but meeting "Class I"</p> <p>Class I: 5 percent by number or weight of rambutan not satisfying the requirements of the class but meeting "Class II"</p> <p>* Number in parentheses is for Sea-chompoo variety; other number is for Rong-rien variety.</p> | | |

The RAP Market Information Bulletin is produced monthly by the USAID-funded Asia Regional Agribusiness Project (RAP), implemented by Development Alternatives, Inc. (DAI). The bulletin provides information on competitors, importers, and prices for selected fresh horticultural products produced in developing Asian countries. This issue was written by Bob Galinsky of Fintrac Inc. and Tom Klotzbach, RAP Market Information Specialist. The price of this and each subsequent issue is \$10; an annual subscription costs \$100, which includes a three-ring binder for storing the bulletins. To subscribe to the RAP Market Information Bulletin or other market information products of RAP (including our *Market Asia* newsletter), contact Tom Klotzbach, RAP Market Information Specialist, Development Alternatives, Inc., 7250 Woodmont Avenue, Suite 200, Bethesda, MD 20814 USA (Tel.: 301-215-7014, Fax: 301-907-2655).

FRESH ASPARAGUS

PRODUCTION

Asparagus has traditionally been a Northern Hemisphere crop. However, it is now grown in the Southern Hemisphere as well, as many developing countries in the last decade have dramatically increased production to take advantage of the growing market for this high-value vegetable crop. It is estimated that more than 140,000 hectares worldwide are devoted to asparagus production, with 40 percent of this total in Europe, 31 percent in North America, 14 percent in Asia, and the remainder in South America and Africa.

North America

The **United States**, whose production is centered on green varieties, is the world's largest producer of asparagus. In 1993, 99,970 metric tons (MTs) were harvested on 4,000 hectares. This amount represents a decline of almost 1,000 MTs from the previous year, resulting from reduced acreage. Fifty-six percent (56,840 MTs) of total production was for the fresh market in 1993, continuing the steady decline of fresh supply since 1989. Most production is concentrated in California. U.S. exports have been increasing steadily, from 4,201 MTs (US\$10.7 million) in 1988 to 21,253 MTs (US\$21.3 million) in 1993. Forty-six percent of 1993 exports were destined for Canada, followed by Japan (36 percent), the European Union (9 percent), and Switzerland (8 percent).

Canadian production, much smaller than that of the United States, is also based on green spears. Canada has also witnessed a decline in production during the past five years, with 1992 production at 3,185 MTs, about half of which was for fresh consumption.

Mexico produced 30,500 MTs of asparagus in 1993, with 1994 estimates at 32,000 MTs. Most production is in green varieties. Mexico exports fresh asparagus primarily to the United States during the winter, but also ships product to Canada, Europe, and Asia. The Mexican season begins in August and continues until March, peaking in January and February.

Central and South America

Several Central American countries have begun asparagus production during the last decade. **Guatemala** is the leading producer, with 800 hectares in production. **Costa Rica**

is the second-largest producer in Central America, with 160 hectares in production.

Peru is officially the second-largest asparagus producer in the world, but, when final production statistics for 1994 are released, Peru may well have overtaken the United States. Peru produced 97,322 MTs on 16,370 hectares in 1993, and is forecast to produce 103,000 MTs in 1994. An estimated 95 percent of total production goes to export (both processed and fresh), making Peru the largest asparagus exporter in the world. Peru produces green and white asparagus. Most of the green varieties are sold on the U.S. market. Europe imports fresh green asparagus from Peru as well, but most European imports are of white asparagus (fresh, frozen, or canned). The Peruvian season begins in September and ends in March.

Chilean production is estimated at 17,000 MTs for the 1993/94 season, more than 95 percent of which is of green spears. Fifty-five percent of



green spears. Fifty-five percent of Chile's production is exported in fresh or frozen form. Most Chilean exports are destined for the United States, followed by Europe and Asia. Chile exports frozen and canned, as well as fresh, asparagus. Planting area has decreased in Chile about 40 percent in the last three years because of competition from Peru.

Argentina had about 1,500 hectares under asparagus production in 1991, and plantings have reportedly increased since that time. Argentina's production has shifted from white to green asparagus for the fresh market. The harvest lasts from mid-August through December.

Europe

Spain produced 86,000 MTs of asparagus in 1993, of which 23,000 MTs were exported in fresh form. Spain produces white and green asparagus; two-thirds of the white product is processed, whereas most of the green is sold fresh. Spain replaced France as the largest supplier of fresh asparagus to other European Union (EU) countries five years ago, and has held this position ever since. The Spanish season lasts from March until June, with 80 percent of total production harvested in April and May.

Greece is the second-largest supplier of fresh asparagus to the EU market. Production is about 10,000 MTs on 2,900 hectares, and is mostly in white varieties. The Greek season runs concurrently with the Spanish season, from March to June.

The **Netherlands** was the third-largest supplier of fresh asparagus to other EU countries in 1992, supplying them with 8,158 MTs of product. Ninety-seven percent of production is in white varieties, but

green asparagus production has been on the rise. The Netherlands is experimenting with glasshouse production during the winter months.

France produces about 50,000 MTs of asparagus annually, 90 percent of which is white. Overall planting area has decreased in recent years, although plantings in southern France have been increasing. France exported 5,704 MTs of asparagus to other EU countries in 1992.

Africa

South Africa is the largest producer of asparagus in Africa, with about 3,000 hectares of mostly white spears. South Africa exports fresh asparagus to Europe from September until January and to the Middle East during the period October-March. **Morocco** sends almost as much fresh asparagus to Europe as South Africa (566 MTs), while **Egypt**, **Zimbabwe**, **Zambia**, and **Tunisia** export less than 100 MTs each to EU countries.

Asia

China is the largest producer of asparagus in Asia, although production estimates are unavailable.

Taiwan produced 7,951 MTs of fresh asparagus on 1,525 hectares in 1993, but production has been declining rapidly over the last 10 years (production in 1989 and 1985 was 25,092 MTs and 62,068 MTs, respectively). Historically, 60 percent of Taiwanese production was of white asparagus, and most was processed for the export market.

Thailand grows both green and white asparagus and supplies the Japanese and European markets with the whole gamut of asparagus

products: green and white, fresh and processed, whole and tips.

Indonesia produces about 2,100 MTs of asparagus per year, 60 percent of which is white.

Japan has 10,000 hectares of asparagus planted, 85 percent of which is green and the remainder, white.

The **Philippines** grows mostly green asparagus on 1,000 hectares; with most production exported to Japan in fresh form.

Australia and **New Zealand** each has about 3,000 hectares of green asparagus in production, with most exports destined for Japan. Their seasons run from September through January.

MARKETS

North America

U.S. imports have risen from 23,780 MTs (US\$38.6 million) to 31,439 MTs (US\$49.7 million) over the period 1991-1993, with imports for the first nine months of 1994 totaling 23,723 MTs (US\$42.6 million). In 1993, Mexico supplied 73 percent of the total import market, followed by Peru (18 percent) and Chile (5 percent). Other suppliers that shipped more than 100 MTs in 1993 to the United States include Guatemala, Argentina, and Ecuador.

Fifty-five percent of all imports entered during January-March 1993, with nearly a quarter of annual imports entering in February. Most of the remainder of imports enter during the last six months of the year. Mexico was the only country to supply the U.S. market in every month in 1993, with 72 percent entering during January-March. Eighty-four percent of Peruvian exports to the United

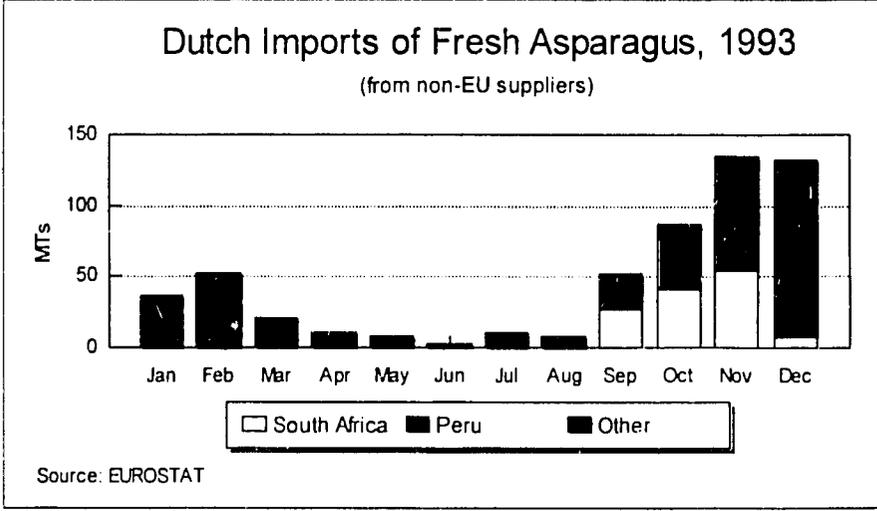
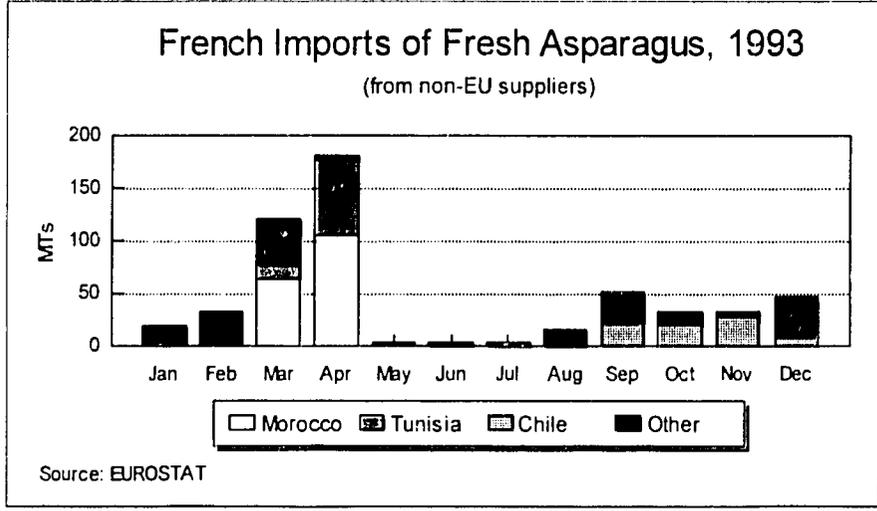
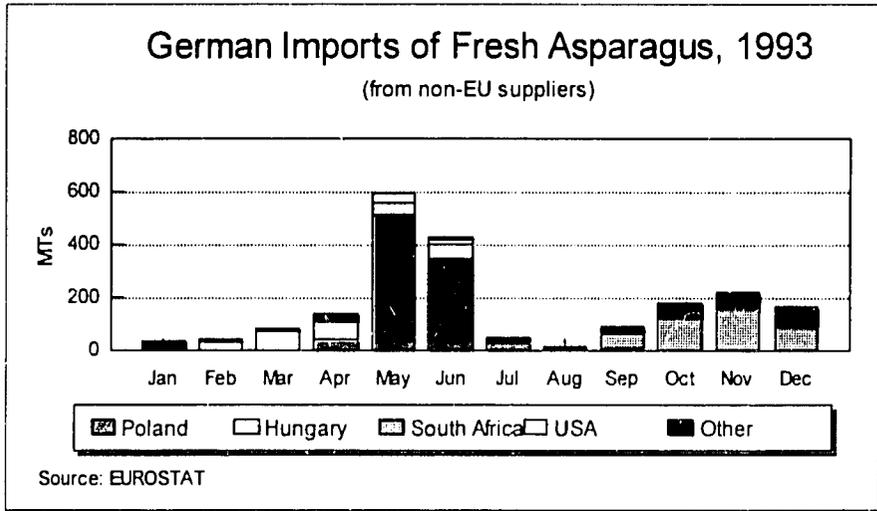
States entered between September and December, while 87 percent of Chilean supply entered in October and November.

