

# Introduction to China's Horticultural Economy

*This paper briefly examines China's horticultural economy, production, marketing, processing, and trade. China is a major net exporter of various horticultural products, earning \$3.3 billion in 1995. A favorable climate and abundant labor force seems to have given China a comparative advantage raising horticultural products. [Frederick W. Crook (202) 219-0002]*

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China's horticultural economy (vegetables; tea, coffee, and spices; fruit; tree nuts; melons; and flowers), is an economy in which China may have comparative advantages with its varied agro-climatic regions, its limited arable land, and its abundance of labor. China's horticultural economy generated net exports of \$2.7 billion in 1994, and in 1995 net horticultural exports reached \$3.3 billion (table 26).

## **Vegetables**

China's farmers plant a wide variety of tropical and temperate vegetables. Area sown to vegetables (including melons used as vegetables) more than tripled from 3.2 million hectares in 1980 to 10.5 million in 1996 (5, 7). Ministry of Agriculture statisticians are in the process of refining their vegetable output series. Their most recent estimate is that farmers produced 431 million tons in 1995; 257 million tons of fresh vegetables; 163 million tons of potatoes; an estimated 10 million tons of dry peas and beans; and 1 million tons of mushrooms (4), which makes China the largest vegetable producer in the world. In 1995, the United States produced 56 million tons of vegetables (including vegetables, potatoes, dry peas and beans, and mushrooms) (13).

All vegetable marketing was managed by the state before reforms were initiated in the early 1980s. But the number of rural open markets increased from nearly 37,000 in 1979 to 63,000 in 1995, and the number of open markets in urban areas expanded from 2,226 in 1979 to nearly 20,000 in 1995 (7). Since then, an increasing share of vegetable output has been delivered to consumers through markets (5). By 1993, state-owned vegetable companies in large cities controlled only 20 percent of vegetable volume (5). Farmers have responded to market signals to boost output. They invested in greenhouses to extend the growing season, constructed irrigation systems, planted varieties of vegetables demanded in the market place, and paid more attention to improving the quality of vegetables produced. Competition in the market place encouraged wholesalers and retailers that there were profits in delivering a fresh, wholesome, clean, appetizing product to consumers. In the past decade, the variety and quantity of vegetables available in the market place improved substantially (2).

Most vegetables in China are consumed in the fresh state. Processing and packaging facilities are the weak links between truck gardens and consumers. In the early 1980s, vegetables were delivered in bulk to city retail outlets. By the early 1990s, farmers and wholesalers had begun to put

fresh vegetables into net plastic bags. In 1996, products arrived in wholesale markets in rigid plastic boxes to protect the quality of vegetables. A traditional processing industry consists of drying and processing products like black ear mushrooms, huanghua, pepper, and chili. Each year, large quantities of vegetables are preserved through drying (5). China has a small frozen vegetable industry, but no annual output data was available. By 1979, China's canning industry produced about 160,000 tons of canned vegetables but by 1995, this figure rose to 660,000 tons (7).

Official statistics show that both urban and rural residents are consuming less kilograms of vegetables in 1996 than in the early 1980s. It is possible that consumers are shifting from bulky, lower quality vegetables to higher quality varieties.

China is a major exporter of fresh and preserved vegetables (table 27). Exports rose from 2.2 million tons (\$721 million) in 1986 to 3.1 million tons (\$2.4 billion) in 1995. According China's Custom Bureau, the top ten vegetable export markets in 1996 include: Japan (\$809 million); Hong Kong (\$160 million); Republic of Korea (\$82 million); the United States (\$44); Germany (\$39 million); Italy (\$35 million); Indonesia (\$34 million); Brazil (\$28 million); Singapore (\$25 million); and Russia (\$25 million) (9). Imports in 1995 totaled \$71 million—mostly dried legumes and dried cassava.

U.S. vegetable imports from China in 1996 totaled \$141 million, of which major items were dried and fresh mushrooms, water chestnuts, peas, and beans. U.S. vegetable exports to China totaled \$12.2 million in 1996, but some products were transshipped into China from Hong Kong. Major items included canned vegetables, frozen potatoes, and hops.

## **Tea, Coffee, and Spices**

Area in tea orchards expanded rapidly from 486,000 hectares in 1970 to 1 million hectares in 1977. Since then, area increased slightly to 1.1 million hectares in 1995. Area increases in the early 1970s boosted output from 136,000 tons in 1970 to 252,000 tons in 1977, an increase of 85 percent. Tea orchards typically are planted in hilly areas which are not well suited to raise grain crops. Yield increases supported output growth in the late 1970s, 1980s, and early 1990s so that production reached 593,000 tons in 1996 (7). China produces several different kinds of tea. Output as a percentage of total follows: red tea (13.5%);

green tea (69.3%); Oolong tea (7.1%); Jinya tea (9%); and other tea (1.1%) (4, 5).

It is not entirely clear how farmers market their tea. In 1992, China's Tea Cooperative (Chaye Shehui) increased purchases of tea but purchases by the State Commerce and Cooperative entity (Guohe shangye) decreased. Of the 560,000 tons of tea produced in 1992, the State Commerce and Cooperatives purchased 300,000 tons (53 percent of production) (5). State Commerce and Cooperatives retained 177,800 tons (32 percent of production). It is not clear what other marketing organizations purchased and retained tea. There are two tea markets. One is the Shanghai International Tea Auction Centre and the other is the Hangzhou Tea Wholesale Market (5).

The Ministry of Internal Trade entities processed 162,269 tons of tea in 1993, up 13 percent from 1992. Presumably other business concerns (township and village enterprises, and private companies) processed the remainder (5).