New York wholesale prices for 11-pound boxes of foreign supplied green asparagus ranged from \$10.50 to \$33.00. During the peak import period (August-February), prices ranged from \$15.00 to \$33.00, mostly \$20.00-\$25.00 per 11-pound box. Pyramid cartons from Mexico sold for between \$29.00 and \$37.50 each in February and March.

Europe

Most European countries source their asparagus import requirements from Spain and Greece, and the large growth in the asparagus import market between 1988 and 1992 (from ECU 117 million to ECU 180 million) has been mostly the result of increased supplies by these two countries. The main Spanish and Greek seasons run concurrently, from March to June, and it is during this time period (especially during April and May) that EU fresh asparagus imports are at their highest levels. Europeans generally prefer asparagus with large stalks, and (with the exception of the United Kingdom) have traditionally consumed white, rather than green, asparagus. However, green asparagus in the last five years has been making inroads to the mainland European market, to the point where most off-season fresh asparagus imports are of green varieties.

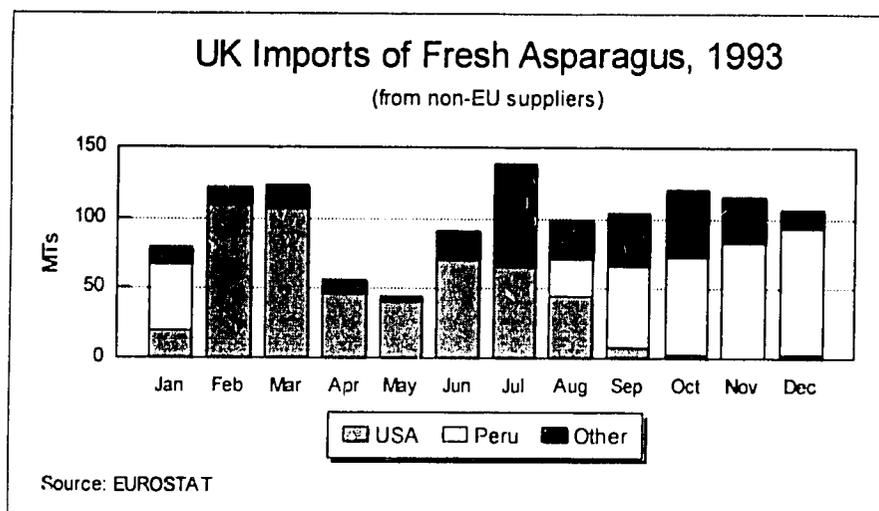
Between 1988 and 1993, imports from non-EU suppliers have increased from 4,828 MTs (ECU 14 million) to 5,931 MTs (ECU 17.9 million), although imports from these sources continue to represent only a fraction of total EU trade in fresh asparagus. The growth in imports from non-EU suppliers was fueled



by increased exports to Europe by Peru, Morocco, and Poland. Thailand has also found a niche in the EU, increasing its asparagus export earnings to this market from ECU 91,000 to ECU 920,000 over the past six years. Other off-season

suppliers include South Africa, Mexico, Guatemala, Ecuador, and Zimbabwe.

Germany is a large producer, consumer, and importer of asparagus. The U.S. Department of



Agriculture estimates that less than half of all German consumption of asparagus is met by domestic production. Most Germans still prefer white asparagus to green, but U.S. and other suppliers are actively marketing green asparagus in Germany. Germany imported 38,027 MTs of fresh asparagus in 1992 (ECU 136 million), a substantial increase over 1988, when 26,328 MTs (ECU 90 million) were imported. Imports from non-EU suppliers increased 660 MTs from 1988 to 1993, although 1993 imports of 2,025 MTs were less than the 2,420 MTs imported the previous year. In 1993, Germany received about half (927 MTs) of its non-EU imports from Poland, with an additional 426 MTs supplied by South Africa, and 242 MTs arriving from the United States. German importers sold Chilean green asparagus for between DM9.35/kg and DM10.80/kg between September and December, 1994. Prices for white asparagus from South Africa began the season at DM12.50/kg in September 1994, and ranged between DM6.50/kg and DM10.50/kg during the period October-December.

France is the second-largest EU importer of fresh asparagus, bringing in 6,436 MTs (ECU 17 million) of product in 1992. EU suppliers accounted for 92 percent

of total French imports in 1992. Non-EU suppliers increased exports to France from 209 MTs to 540 MTs over the period 1988-1993. Morocco and Chile, at 173 MTs and 83 MTs, respectively, were the largest non-EU suppliers to the French market in 1993. Other supplying countries whose asparagus exports to France have been steadily increasing include the United States and Peru. French consumers prefer white asparagus, but green varieties are becoming more popular. Green Chilean and Peruvian product began the 1994 season in September at FF40/kg and were selling for FF29/kg in December. White product from Peru sold for FF29/kg in November 1994.

Imports of fresh asparagus from the **Netherlands** tripled between 1988 and 1992, from 430 MTs (ECU 1 million) to 1,310 MTs (ECU 3.3 million), with 25 percent of Dutch imports entering from non-EU members. Imports from non-EU countries have grown from 198 MTs (ECU 552 thousand) in 1988 to 551 MTs (ECU 2 million) in 1993. Peru is the largest non-EU supplier to Holland, followed by South Africa. Thailand, Mexico, Guatemala, and Argentina also export fresh asparagus to the Netherlands. Green asparagus from Peru generally sold for between FL9.50/kg and FL12.60/kg between September and Decem-

ber 1994. Green asparagus from Chile and Argentina was in the same price range. Asparagus tips from Peru and Thailand were also imported, and sold for between FL18.50/kg and FL25.00/kg.

The **United Kingdom** is the only major EU country that imports more asparagus from outside Europe than from other EU countries (72 percent of 1992 imports were supplied from non-EU suppliers), mostly because English consumers prefer green asparagus. Even so, imports of non-EU product have fallen from 1,592 MTs (ECU 4.8 million) in 1988 to 1,195 MTs (ECU 4.3 million) in 1993. Imports from Peru have grown over this time period (from 51 MTs to 377 MTs), as those from the United States have fallen (from 1,006 MTs to 516 MTs). Other suppliers to the British market include Thailand, Mexico, South Africa, and Egypt. British importers sold Peruvian and Mexican product for between £2.80/kg and £4.60/kg in late 1994.

Middle East

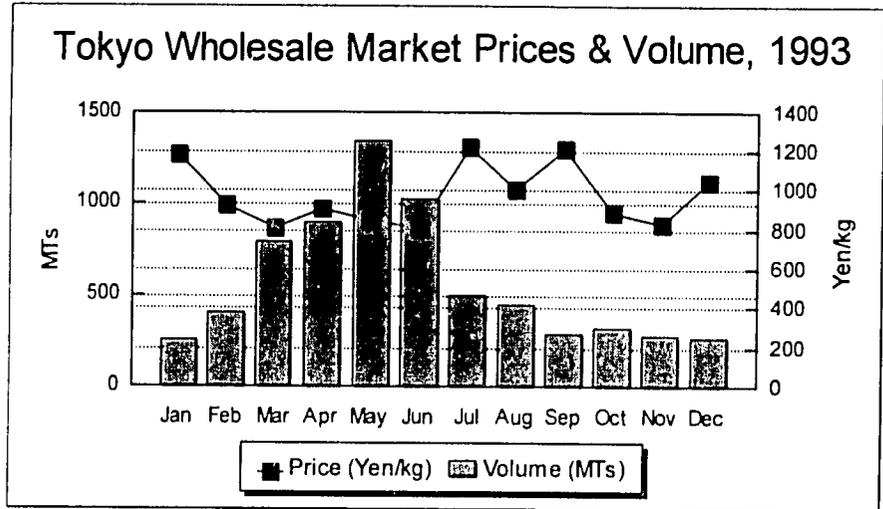
The Middle East is not a large market for asparagus. Dubai, one of the largest import centers for produce in the region, reported receiving only 43 MTs in 1993, and that resulted from unusually heavy imports from Iran. Total value of Dubai imports in 1993 were only about US\$112 thousand. Between January and September 1994, Dubai sourced most of its fresh asparagus from Thailand (18 MTs) and the United States (3 MTs). Other suppliers included France, Spain, Holland, Australia, Kenya, Guatemala and Peru. According to European export statistics, the EU exported only 3 MTs of fresh product to Saudi Arabia and 1 MT to the United Arab Emirates. U.S. export statistics indicate 4 MTs of fresh U.S. asparagus were shipped to Kuwait in 1993.

Importer selling prices in 1994 in the Middle East varied a great deal, from a low of Dh14 (US\$3.78)/kg in Dubai for Australian product in November to a high of R108.00 (US\$30.00)/kg in Qatar for Dutch product in July. Generally, the lowest prices were paid for summer product from Europe and the United States, as well as winter product from Australia. These ranged between US\$5.00/kg and US\$8.00/kg. Higher prices were paid for winter imports from Peru, the United States, and Europe. These prices ranged between US\$9.00/kg and US\$12.00/kg.

Asia

Japan is by far the largest import market for fresh asparagus in Asia, and is one of the largest importers of this product in the world. Japanese consumers prefer green spears. Japan's imports of fresh asparagus have increased from 12,841 MTs (US\$66 million) in 1991 to 18,315 MTs (US\$89 million) in 1993. The largest supplier to the Japanese market is the United States, followed by Australia, the Philippines, Mexico, Thailand, and New Zealand. All these countries sent at least 1,000 MTs of product to Japan in 1993. Japan imports asparagus year-round, and imports are highest during September-April. Japanese production is concentrated during the summer months. Average monthly Tokyo wholesale prices in 1993 ranged from ¥808/kg to ¥1219/kg, with the highest prices recorded during July-September and December-January. Annual throughput of the Tokyo wholesale market system was 6,790 MTs in 1993, up from 6,415 MTs in 1992. Monthly wholesale throughput in Tokyo peaked in May and June, when domestic production is highest.

Taiwan and South Korea are small import markets for asparagus,

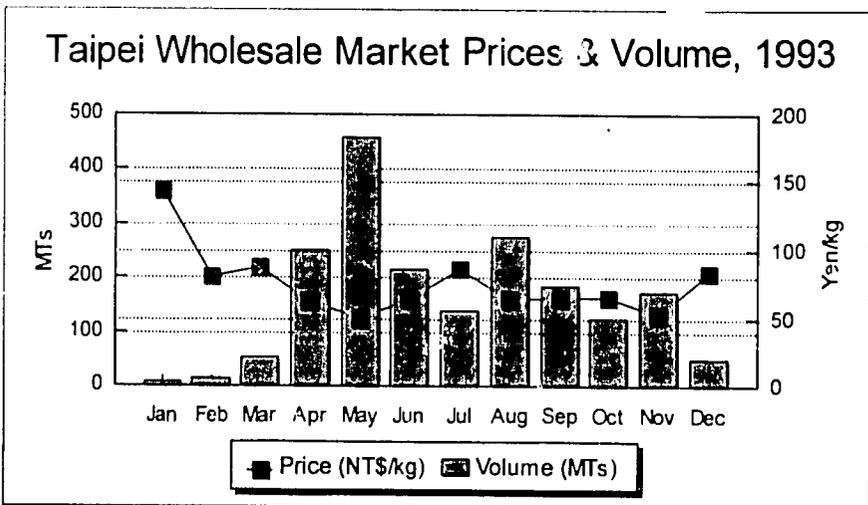


although, with anticipated lowering of tariff and non-tariff barriers in both these countries in the near term, these markets may offer increased opportunities. **Taiwan** imported 16 MTs of fresh asparagus from New Zealand in 1993, worth only US\$25,000 CIF. Average monthly wholesale prices in Taipei ranged from NT\$49/kg to NT\$144/kg, with highest prices generally recorded during the period December-March and in July. Taipei wholesale transactions are highest during the periods April-June and August-September. Wholesale transactions during the period December-March are only a fraction of what they are during the in-season. **South Korea** imported 35 MTs (US\$178,000) of product in 1993, mostly from the United States.

GRADES AND STANDARDS

The UN/ECE Standard (FFV-04) for fresh asparagus applies to shoots of the cultivars grown from *Asparagus Officinalis L.*, to be supplied fresh to the consumer. The standard was developed by the Working Party on Standardization of Perishable Produce and Quality Development of the United Nations Economic Commission for Europe. It does not apply to asparagus of less than 10 millimeters in diameter, known as "sprue." Asparagus shoots are classified into three groups according to color:

- White asparagus;



- Violet asparagus, with tips and a part of the shoot of a color between pink and purple; and
- Green asparagus, with tips and all or part of the shoot of a green color.

Information on minimum requirements, classification, sizing, and tolerance is given below. Additional information on presentation and marking standards can be obtained from either the RAP Project or from the UN/ECE, Geneva.

Minimum Requirements

In all classes, subject to the special provisions of each class and the tolerances allowed, the shoots must be intact; sound, with produce affected by rotting or deterioration such as to make it unfit for consumption is excluded; clean, practically free of any visible foreign matter; fresh in appearance and fresh smelling; free from damage by rodents or insects; practically unbruised; free of abnormal external moisture, that is, adequately "dried" if they have been washed (shoots may be dried but not soaked); and free of any foreign smell and taste.

The cut at the base of the shoots must be as clean and as square as possible. The asparagus must not after cutting have undergone any treatment other than re-cooling to preserve or restore its fresh appearance. In addition, shoots must not be hollow, split, peeled, or broken. Small cracks that have appeared after harvesting are, however, allowed, so long as they do not exceed the limits outlined under "Tolerances" on page 7.

The condition of the asparagus must be such as to enable it to withstand transport and handling and arrive in satisfactory condition at the place of destination.

Classification

"Extra" class shoots must be of superior quality, very well formed, and practically straight. Their tips must be very compact. Only a few very slight traces of rust, removable by normal peeling by the consumer, are allowable. For white asparagus, the tips and shoots must be white, with only a faint pink tint appearing after cutting allowed. For white and violet asparagus, no traces of woodiness are allowed, although a slight trace of woodiness is allowed for green asparagus. To improve presentation when the asparagus is packed in bundles, those on the outside may be slightly beveled, so long as the height of beveling does not exceed 1 centimeter.

"Class I" shoots must be of good quality and well formed. They may be slightly curved. Their tips must be compact. Slight traces of rust, removable by normal peeling by the consumer, are allowable. For white asparagus, the tips may be slightly colored before cutting, and a faint pink tint appearing on the shoot after cutting is allowed provided these colorations disappear after cooking. For white asparagus, no woody shoots are allowed, although a trace of woodiness is permissible for violet and green asparagus.

"Class II" shoots include those that do not qualify for the higher classes but satisfy the minimum requirements. Compared with Class I, Class II shoots may be less well formed, more curved, and have less compact tips. Traces of rust, removable by normal peeling by the consumer, are allowed. Shoots may be slightly woody. The tips of white asparagus may have a coloration other than a green tint.

Sizing

Sizing is determined by the length and diameter of the shoot. The length of the shoot must be between 17 and 22 centimeters for long asparagus, 12 and 17 centimeters for short asparagus, 12 and 22 centimeters for Class II asparagus in bulk in packages, and under 12 centimeters for asparagus tips. However, green asparagus shoots may have a maximum length of 27 centimeters, provided that at least one-third of their length is green.

The diameter of shoots should be measured at the mid-point of their length. The minimum diameter and the sizing are outlined in the box below:

| Minimum Diameter and Sizing for Classification for Asparagus | | | |
|--|---|-------------|--|
| Quality Class | Minimum Diameter | | Size |
| Extra | 12 mm | 12 to 16 mm | 16 mm and more with a maximum variation of 8 mm in any single package or bundle |
| I | 10 mm | 10 to 16 mm | 16 mm and more with a maximum variation of 10 mm in any single package of bundle |
| II | 10 mm; no provision as to uniformity prescribed | | |

Source: UN/ECE Standard (FF) -04 for Fresh Asparagus

Tolerances

Quality Tolerances. For "Extra" class, 5 percent by number or weight of shoots not satisfying the requirements of the class, but meeting those of Class I, or exceptionally, coming within the tolerances of that class or having slight unscarred cracks appearing after harvesting is allowed. For "Class I," 10 percent by number or weight of shoots not satisfying the require-

ments of the class, but meeting those of Class II, or exceptionally, coming within the tolerances of that class or having slight unscarred cracks appearing after harvesting is allowed. For "Class II," 10 percent by number or weight of shoots satisfying neither the requirements of the class nor the minimum requirements is allowed, except produce affected by rotting or any other deterioration rendering it unfit for consumption. Moreover, shoots

showing very slight fissures as a result of washing up, to a maximum limit of 10 percent by number or weight are allowed.

Sizing Tolerances. For all classes, 10 percent by number or weight of shoots not corresponding to the size indicated and deviating from the specified limits subject to a maximum deviation of 1 centimeter in length and 2 millimeters in diameter is allowed.

Table 1: U.S. Imports of Fresh Asparagus, 1991-1994, US\$ and Kilograms

| | Customs Value (US\$000s) January-October 1994 | | | | Volume (kilograms) January-October 1994 | | | |
|---------------|--|---------------|---------------|---------------|--|-------------------|-------------------|-------------------|
| | 1994 | 1993 | 1992 | 1991 | 1994 | 1993 | 1992 | 1991 |
| Argentina | 258 | 392 | 480 | 227 | 183,199 | 265,573 | 306,974 | 113,205 |
| Australia | | | 12 | | | | 3,525 | |
| Canada | 15 | 10 | 2 | 5 | 9,209 | 8,910 | 1,800 | 50 |
| Chile | 1,344 | 2,975 | 1,869 | 4,356 | 845,494 | 1,654,808 | 917,908 | 1,864,128 |
| Colombia | 471 | 125 | 71 | 16 | 155,895 | 32,819 | 12,503 | 10,140 |
| Costa Rica | 144 | 41 | 9 | 18 | 41,397 | 21,758 | 4,449 | 5,612 |
| Dominican Rep | | | 4 | | | | 6,302 | |
| Ecuador | 119 | 572 | 223 | 63 | 55,112 | 198,305 | 93,120 | 42,238 |
| France | 4 | 2 | 18 | | 515 | 245 | 2,072 | |
| Guatemala | 537 | 653 | 548 | 191 | 401,825 | 477,932 | 377,726 | 132,545 |
| Hong Kong | | | 6 | | | | 670 | |
| Italy | | | | 5 | | | | 1,930 |
| Mauritius | | | | 40 | | | | 25,678 |
| Mexico | 27,919 | 32,982 | 28,133 | 26,312 | 17,233,818 | 23,061,416 | 20,177,557 | 18,308,479 |
| Montserrat | | 98 | | | | 56,314 | | |
| Netherlands | 39 | 3 | 5 | 46 | 8,040 | 200 | 585 | 16,942 |
| New Zealand | 8 | 282 | 1,269 | 1,333 | 2,610 | 91,753 | 452,570 | 462,233 |
| Peru | 11,749 | 11,568 | 7,315 | 5,957 | 4,786,086 | 5,568,833 | 3,805,847 | 2,799,577 |
| Uruguay | | | 26 | | | | 11,976 | |
| Venezuela | | | | 5 | | | | 2,160 |
| Total | 42,607 | 49,703 | 39,990 | 38,574 | 23,723,200 | 31,438,866 | 26,175,582 | 23,784,917 |

Source: U.S. Department of Commerce

Table 2: Japanese imports of Fresh Asparagus, 1991-1993 (kg and US\$)

| Supplier | Volume (kilograms) | | | Value (US\$) | | |
|--------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | 1991 | 1992 | 1993 | 1991 | 1992 | 1993 |
| China | 23,665 | 27,729 | 180,848 | 100,760 | 92,168 | 526,017 |
| Thailand | 1,845,581 | 1,836,670 | 2,029,926 | 9,060,904 | 9,946,032 | 10,773,788 |
| Philippines | 908,717 | 1,713,825 | 2,874,627 | 2,567,056 | 4,415,344 | 8,597,141 |
| Netherlands | | 1,990 | 1,020 | | 32,168 | 120,129 |
| Belgium | | | 92 | | | 2,527 |
| France | 870 | 2,985 | 6,774 | 12,216 | 33,520 | 71,930 |
| USA | 3,132,392 | 4,630,714 | 5,619,874 | 15,451,936 | 20,912,472 | 26,435,374 |
| Mexico | 2,323,340 | 2,517,530 | 2,829,843 | 11,736,880 | 12,693,144 | 14,444,569 |
| Guatemala | | | 770 | | | 5,135 |
| Ecuador | | | 870 | | | 5,548 |
| Peru | 400,010 | 42,690 | 135,368 | 337,552 | 294,736 | 951,093 |
| Chile | 4,477 | 10,797 | 15,560 | 33,560 | 80,216 | 95,402 |
| Australia | 2,909,182 | 3,047,436 | 3,458,142 | 17,895,456 | 16,084,936 | 20,323,409 |
| New Zealand | 1,493,385 | 1,213,581 | 1,161,030 | 9,007,912 | 6,616,896 | 6,934,836 |
| Total | 12,841,619 | 15,045,947 | 18,314,844 | 66,204,232 | 71,201,632 | 89,186,879 |

Source: Japan Tariff Association

Table 3: Taiwanese Imports of Fresh Asparagus, 1992-1993 (kg and US\$)

| | Volume (kilograms) | | Value (US\$) | |
|-----------------|--------------------|--------|--------------|--------|
| | 1992 | 1993 | 1992 | 1993 |
| N.Zealand (wh) | | 4,779 | | 7,280 |
| N. Zealand (gr) | 950 | 11,460 | 1,440 | 17,680 |
| Total | 950 | 16,239 | 1,440 | 24,960 |

Source: Taiwan Customs Department

Table 4: South Korean Imports of Fresh Asparagus, 1991-1993 (kg and US\$)

| | Volume (kilograms) | | | Value (US\$) | | |
|-------------|--------------------|--------|--------|--------------|---------|---------|
| | 1991 | 1992 | 1993 | 1991 | 1992 | 1993 |
| Australia | | 31,388 | 9,580 | | 31,388 | 43,461 |
| Chile | 823 | | | 4,950 | | |
| Japan | | 526 | | | 3,903 | |
| Mexico | 1,089 | | | 6,000 | | |
| Netherlands | | 605 | 425 | | 4,212 | 2,557 |
| New Zealand | 3,805 | | 3,145 | 22,417 | | 17,312 |
| Thailand | | 480 | | | 1,440 | |
| U.S.A. | 12,800 | 16,120 | 22,025 | 54,275 | 87,154 | 114,538 |
| Total | 18,517 | 49,119 | 35,175 | 87,642 | 128,097 | 177,868 |

Source: Official Trade Statistics, Government of the Republic of Korea

Table 5: Hong Kong Imports of Fresh Asparagus, 1992-1993 (MTs and HK\$)

| | Volume (MTs) | | Value (HK\$000s) | |
|-----------|--------------|------|------------------|--------|
| | 1992 | 1993 | 1992 | 1993 |
| USA | 316 | 391 | 11,613 | 13,393 |
| Thailand | 96 | 52 | 2,833 | 1,709 |
| China | 305 | 191 | 3,193 | 1,422 |
| Australia | 96 | 140 | 2,994 | 3,833 |
| Others | | 30 | | 821 |
| Total | 813 | 804 | 20,633 | 21,178 |

Source: Government of Hong Kong

Table 6: Dubai Imports of Fresh Asparagus, 1992-1994 (kg and dirhams)

| Suppliers | Volume (kilograms) | | | Value (dirhams) | | |
|-------------|--------------------|--------|--------|-----------------|---------|---------|
| | 1992 | 1993 | 1994 | 1992 | 1993 | 1994 |
| Australia | 5,613 | 6,032 | 488 | 114,913 | 101,082 | 12,764 |
| Egypt | 411 | | | 1,178 | | |
| Spain | 33 | 51 | 125 | 1,025 | 1,637 | 2,513 |
| France | 280 | 293 | 669 | 6,807 | 7,614 | 13,539 |
| Iran | | 20,000 | 65 | | 36,390 | 1,039 |
| Jordan | | 30 | 350 | | 671 | 7,877 |
| Kenya | 40 | 845 | 774 | 186 | 5,941 | 4,260 |
| Netherlands | 903 | 2,695 | 638 | 12,561 | 43,173 | 8,404 |
| Peru | 10 | 856 | 377 | 327 | 23,428 | 10,690 |
| Philippines | | 2,145 | | | 38,914 | |
| Thailand | 3,545 | 9,690 | 12,572 | 61,522 | 134,532 | 144,217 |
| USA | 3,713 | 1,191 | 2,832 | 65,712 | 18,395 | 51,099 |
| Other | 90 | 83 | 59 | 2,228 | 2,381 | 1,354 |
| Total | 14,638 | 43,911 | 18,949 | 266,459 | 414,158 | 257,756 |

Source: Government of Dubai

Note: 1994 statistics include January-September only

Table 7: Total EU Imports of Fresh Asparagus, 1988-1993 (MTs)

| Suppliers | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|----------------|--------|--------|--------|--------|--------|-------|
| France | 10,653 | 10,935 | 6,153 | 5,859 | 6,704 | (a) |
| Belgium/Lux | 184 | 195 | 318 | 328 | 441 | (a) |
| Netherlands | 4,782 | 4,669 | 5,820 | 5,979 | 8,158 | (a) |
| Germany | 132 | 285 | 484 | 228 | 549 | (a) |
| Italy | 99 | 131 | 308 | 232 | 700 | (a) |
| Greece | 4,399 | 7,685 | 9,418 | 11,069 | 12,242 | (a) |
| Portugal | 1 | 13 | 27 | 277 | 825 | (a) |
| Spain | 10,813 | 11,674 | 13,682 | 19,232 | 19,086 | (a) |
| Poland | 305 | 593 | 839 | 709 | 934 | 927 |
| Hungary | 100 | 67 | 89 | 65 | 132 | 113 |
| Morocco | 81 | 129 | 215 | 384 | 321 | 566 |
| South Africa | 521 | 486 | 405 | 272 | 238 | 593 |
| USA | 1,933 | 1,366 | 1,597 | 1,716 | 1,561 | 344 |
| Mexico | 228 | 219 | 194 | 227 | 243 | 239 |
| Ecuador | 12 | 28 | 40 | 113 | 80 | 34 |
| Peru | 196 | 289 | 695 | 460 | 830 | 997 |
| Chile | 637 | 682 | 831 | 753 | 759 | 487 |
| Argentina | 507 | 411 | 413 | 449 | 631 | 153 |
| Thailand | 21 | 70 | 129 | 121 | 150 | 147 |
| Other Intra EU | 29 | 10 | 33 | 70 | 76 | (a) |
| Other Extra EU | 287 | 182 | 283 | 277 | 276 | 331 |
| Total Intra EU | 30,872 | 35,597 | 38,203 | 43,272 | 48,781 | (a) |
| Total Extra EU | 4,828 | 4,522 | 5,710 | 5,546 | 6,155 | 5,931 |
| Total World | 35,697 | 40,119 | 41,914 | 43,827 | 54,940 | (a) |

(a) Due to reporting errors, intra EU trade was not reported in 1993

Source: EUROSTAT

Table 8: Tokyo and Taipei Wholesale Market Prices for Fresh Asparagus, 1992-1993 (yen/kg and NT\$/kg)

| | Tokyo (yen/kg) | | Taipei (NT\$/kg) | |
|-----|----------------|------|------------------|------|
| | 1992 | 1993 | 1992 | 1993 |
| Jan | 1245 | 1185 | 215 | 144 |
| Feb | 1043 | 928 | 183 | 80 |
| Mar | 961 | 808 | 81 | 87 |
| Apr | 1104 | 901 | 73 | 62 |
| May | 980 | 846 | 63 | 49 |
| Jun | 889 | 805 | 87 | 83 |
| Jul | 1298 | 1219 | 87 | 86 |
| Aug | 1084 | 1001 | 81 | 84 |
| Sep | 1234 | 1206 | 84 | 65 |
| Oct | 882 | 882 | 92 | 65 |
| Nov | 653 | 830 | 76 | 52 |
| Dec | 849 | 1046 | 95 | 83 |

Source: Wholesale market price reports

Table 9: 1993 New York Wholesale Market Average Weekly Prices for Fresh, Green, Standard Size Asparagus, 1993

| | 11-LB. BOXES | | | | | | | Pyramid Cartons | |
|-----|--|----------------------------------|----------------|----------------------------------|----------------|-------------------------|--|---|------------|
| | Peru | Chile | Ecuador | Mexico | Colombia | Guatemala | Argentina | Mexico | California |
| Jan | 33.00 33.00 | | 27.00 | 27.00 19.50 19.50 | | | | | |
| Feb | | | | 14.50 17.00 | 20.00 | | | | |
| Mar | | | | | | | 37.50 29.00 31.00 29.00 29.00 31.00 | | |
| Apr | | | | 10.50 | | | | 36.50 51.00 50.00 | |
| May | | | | | | | | 32.00 25.00 25.00 27.50 35.00 | |
| Jun | | | | | | 24.00 | | | |
| Jul | | | | 28.00 20.00 16.00 19.50 | | | | | |
| Aug | | | 21.00 | 21.00 21.00 17.50 25.00 | | 21.00 | Argentina | | |
| Sep | 23.50 28.00 27.50 27.50 23.00 17.00 | 27.50 23.50 17.00 | 23.50 28.00 | 25.00 | 28.00 31.00 | 25.50 26.00 29.00 | | | |
| Oct | 21.00 19.00 21.00 19.00 | 21.00 20.00 19.00 | 30.00 | | | | 19.00 21.00 | | |
| Nov | 23.00 25.00 24.00 28.00 26.00 | 25.00 23.00 27.00 26.00 | | 23.50 24.00 | | | | | |
| Dec | 19.00 21.00 25.00 28.00 | 20.00 21.00 29.00 | | | | | | | |

Source: New York Terminal Market Reports

Table 10: Middle East Importer Selling Prices for Fresh Asparagus, 1994

| Importer | UAE (dirham/kg) | | Bahrain (dinar/kg) | | | Kuwait (dinar/kg) | | | | |
|----------|-----------------|----------|--------------------|-----------|---------|-------------------|----------|---------|-------|----------|
| | Neth. | Neth. Wh | Australia | Australia | France | USA | Thailand | Peru | Neth. | Neth. Wh |
| Jan 6 | | | | | | | | | | |
| Jan 12 | 40.00 | 46.80 | | 2.20 | 4.00 | | 1.80 | | 3.70 | 3.80 |
| Jan 19 | 39.50 | 35.80 | | 2.10 | 4.00 | | | | | |
| Jan 26 | 37.80 | 33.80 | | 2.10 | 4.00 | | | | 3.60 | 3.65 |
| Feb 2 | 47.00 | 30.00 | | 2.20 | 4.00 | | 2.70 | | 3.75 | 3.60 |
| Feb 9 | 38.00 | 42.40 | | 2.20 | 4.00 | | 2.80 | | | |
| Feb 16 | 37.00 | 41.60 | | 2.20 | 4.00 | | 2.80 | | 3.60 | 3.25 |
| Feb 23 | 37.00 | 41.60 | | 2.20 | 4.00 | | 2.60 | | 3.65 | 3.40 |
| Mar 2 | 36.40 | 38.80 | | 2.20 | 4.00 | | 2.80 | | 2.25 | 3.10 |
| Mar 8 | 37.60 | 41.80 | | 2.20 | 4.00 | | 2.80 | | 3.25 | 3.00 |
| Mar 17 | | | | | | | | | | |
| Mar 23 | 33.50 | | | 2.20 | 4.00 | | 2.60 | | | 3.20 |
| Mar 30 | 27.80 | | | | | | 2.60 | | 3.10 | 3.40 |
| Apr 5 | | | | | | | | | | |
| Apr 12 | 23.50 | | | | 3.00 wh | | 2.60 | | 2.80 | |
| Apr 19 | 19.80 | 17.35 | | | 3.00 wh | | 2.40 | | 2.40 | 2.90 |
| Apr 26 | 19.60 | 17.35 | | | 3.00 wh | | 2.60 | | 2.40 | 2.00 |
| May 3 | 19.80 | 17.50 | | | 3.00 wh | 3.00 | | | 3.00 | |
| May 11 | 21.00 | 22.00 | | | 3.00 wh | 2.57 | | | | 3.00 |
| May 18 | | 23.60 | | | 3.00 wh | 2.57 | | | 1.30 | 1.90 |
| May 25 | | | | | | 2.42 | | | | |
| May 31 | | | | | | 2.40 | 2.43 | | 3.00 | 2.80 |
| Jun 9 | 20.40 | 31.60 | | | 2.40 | 2.29 | | | 2.25 | 3.00 |
| Jun 14 | 25.50 | 32.40 | | | 2.40 | 2.43 | | | 2.40 | 2.90 |
| Jun 21 | 33.00 | 31.80 | | | 2.40 | 2.29 | | | 3.00 | 2.80 |
| Jun 29 | 29.50 | 21.60 | | | 2.40 | 3.00 | | | 2.80 | 2.20 |
| Jul 6 | | | | | | | | | | |
| Jul 13 | | | | | 2.40 | 3.33 | | | 2.80 | 2.10 |
| Jul 21 | | | | | | | | | | |
| Jul 27 | | | 49.00 | | 2.40 | 4.17 | | | | |
| Aug 3 | | | | | | | | | | |
| Aug 10 | 36.75 | | | | 2.40 | 4.00 | | | 3.60 | |
| Aug 16 | | | 40.40(a) | | 2.40 | 3.64 | | 3.75(a) | | |
| Aug 23 | | | 48.90(a) | | 2.40 | 3.64 | | 3.75(a) | | |
| Aug 30 | | | 39.00(a) | | 2.40 | 3.64 | | 3.40(a) | | |
| Sep 6 | | | | | | | | | | |
| Sep 13 | | | | | | | | | | |
| Sep 20 | | 46.35(b) | | | | 3.82 | | 3.50(a) | | |
| Sep 27 | | | 24.00 | 3.20 wh | | 4.36 | | | 2.81 | |
| Oct 4 | | 34.00(b) | 18.10 | 3.20 wh | | 4.00 | | | 3.50 | |
| Oct 11 | | 37.50(b) | 16.50 | 3.00 | | 4.00 | | 3.40 | | 4.00(b) |
| Oct 18 | | 29.80(b) | 19.65 | 2.50 | | | | 3.20 | | 3.20(b) |
| Oct 25 | | 31.25(b) | 15.65 | 3.00 | | 4.00 | | 3.25 | 3.00 | |
| Nov 2 | | | 14.65 | 2.50 | | | | 3.75 | | 3.75(b) |
| Nov 9 | | | 14.00 | 1.83 | | | | 3.20 | | 3.00 |
| Nov 16 | | | | | | | | | | |
| Nov 23 | | 30.85(b) | 17.50 | 2.17 | | | | 3.70 | 3.00 | |
| Dec 1 | | 32.20(b) | 17.35 | 2.33 | | | | 3.50 | | 3.00 |
| Dec 7 | | | | | | | | | | |
| Dec 14 | | | | | | | | | | |
| Dec 21 | | | | | | | | | | |
| Dec 28 | | | | | | | | | | |

(a) Mexico green (b) Peru white
Source: ITC/MNS

Table 11: European Importer Selling Prices for Fresh Asparagus, 1994 Off-Season (France and the Netherlands)

| Importer: Exporter: | France (FF/kg) | | | | | The Netherlands (Hfl/kg) | | | | | |
|------------------------|----------------|-----------|-----------|-------|-----------|--------------------------|-------|---------|-----------|-----------|-----------|
| | Chile | Peru | Spain Wh | USA | Guat | Mexico | Peru | Peru Wh | Peru Tips | South Afr | Thai Tips |
| Jan 13 | | | | | 13.00 | | 13.25 | 13.00 | | | 25.00 |
| Jan 20 | | 40.00 | | 38.00 | 13.40 | | 12.00 | 11.50 | | | 24.00 |
| Jan 27 | | 40.00 | | | 13.40 | 20.00 (c) | 13.40 | 12.50 | | | |
| Feb 3 | | | | | 13.40 | 21.00 (e) | 13.25 | 13.00 | 26.00 | 11.50 (f) | 23.00 |
| Feb 10 | | | | 41.00 | 13.50 | | 13.50 | 14.00 | | 11.50 (f) | 23.00 |
| Feb 17 | | | | 42.00 | 12.40 | | 13.50 | 14.50 | | 12.50 (f) | 23.00 |
| Mar 3 | 31.00 (a) | | | 46.00 | 12.40 | 15.90 | 13.50 | 11.70 | | | 22.00 |
| Mar 10 | | | | 41.00 | 13.40 | 12.75 | 9.75 | | | | 24.50 |
| Mar 17 | | 34.00 (b) | 30.00 | | 11.50 | 12.00 | | 10.00 | | 11.50 (g) | 22.00 |
| Mar 23 | | 30.00 (b) | 27.00 | 28.00 | 11.50 | 12.00 | | | | 10.80 (g) | 22.00 |
| Mar 31 | | 26.00 (b) | 22.00 | | 11.00 | 13.00 | | | | | |
| Aug 24 | | | | | 12.60 | | 14.00 | | | | |
| Aug 31 | | | | | 12.10 | | 11.40 | | | | |
| Sep 7 | | 38.00 | | | 12.75 | | 12.50 | 16.00 | | | |
| Sep 14 | | 40.00 | | | 12.20 | | 12.60 | 16.00 | 23.00 | 13.00 | |
| Sep 22 | 40.00 | 40.00 | | | 11.50 | | 11.50 | 15.00 | | 10.50 | |
| Sep 28 | 40.00 | 40.00 | | | 11.00 | | | 12.50 | 22.00 | 9.50 | 23.00 |
| Oct 5 | 34.00 | 40.50 | | | 11.00 | | 10.25 | 11.50 | 23.00 | 11.00 | |
| Oct 13 | 30.00 | | | | | | 10.00 | 10.50 | | 9.00 (h) | |
| Oct 20 | 29.00 | 34.00 | | | | | 9.80 | 9.00 | | 9.00 (h) | |
| Nov 3 | 27.00 | | | | | | 9.50 | 8.20 | 20.50 | 8.50 (h) | |
| Nov 11 | 29.00 | 29.00 | 29.00 (c) | | | | 10.00 | 8.60 | 20.25 | 7.50 (h) | |
| Nov 17 | 32.00 | | 30.00 (c) | | | | 10.00 | 8.60 | 19.50 | | |
| Nov 23 | | | | | 9.60 (d) | | 10.80 | 10.30 | 18.50 | | |
| Nov 30 | 28.00 | | 29.00 (c) | | 10.25 (d) | | 11.20 | 10.80 | 18.50 | | 21.50 |
| Dec 8 | 29.00 | | | | 11.00 (d) | | 11.20 | 12.00 | | 19.00 (f) | |
| Dec 14 | | | | | | | | | | | |
| Dec 21 | | | | | | | | | | | |
| Dec 28 | | | | | | | | | | | |

(a) Morocco white

(c) Peru white

(e) Mexico tips

(g) USA green

(b) Spain green

(d) Arentina green

(f) Thailand green

(h) South Africa white

Source: ITC/MNS

Table 12: European Importer Selling Prices for Fresh Asparagus, 1994 Off-Season (Germany and United Kingdom)

| Importer: Exporter: | Germany (DM/kg) | | | | United Kingdom (L/kg) | | | | | | |
|------------------------|-----------------|-----------|------------|-----------|-----------------------|----------|--------|------|-----------|------|----------|
| | Argnt. Wh | Chile | S. Afr. Wh | USA | Argentina | Chile | Mexico | Peru | S. Africa | USA | Zimbabwe |
| Jan 13 | | 10.00 (a) | | 9.40 | | 6.60 | | | | | |
| Jan 20 | | | | | | 5.50 | | | | | |
| Jan 27 | | 11.50 (b) | | 10.00 | | 4.40 | | | | | |
| Feb 3 | | | | 11.00 | | | 5.50 | | | | |
| Feb 10 | | | | 11.30 | | | 4.85 | | | | |
| Feb 17 | | | | | | | 2.50 | | | | |
| Mar 3 | | | | 11.00 | | 5.00 | | | | 5.70 | |
| Mar 10 | | | | 10.00 | | | 4.80 | 5.60 | | 4.40 | |
| Mar 17 | | | | 11.10 | | | | | | 4.80 | |
| Mar 23 | | | 8.00 (d) | 9.00 | | | | | | 4.40 | |
| Mar 31 | | | | 10.00 | | | | | | 4.30 | |
| Aug 24 | | | | | | 5.30 (f) | 4.45 | | | | |
| Aug 31 | | 12.10 (c) | | | | | 4.40 | | | 5.50 | 3.75 |
| Sep 7 | | | | | | | 4.50 | 5.00 | | 5.00 | |
| Sep 14 | | 9.60 | 12.50 | | 5.15 | 4.40 (f) | 4.20 | 4.40 | | 4.85 | 4.40 |
| Sep 22 | | | | | | | 4.20 | 3.50 | | 4.60 | 4.40 |
| Sep 28 | | 9.35 | 8.00 (d) | 8.50 (e) | | 3.75 | | 3.75 | | | |
| Oct 5 | | 11.20 | 10.50 | 10.00 (e) | 4.00 | 4.00 | 5.25 | 3.00 | | 4.60 | |
| Oct 13 | 6.00 | | 6.50 | 7.50 (e) | 4.00 | 3.50 | 3.30 | 3.50 | | 4.00 | 4.00 |
| Oct 20 | 8.50 | 9.60 | 6.50 | | 3.75 | 3.50 | 3.40 | 3.50 | | 4.20 | 4.20 |
| Nov 3 | | 10.00 | 7.50 | | 2.60 | 2.80 | | 2.80 | | | |
| Nov 11 | 7.80 | 9.60 | 7.80 | | | 3.75 | 3.50 | 3.93 | | | |
| Nov 17 | | | 8.50 | | 4.20 | 4.60 | | 4.30 | | | 3.30 |
| Nov 23 | 10.25 | 9.60 | 10.50 | | | 4.20 | | 4.20 | | | |
| Nov 30 | | 9.60 | 10.00 | | | 4.20 | | 3.30 | | 4.60 | |
| Dec 8 | 9.00 | 10.80 | 9.00 | | | 4.40 | | 4.20 | | 4.60 | |
| Dec 14 | | | | | | | | | | | |
| Dec 21 | | | | | | | | | | | |
| Dec 28 | | | | | | | | | | | |

(a) Ecuador green

(c) Mexico green

(e) South Africa green

(b) Peru green

(d) Spain white

(f) Guatemala green

Source: ITC/MNS

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World Market for **DURIAN**

March 1995

RAP MARKET INFORMATION BULLETIN

No. 3 (US\$10)

PRODUCTION

Commercial production of durian is concentrated in Thailand, Malaysia, and Indonesia. The Philippines and other Southeast Asian nations also produce durian commercially, but at much smaller levels and mostly for domestic markets. Malaysia produced 80,715 metric tons (MTs) in 1991, up from 128,555 MTs in 1988. Thai production expanded nearly 50 percent between 1989 and 1992, going from 86,644 MTs to 720,990 MTs; Thai and Malaysian production appears to have expanded even further since 1991-1992. Durian production in Indonesia has varied widely over the last decade. Production decreased from 242,585 MTs in 1990 to 152,501 MTs in 1992, although preliminary 1993 figures show an increase of more than 50 percent from 1992 levels.

Availability of durian is affected by short harvest seasons, typically only two to three months, although smaller harvests are also reported during other months of the year. Thai and Malaysian production is highest between June and July, although exports are also reported during other months (mostly immediately preceding or following this period). Peak harvest in Indonesia is from October to February, although the high season in South Sumatra lasts from June to September.

EXPORTS

Most official national trade statistics do not provide details on imports of

durian. Therefore, world trade is estimated using export statistics of the three largest supplying countries: Malaysia (1991, fresh), Thailand (1993, fresh and frozen), and Indonesia (1993, fresh). Tables 1 and 2 itemize by importer the frozen and fresh exports of all three countries by volume and value, respectively. Fresh and frozen durian exports from these three suppliers in 1993 totaled \$43.5 million (f.o.b.), comprising \$36.6 million (53,869 MTs) of fresh product and \$6.9 million (2,559 MTs) of frozen product.

Malaysia is the largest exporter of fresh durian, with 1991 exports of 34,904 MTs. The vast majority (99.7 percent) of the country's exports that year went to Singapore; most remaining exports were sent to Brunei, Thailand, and the United States.

In 1993, Thailand exported 18,634 MTs of fresh durian and 2,559 MTs of frozen. Hong Kong was the destination of more than half of Thailand's fresh exports, followed by Malaysia, Taiwan, Canada, the United States, Singapore, and Indonesia. Almost all Thai frozen exports were shipped to the United States, Australia, and Canada. Indonesian exports stood at only 331 MTs in 1993, down from 435 MTs in 1989 but up from 277 MTs in 1992. Singapore has remained Indonesia's largest export market, accounting for 98 percent of all exports in 1993. The only other nations importing more than 1 MT from Indonesia in 1993 were Taiwan and Brunei.

MARKETS

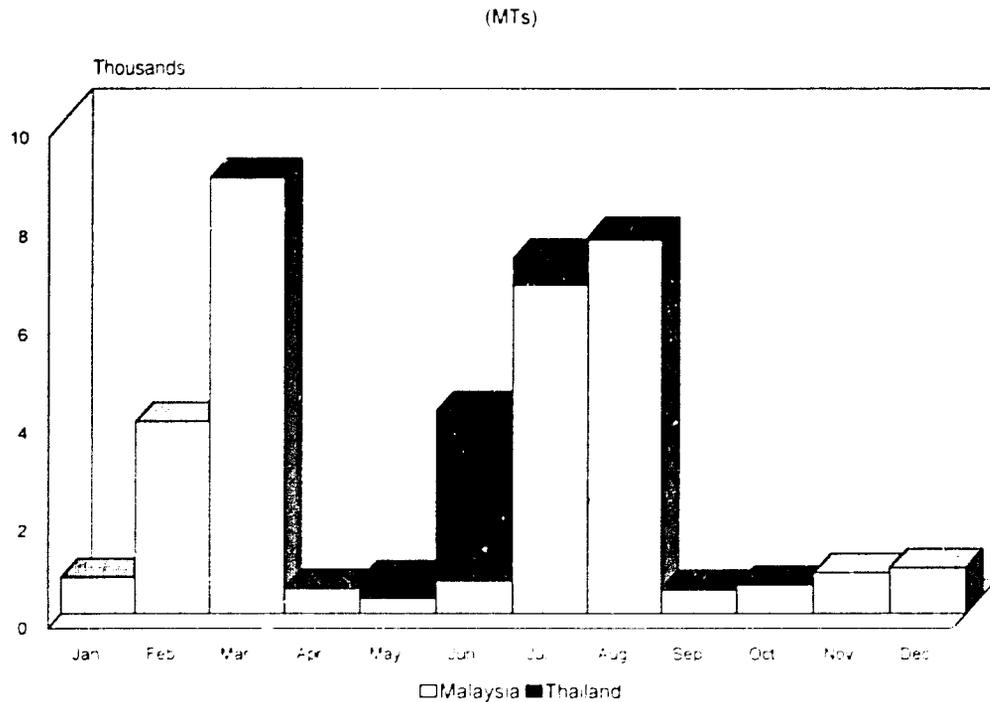
Asia

Singapore, Hong Kong, and Taiwan are the main importers of durian worldwide. These three countries account for 90 percent of total exports from Malaysia, Thailand, and Indonesia. When shipments among the three durian-exporting countries — Malaysia, Thailand, and Indonesia — are added to their combined exports to Singapore, Hong Kong, and Taiwan, nearly 99 percent of world trade in fresh durian is accounted for.

Singapore. Singapore is the largest import market for durian, accounting for 65 percent total exports of the top three supplying countries. Malaysia supplies most of total domestic demand. Singapore buys the vast majority of Malaysia's and Indonesia's durian exports, as well as significant quantities from Thailand (see Figure 1).

Singapore is one of the few importing countries that reports durian in its official trade statistics. According to these statistics, Singapore imported 36,745 MTs (US\$30.6 million) of fresh durian in 1993 (Table 3), although actual imports were probably slightly higher because Singapore does not report imports from Indonesia. The majority of fresh durian entered during the periods February-March and June-August. Thai supply entered exclusively during the period May-July, primarily in June.

Figure 1: Singapore Monthly Imports of Durian, 1993



Source: Singapore External Trade Statistics

Hong Kong. Hong Kong is the second-largest import market for fresh durian in the world, accounting for 20 percent of the exports from the top three supplying countries. Official Hong Kong trade statistics show imports in 1993 totaling 16,810 MTs (HK\$201.0 million), down slightly from 17,417 MTs (HK\$201.0 million) in 1992 (Table 4). Almost all of Hong Kong's import demand is met by Thailand, which supplied 99.6 percent of imports in 1993. Most remaining supply entered from Malaysia.

Taiwan. Taiwan imported 3,270 MTs of fresh durian in 1993, mostly from Thailand but including small amounts from Indonesia and Malaysia. Single-layer cartons of durian from Thailand were spotted on Taiwanese street markets in January 1995.

North America

United States. The United States imports more durian, fresh and frozen, than any other non-Asian country. Imports in 1993 were estimated at 1,742 MTs, of which frozen durian accounted for more than 80 percent. Thailand supplied almost all of U.S. demand, although small amounts of durian entered the United States from Malaysia. Thai product retailed for US\$2.80 per pound in New York City's Chinatown in late 1994.

Canada. As with most non-Asian countries, demand in Canada is mainly limited to the Asian immigrant population. There has been very little cross-over appeal. Importers interviewed in late 1994 reported a preference for large individual fruit sections, small seeds, and yellow flesh.

Canada is the largest non-Asian market for fresh durian. Canadian imports were estimated at 600 MTs in 1993, 45 percent of them fresh and 55 percent frozen. Thailand supplied the vast majority of Canada's import demand, although small quantities of durian also entered from Malaysia. Toronto and Montreal wholesalers report wide price differences: between C\$4.40 per kilogram and C\$8.00 per kilogram. One Toronto-based importer reported selling individually quick frozen durian at C\$2.20 per kilogram. Most imports entered Canada during the summer months.

Europe

The European market for durian is small, totaling only 52 MTs of fresh product and 81 MTs of frozen. Importers interviewed in late 1994 reported only a small demand for

durian by European consumers, mostly from countries with significant immigrant populations from Southeast Asia (France, the Netherlands, and the United Kingdom).

France is the largest European importer of fresh and frozen durian, with imports of 31 MTs and 37 MTs, respectively, in 1993. Thailand was the only reported supplier.

The **Netherlands** imported 27 MTs of durian in 1993, the majority of it frozen. Although Thailand is the dominant supplier, Indonesia also provides small quantities of fresh product. Importer selling prices of Thai durian ranged from Hfl 11.00 to Hfl 17.25 per kilogram in 1994, according to the International Trade Centre's Market News Service reports (Table 5). Prices were lowest from May to August.

United Kingdom imports of fresh durian are estimated at only 8 MTs, more than 90 percent entering from Thailand, the remainder from Malaysia. Importer selling prices ranged from £4.50 per kilogram to £8.00 per kilogram (mostly £6.00 to £7.00 per kilogram) in 1994.

EXPORT GRADES AND STANDARDS

Thai durian is typically exported four fruits per carton (cartons are 470 millimeters wide, 470 millimeters long, and 229 millimeters high). Although there are more than 300 varieties of durian, Monthong and Chanee durian from Thailand are most often found in import markets.

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Table 1: Durian Exports of Thailand, Indonesia, and Malaysia, by Importer, 1993 (kg)

| Exporter Importer | Thailand Frozen | Fresh | Indonesia Fresh | Malaysia (1991) Fresh | Total Fresh |
|----------------------|--------------------|-------------------|--------------------|--------------------------|-------------------|
| Australia | 566,597 | 6,968 | | 5,520 | 12,485 |
| Austria | | 72 | | 3,170 | 3,242 |
| Bahrain | | 225 | | | 225 |
| Belgium | | | | 1,500 | 1,500 |
| Brazil | | 650 | | | 650 |
| Brunei | | 14,251 | 1,098 | 34,210 | 49,559 |
| Canada | 339,222 | 260,330 | | 380 | 260,710 |
| China | | 44,000 | | | 44,000 |
| Denmark | 108 | | | | 0 |
| Ethiopia | | 900 | | | 900 |
| France | 37,310 | 30,512 | | | 30,512 |
| Germany | 7,790 | 1,323 | 619 | 1,000 | 2,942 |
| Hong Kong | | 10,057,070 | | 5,720 | 10,062,790 |
| India | | 1,760 | | | 1,760 |
| Indonesia | | 128,695 | | | 128,695 |
| Italy | | | | 3,390 | 3,390 |
| Japan | 17,865 | 59,500 | 425 | 1,180 | 61,105 |
| Kampuchea | | 7,621 | | | 7,621 |
| Laos | | 1,250 | | | 1,250 |
| Malaysia | | 4,387,107 | 160 | | 4,387,267 |
| Malta | | 1,400 | | | 1,400 |
| Netherlands | 25,222 | 1,288 | 459 | | 1,747 |
| New Zealand | 1,632 | | | | 0 |
| Pakistan | | 800 | | | 800 |
| Philippines | | 1,000 | | | 1,000 |
| Saudi Arabia | | | | 840 | 840 |
| Singapore | | 133,144 | 324,156 | 34,806,530 | 35,263,830 |
| Spain | 326 | | | | 0 |
| Sweden | 9,919 | | | | 0 |
| Switzerland | | 3,902 | | | 3,902 |
| Taiwan | 37,470 | 3,270,469 | 3,888 | 570 | 3,274,927 |
| Thailand | | | | 20,220 | 20,220 |
| UAE | 217 | | 512 | | 512 |
| UK | | 7,048 | | 720 | 7,768 |
| USA | 1,515,502 | 207,650 | | 18,690 | 226,340 |
| Other | | 12,440 | | | 12,440 |
| Total | 2,559,180 | 18,634,407 | 331,317 | 34,903,640 | 53,869,364 |

Source: Government trade statistics

Table 2: Durian Exports of Thailand, Indonesia, and Malaysia, 1993, by Importer (US\$, f.o.b. value)

| Exporter Importer | Thailand | | Indonesia | Malaysia (1991) | Total |
|----------------------|------------------|-------------------|----------------|-------------------|-------------------|
| | Frozen | Fresh | Fresh | Fresh | Fresh |
| Australia | 1,463,971 | 13,455 | | 3,222 | 16,677 |
| Austria | | 93 | | 2,467 | 2,560 |
| Bahrain | | 163 | | | 163 |
| Belgium | | | | 584 | 584 |
| Brazil | | 1,331 | | | 1,331 |
| Brunei | | 8,698 | 2,034 | 22,353 | 33,085 |
| Canada | 733,608 | 259,008 | | 2,760 | 261,768 |
| China | | 31,027 | | | 31,027 |
| Denmark | 1,079 | | | | 0 |
| Ethiopia | | 1,337 | | | 1,337 |
| France | 244,741 | 34,055 | | | 34,055 |
| Germany | 57,330 | 951 | 681 | 1,445 | 3,076 |
| Hong Kong | | 7,241,041 | | 3,534 | 7,244,575 |
| India | | 2,901 | | | 2,901 |
| Indonesia | | 166,899 | | | 166,899 |
| Italy | | | | 2,638 | 2,638 |
| Japan | 88,514 | 159,307 | 1,405 | 930 | 161,642 |
| Kampuchea | | 7,116 | | | 7,116 |
| Laos | | 527 | | | 527 |
| Malaysia | | 2,419,193 | 187 | | 2,419,380 |
| Malta | | 1,076 | | | 1,076 |
| Netherlands | 176,338 | 2,341 | 595 | | 2,936 |
| New Zealand | 16,821 | | | | 0 |
| Pakistan | | 1,185 | | | 1,185 |
| Philippines | | 495 | | | 495 |
| Saudi Arabia | | | | 654 | 654 |
| Singapore | | 472,920 | 258,972 | 21,202,245 | 21,934,137 |
| Spain | 2,494 | | | | 0 |
| Sweden | 36,367 | | | | 0 |
| Switzerland | | 3,899 | | | 3,899 |
| Taiwan | 88,473 | 3,707,542 | 8,848 | 1,730 | 3,718,120 |
| Thailand | | | | 6,776 | 6,776 |
| UAE | 1,873 | | 978 | | 978 |
| UK | | 13,977 | | 1,678 | 15,655 |
| USA | 3,986,034 | 417,052 | | 140,556 | 557,608 |
| Other | | 14,540 | | | 14,540 |
| Total | 6,897,644 | 14,982,131 | 273,700 | 21,393,571 | 36,649,401 |

Table 3: Singapore Monthly Imports of Fresh Durian from Malaysia and Thailand, 1993 (MT,S\$)

| Month | Malaysia | | Thailand | | Total | |
|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
| | MT | S\$000 | MT | S\$000 | MT | S\$000 |
| Jan | 745 | 1,414 | | | 745 | 1,414 |
| Feb | 3,933 | 6,293 | | | 3,933 | 6,293 |
| Mar | 8,885 | 11,970 | 1 | 10 | 8,886 | 11,980 |
| Apr | 506 | 678 | 11 | 46 | 517 | 724 |
| May | 310 | 442 | 384 | 441 | 694 | 883 |
| Jun | 663 | 837 | 3,493 | 3,754 | 4,156 | 4,591 |
| Jul | 6,713 | 8,976 | 543 | 557 | 7,256 | 9,533 |
| Aug | 7,638 | 9,527 | 57 | 46 | 7,695 | 9,573 |
| Sep | 490 | 668 | 12 | 9 | 502 | 677 |
| Oct | 584 | 743 | 1 | 1 | 585 | 744 |
| Nov | 839 | 1,466 | | | 839 | 1,466 |
| Dec | 937 | 1,676 | | | 937 | 1,676 |
| Total | 52,243 | 44,690 | 4,502 | 4,864 | 36,745 | 49,554 |

Source: Government of Singapore

Table 4: Hong Kong Imports of Fresh Durian (MT, HK\$)

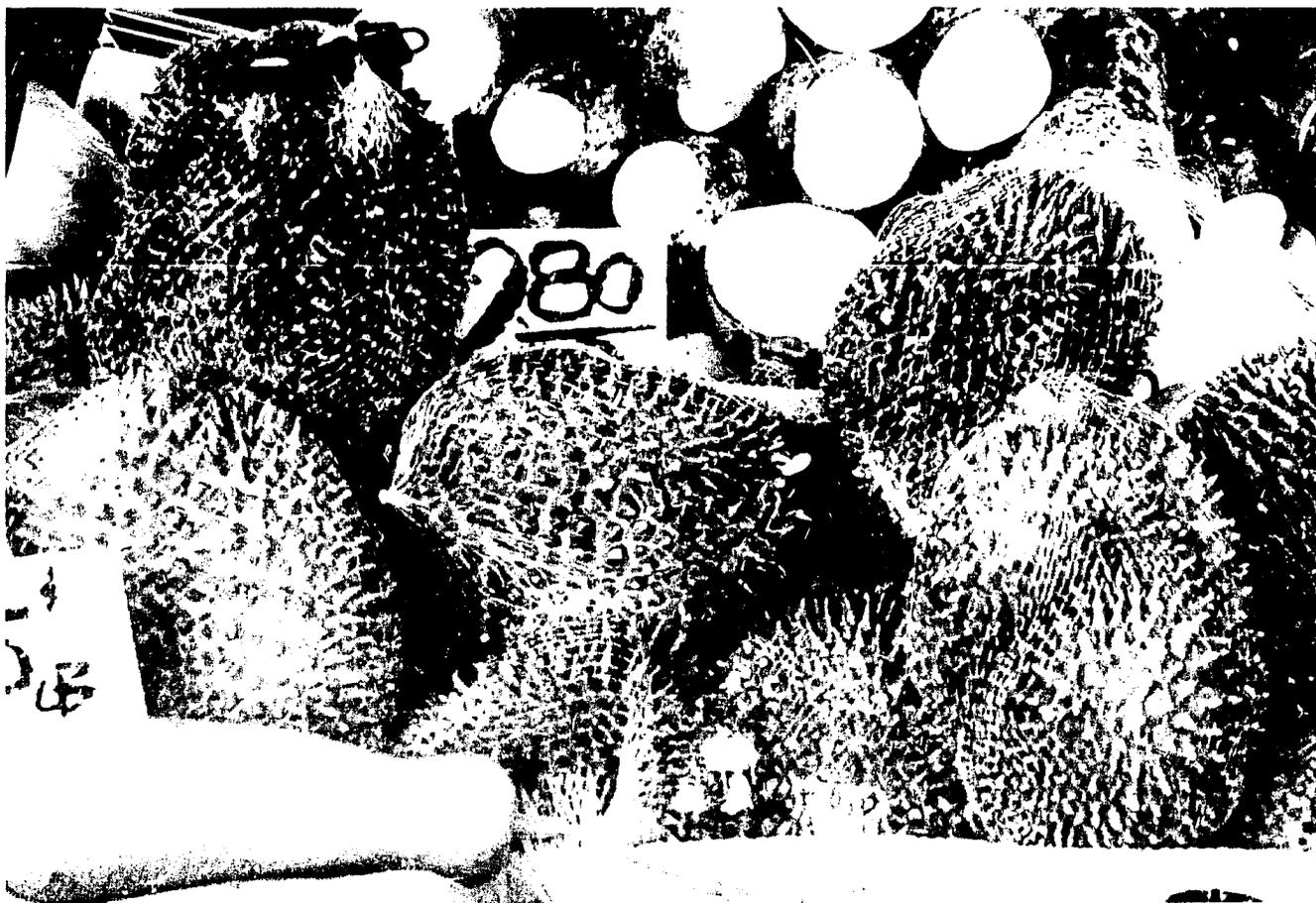
| Supplier | Volume (MT) | | Value (HK\$) | |
|--------------|---------------|---------------|----------------|----------------|
| | 1992 | 1993 | 1992 | 1993 |
| Thailand | 17,390 | 16,752 | 200,837 | 200,518 |
| Malaysia | 21 | 54 | 131 | 389 |
| Singapore | 3 | | 24 | |
| Australia | 3 | 1 | 140 | 20 |
| China | | 3 | | 102 |
| Total | 17,417 | 16,810 | 201,132 | 201,029 |

Source: Official Hong Kong Trade Statistics

Table 5: European Importer Selling Prices for Fresh Durian, 1994 (per kg in currency of exporting country)

| Importer | Austria Thailand | Denmark Thailand | Netherlands Thailand | UK Thailand | Switzerland Thailand | Sweden Indonesia |
|----------|---------------------|---------------------|-------------------------|----------------|-------------------------|---------------------|
| 13 | 130.00 | | 16.75 | 6.90 | | |
| 19 | | | 17.25 | 6.65 | | |
| 26 | 130.00 | | 17.25 | 6.60 | | |
| 3 | 130.00 | | 15.50 | 6.65 | | |
| 9 | 130.00 | | 16.00 | 6.00 | | |
| 17 | 130.00 | | 17.00 | | | |
| 3 | 131.00 | | 15.50 | 5.00 | | |
| 10 | 131.00 | | 15.50 | 6.00 | | |
| 16 | 131.00 | | | | | |
| 23 | | | 15.50 | 5.00 | | |
| 31 | 131.00 | | 17.00 | 4.50 | | |
| 13 | 130.00 | | 15.50 | 4.50 | | |
| 20 | 130.00 | | 13.50 | | | |
| 27 | | | | | | |
| 5 | | | 13.50 | | | |
| 11 | 130.00 | | 13.50 | | | |
| 18 | | | | | | |
| 25 | | | 12.50 | | | |
| 1 | | | 11.25 | | | |
| 6 | | | 11.00 | | | |
| 15 | 130.00 | | 11.00 | | 9.75 | |
| 22 | | | 11.00 | 5.00 | | |
| 7 | | | 11.50 | | | |
| 14 | | | | | | |
| 28 | | | 12.50 | | | 50.00 |
| 3 | | | | 8.00 | | |
| 10 | | | | | | |
| 17 | | | 12.50 | | | |
| 24 | | | 12.25 | | | |
| 31 | | | 12.25 | 5.00 | | |
| 7 | | | 12.00 | 6.00 | | |
| 14 | | | | 6.60 | | |
| 22 | | | | 7.35 | | |
| 28 | | | | 6.65 | | |
| 5 | | | | 6.65 | | |
| 13 | | | | 6.83 | | |
| 20 | | | | 7.00 | | |
| 3 | | | | 6.60 | | |
| 11 | | 90.00 | | 6.60 | | |
| 17 | | | | 6.60 | | |
| 24 | | | | 6.60 | | |
| 29 | | | | 6.60 | | |
| 8 | | | | 6.60 | | |
| 15 | | | | 6.60 | | |

Source: ITC/MNS, Geneva



Durian for sale on the Chinatown market in New York City

The RAP Market Information Bulletin is produced monthly by the USAID-funded Asia Regional Agribusiness Project (RAP), implemented by Development Alternatives, Inc. (DAI). The bulletin provides information on competitors, importers, and prices for selected fresh horticultural products produced in developing Asian countries. This issue was written by Jason Graef of Fintrac Inc. and Tom Klotzbach, RAP Market Information Specialist. The authors are grateful for the information provided by Mr. Henry Harmon of the USAID-funded Agribusiness Development Project in Indonesia. The price of this and each subsequent issue is US\$10; an annual subscription costs US\$100, which includes a three-ring binder for storing the bulletins. Checks should be made payable to Development Alternatives, Inc. To subscribe to the RAP Market Information Bulletin or other market information products of RAP (including our *Market Asia* newsletter), contact Heather Doyle, RAP Market Information Assistant, Development Alternatives, Inc., 7250 Woodmont Avenue, Suite 200, Bethesda, MD 20814 USA (Tel.: 301-215-7014, Fax: 301-907-2655).

ANNEX F
SHORT-TERM TECHNICAL ASSISTANCE UNDER RAP

Short-Term Technical Assistance Under RAP

| No. | Short-term Technical Assistance | Status | Date |
|---------------|--|--------------------------|----------------------|
| DAI-A | "Analysis of Project Parameters of the Agricultural Commercialization and Enterprise Project — India" | Completed | December 1993 |
| DAI-B | RAP Seminar (Dec. 22-23, 1993) | Completed | December 1993 |
| DAI-C | Development of monitoring and evaluation methodology for Asian agribusiness projects | Phase I report completed | April 1994 |
| DAI-D | Inquiry into the information needs for a price information system in Sri Lanka | Cancelled | |
| DAI-E & Abt-A | Background information assembly and analysis for the "Comparison of Major Wholesale Market Facilities in Asia As Impacting on Vegetable and Fruit Trade, Especially Exports" | Completed | December 1994 |
| TAS-A | <i>Ensuring Food Safety and Quality: A Review of HACCP and ISO 9000 Systems</i> | Completed | March 1994 |
| TAS-B | An overview of "National Pesticide Regulatory Policies of Selected Countries in Asia" | Completed | September 1994 |
| TAS-C | RAP collaborators' meetings | In progress | Started January 1994 |
| TAS-D | Food Safety and Phytosanitary Issues Impacting Asian Agribusiness Trade | Completed | July 1994 |
| Fintrac-A | Research support to RAP Market Information Services component | Completed | Started May 1994 |
| DAI-F | "Comparative Analysis of Export Competitive Positions — Sri Lanka Case Study" | Completed | January 1995 |
| DAI-G | "Comparative Analysis of Export Competitive Positions — Bangladesh Case Study" | Completed | January 1995 |
| DAI-H | "Comparative Analysis of Export Competitive Positions — India Case Study" | Completed | January 1995 |
| DAI-I | Preparatory work for market information study in Japan | Completed | June 1994 |

| | | | |
|----------------|---|-------------|------------------------|
| DAI-J Abt-B | Chronicle writer for the analysis for the "Comparison of Major Wholesale Market Facilities in Asia As Impacting on Vegetable and Fruit Trade, Especially Exports — Singapore Case Study and Hong Kong Case Study" | Completed | December 1994 |
| DAI-K | Competitive Positions — Philippine Case Study | In progress | Started September 1994 |
| Abt-C | "Comparison of Major Wholesale Market Facilities in Asia As Impacting on Vegetable and Fruit Trade, Especially Exports — Taiwan Case Study" | Completed | March 1995 |
| Abt-D | Analyst for the analysis for the "Comparison of Major Wholesale Market Facilities in Asia As Impacting on Vegetable and Fruit Trade, Especially Exports" | In progress | Started July 1994 |
| Fintrac-B | Data collection and entry for GATT Study | Completed | September 1994 |
| Fintrac-C | Business plan for and commercial viability and sustainability of RAP newsletter (<i>Market Asia</i>) | In progress | Started August 1994 |
| DAI-L | Delphi Study, Strategic Planning Panel | In progress | Started August 1994 |
| DAI-M | "Comparative Analysis of Export Competitive Positions — Thailand and Malaysia Case Studies" | Completed | January 1995 |
| DAI-95-1 | M&E for RAP | In progress | Started November 1994 |
| DAI-95-2 | "Comparative Analysis of Export Competitive Positions — Nepal Case Study" | Completed | January 1995 |
| DAI 95-3 | Organization of a collaborative venture referral system for RAP | In progress | Started November 1994 |
| Abt 95-1 | Support for the Abt subcontract under Asia RAP | In progress | Started November 1994 |
| TAS 95-1 | Analysis of import detention of food products exported from selected Asian and other countries into the United States | In progress | Started January 1995 |

| | | | |
|--------------|---|---|----------------------|
| TAS 95-2 | "Food Safety and Quality Issues Impacting Agribusiness Trade in India and Bangladesh" | Report in Progress | Started January 1995 |
| DPRA 95-1 | "Environmental Issues Impacting Agribusiness Enterprises in India and Bangladesh" | Report in Progress | Started January 1995 |
| Fintrac 95-1 | Floriculture export opportunities for RAP beneficiary countries | On hold | |
| DAI 95-4 | "Comparative Analysis of Export Competitive Positions — Indonesian Case Study" | Pending USAID Contracting Officer salary app vals | |

ANNEX G
PUBLICATIONS

PUBLICATIONS

- April 1995 *Market Asia* Volume 1: Issue 7.
- March 1995 “GATT-Uruguay Round: Impact on Demand for Horticultural and Meat Products in North America, Europe, and Asia, A Synthesis of Three Commissioned Papers,” by Kenneth G. Swanberg.
- March 1995 *World Market for Durian*, RAP Market Information Bulletin No. 3.
- February 1995 *Market Asia* Volume 1: Issue 6.
- February 1995 *World Market for Fresh Asparagus*, RAP Market Information Bulletin No. 2.
- January 1995 *World Market for Rambutan*, RAP Market Information Bulletin No. 1.
- December 1994 *Market Asia* Volume 1: Issue 5.
- December 1994 “The Role of Agribusiness in Asia,” by Kenneth G. Swanberg.
- December 1994 “Wholesale Markets for Fresh Fruits and Vegetables in Hong Kong,” by Mark Speece.
- December 1994 “Fresh Fruit and Vegetable Marketing: Roles of Urban Wholesale Markets and Supermarkets in Asia,” by Merle Menegay, William Guyton, and Christine Estaque.
- October 1994 *Market Asia* Volume 1: Issue 4.
- October 1994 “National Pesticide Regulatory Policies of Selected Countries in Asia,” by Cecilia Gaston.
- August 1994 *Market Asia* Volume 1: Issue 3.
- May 1994 *Market Asia* Volume 1: Issue 2.
- March 1994 “Regional Impact Indicators for Agribusiness Projects in Asia,” by Susan Exo.
- March 1994 “Analysis of Project Parameters of the Agricultural Commercialization and Enterprise Project — India,” by William Scott.
- March 1994 “Ensuring Food Safety and Quality: A Review of HACCP and ISO 9000 Systems,” by H. Michael Wehr.
- March 1994 *Market Asia* Volume 1: Issue 1.
- December 1993 *Proceedings of the Agricultural Product Quality Workshop.*

ANNEX H
BUDGET UPDATE

PROJ. #: 499-0009
 PIO / T: (1) 499-0009-3-3672517/01/02 \$532,895
 (2) 499-0009-3-3672533 \$174,298
 (3) 499-0009-3-3672547 \$13,807
 APPROPRIATION (1) 72-1131021
 (2) 72-1131021
 (3) 72-1131021
 BPC: (1) HDVA-93-37499-KG12
 (2) HDVA-93-37499-EG12
 (3) HDVA-93-37499-KG12

ASIA REGIONAL AGBUS. PROJECT

CONTRACT NO.: AEP-0009-C-00-3057
 REPORTING PERIOD: MARCH 1- 31, 1995
 SUBMISSION NO: 18
 SUBMISSION DATE: APRIL 15, 1995

| CATEGORY | BUDGET AMOUNT | INCEPTION TO LAST REPORTED PERIOD | THIS PERIOD | CUMULATIVE AMOUNT | REMAINING AMOUNT | PERCENT OF BUDGET EXPENDED |
|--------------------------|-----------------------|-----------------------------------|---------------------|-----------------------|-----------------------|----------------------------|
| SALARIES AND WAGES | \$1,224,513.00 | \$398,283.61 | \$27,193.06 | \$425,476.67 | \$799,036.33 | 34.75% |
| FRINGE BENEFITS | 146,446.00 | 58,324.41 | 3,935.59 | 62,260.00 | 84,186.00 | 42.51% |
| OVERHEAD | 1,069,348.00 | 354,572.85 | 24,219.78 | 378,792.63 | 690,555.37 | 35.42% |
| TRAVEL, TRANS. & PERDIEM | 584,010.00 | 101,700.49 | 16,738.52 | 119,439.01 | 465,570.99 | 20.28% |
| OTHER DIRECT COSTS | 320,509.00 | 144,724.93 | 8,363.52 | 153,088.45 | 167,420.55 | 47.76% |
| SUBCONTRACTORS | 1,522,404.00 | 396,891.80 | 46,231.42 | 443,123.22 | 1,079,280.78 | 29.11% |
| SUBTOTAL | \$4,867,230.00 | \$1,454,498.09 | \$126,681.89 | \$1,581,179.98 | \$3,286,050.02 | 32.49% |
| FEE AT 4.71% | 229,415.00 | 68,506.88 | 5,966.72 | 74,473.60 | 154,941.40 | |
| TOTAL EST BUDGET | \$5,096,645.00 | \$1,523,004.97 | \$132,648.61 | \$1,655,653.58 | \$3,440,991.42 | 32.49% |

H-3

The undersigned hereby certifies: (i) the fiscal report and any attachments have been prepared from the books and records of the Contractor in accordance with the terms of this Contract, and to the best of my knowledge and belief, that they are correct, that the sum claimed under this contract is proper and due, that all the costs of contract performance (except as herewith reported in writing) have been accrued or paid or will be paid currently by the Contractor when due in the ordinary course of business, that the work reflected by the costs above has been performed, that the quantities and amounts involved are consistent with the requirements of this Contract, that all required Contracting Officer approvals have been obtained, and (ii) appropriate refund to AID will be made promptly upon request in the event of disallowance of costs not reimbursable under the terms of this Contract.

By M. Aliece Baldwin
 M. ALIECE BALDWIN
 TITLE: PROJECT ACCOUNTANT
 DATE: APRIL 15, 1995

110

NAME OF CONTRACTOR: DEVELOPMENT ALTERNATIVES, INC.

#3200

PROJ. #: 499-0009

PIO / T: (1) 499-0009-3-3672517/01/02 \$532,895

(2) 499-0009-3-3672533 \$174,298

(3) 499-0009-3-3672547 \$13,807

APPROPRIATION (1) 72-1131021

(2) 72-1131021

(3) 72-1131021

BPC: (1) HDVA-93-37499-KG12

(2) HDVA-93-37499-EG12

(3) HDVA-93-37499-KG12

ASIA REGIONAL AGBUS. PROJECT

CONTRACT NO.: AEP-0009-C-00-3057

REPORTING PERIOD: MARCH 1- 31, 1995

SUBMISSION NO: 18

SUBMISSION DATE: APRIL 15, 1995

| CATEGORY | BUDGET AMOUNT | INCEPTION TO LAST REPORTED PERIOD | THIS PERIOD | CUMULATIVE AMOUNT | REMAINING AMOUNT | PERCENT OF BUDGET EXPENDED |
|--------------------------|-----------------------|-----------------------------------|---------------------|-----------------------|-----------------------|----------------------------|
| SALARIES AND WAGES | \$1,224,513.00 | \$398,283.61 | \$27,193.06 | \$425,476.67 | \$799,036.33 | 34.75% |
| FRINGE BENEFITS | 146,446.00 | 58,324.41 | 3,935.59 | 62,260.00 | 84,186.00 | 42.51% |
| OVERHEAD | 1,069,348.00 | 354,572.85 | 24,219.78 | 378,792.63 | 690,555.37 | 35.42% |
| TRAVEL, TRANS. & PERDIEM | 584,010.00 | 101,700.49 | 16,738.52 | 118,439.01 | 465,570.99 | 20.28% |
| OTHER DIRECT COSTS | 320,509.00 | 144,724.93 | 8,363.52 | 153,088.45 | 167,420.55 | 47.76% |
| SUBCONTRACTORS | 1,522,404.00 | 396,891.80 | 46,231.42 | 443,123.22 | 1,079,280.78 | 29.11% |
| SUBTOTAL | \$4,867,230.00 | \$1,454,498.09 | \$126,681.89 | \$1,581,179.98 | \$3,286,050.02 | 32.49% |
| FEE AT 4.71% | 229,415.00 | 68,506.88 | 5,966.72 | 74,473.60 | 154,941.40 | |
| TOTAL EST BUDGET | \$5,096,645.00 | \$1,523,004.97 | \$132,648.61 | \$1,655,653.58 | \$3,440,991.42 | 32.49% |

The undersigned hereby certifies: (i) the fiscal report and any attachments have been prepared from the books and records of the Contractor in accordance with the terms of this Contract, and to the best of my knowledge and belief, that they are correct, that the sum claimed under this contract is proper and due, that all the costs of contract performance (except as herewith reported in writing) have been accrued or paid or will be paid currently by the Contractor when due in the ordinary course of business, that the work reflected by the costs above has been performed, that the quantities and amounts involved are consistent with the requirements of this Contract, that all required Contracting Officer approvals have been obtained, and (ii) appropriate refund to AID will be made promptly upon request in the event of disallowance of costs not reimbursable under the terms of this Contract.

By M. Aliece Baldwin
M. ALIECE BALDWIN
TITLE: PROJECT ACCOUNTANT
DATE: APRIL 15, 1995