Urban per capita tea consumption has remained fairly constant at around 0.24 kilograms per capita from 1985 to 1995 (6). Rural per capita tea consumption was 0.33 kilograms, 38 percent higher than urban areas (8).

China's tea exports have remained fairly constant from the mid-1980s, with 174,000 tons to 179,000 tons in 1994. On average, China exported \$350 million worth of tea a year. Major export destinations included Russia, Hong Kong, Japan, France, Pakistan, and Uzbekistan (1). China also imports a small amount of tea.

China produces a small amount of coffee, a little over 3,000 tons in 1995 (4). There are only a few areas which have good natural conditions to raise coffee. Also in 1995, China produced 23,000 tons of cinnamon; 21,000 tons of anise; 12,000 tons of hops; 10,000 tons of pepper; and 400 tons of vanilla (10).

### **Orchard (Fruit)**

China's orchards include a wide variety of tropical and sub-tropical fruits such as bananas, citrus, mangoes, papayas, guava, and temperate fruits such as apples, peaches,

pears, and grapes (3). China has many hilly areas which have fairly good conditions for fruit production. As infrastructure improves, output will continue to grow. Agricultural reforms instituted in the early 1980s encouraged farmers to expand fruit production. Orchard area rose from 1.8 million hectares in 1980 to 8.1 million hectares in 1995, an increase of 350 percent (7). Fruit production increased dramatically from 6.8 million tons in 1980 to 46.5 million tons in 1996, a 583-percent increase. The United States produces more citrus and grapes than China, but China is a large producer of many varieties of fruit, and total output is nearly 70 percent larger than that of the United States (table 28).

Before 1980, state-owned or controlled enterprises handled fruit marketing. Supply and marketing Cooperatives played an important role in purchasing fruit destined for processing (5). They purchased fruit from farmers, consolidated the product, stored it, and transported it to state-owned, township, and village-owned processing plants. But as economic reforms were implemented, increasing quantities of fresh fruit were marketed through open markets. After reforms were implemented in the early 1980s, an increasing portion of fresh and dried fruits were marketed through open markets.

China's fruit exports from the mid-1980s to the mid-1990s continued at about 375,000 tons per year. While China exported a wide variety of fruit, apples, pears, and bananas made up the bulk of the trade which was shipped primarily to Russia, Hong Kong, Singapore, Malaysia, and Vietnam. The value of fruit exports in the same period decreased slightly from about \$270 million a year to \$200 million. China's fruit imports were \$32 million in 1994. Major imports are bananas, mangos, and guava from Burma, Philippines, and Vietnam.

### **Tree Nuts**

China produces a wide variety of tree nuts such as pine nuts, hazelnuts (filberts), almonds, cashews, chestnuts, and walnuts, but data exist only for walnuts, cashews, and chestnuts (table 30). The state purchases some tree nuts through the branches of the Supply and Marketing Coop-

**Table 26--China's horticultural product trade, 1994-95**

Commodity	1994			1995		
	Imports	Exports	Net	Imports	Exports	Net
	\$ millions			\$ millions		
Vegetables	18	2,091	2,073	87	2,209	2,122
Spices	2	294	292	15	466	451
Fruit	41	223	182	69	307	238
Nuts	24	183	159	14	452	438
Flowers	6	24	18	12	44	32
Melons	0	8	8	1	20	19
Total horticulture	91	2,823	2,732	198	3,498	3,300

Source: China Customs Administration, Annual Customs Statistics, 1994-95.

eratives in rural areas. Also, some tree nuts are marketed through local open markets.

The quantity of China's tree nut exports has remained stable for the past decade at about 75,000 tons per year. But the export value of these nuts increased from \$130 million in the mid-1980s to \$170 million in the mid-1990s (1). In 1994, China's tree nut exports totaled \$182 million: shelled walnuts (\$27 million); chestnuts (\$80 million); Gingko (\$29 million); and pine nuts (\$27 million). Major export destinations included Canada, the United Kingdom, Japan, Hong Kong, Australia, South Korea, Singapore, and the United States (table 32).

China's imports of tree nuts increased from 10,000 tons (\$12 million) in the mid-1980s to 27,000 tons (\$24 million) in the mid-1990s. In 1994, major nut suppliers included: \$11.5 million of cashews from Vietnam; \$2.7 million of chestnuts from North Korea; and \$3.6 million of pistachios from the United States (1).

### Melons

Melons, which are used as a fruit, are placed by China's statistical authorities in a special class by themselves (*guo yong gua*, and include watermelon, hami melons, muskmelons, and other melons) (3). Melons used as vegetables are included in vegetable statistics. Watermelons accounted for 77 percent, and muskmelon (*tiangua*) accounted for 15 percent of total melon area (3). China's melon exports and imports are small.

Urban per capita consumption of melons increased from 20 kilograms in 1985 to 23 kilos in 1994 (6). Rural household income and expenditure survey data does not include a category of melon consumption but the surveys did contain data for watermelons. Since watermelons account for 77 percent of total melon area, watermelons can be taken as a proxy for melon consumption. Rural residents consumed an average of 4 kilograms during 1994, which sug-

gests their consumption is substantially below that for urban residents (8).

### Flowers

Neither nursery stock nor flower production, marketing and consumption data were found. The export of flowers (shrubs, nursery stock plants, and foliage) rose from \$6.5 million in the mid-1980s to \$44 million in the mid-1990s, more than a 6-fold increase. Imports of these materials increased even more rapidly, from \$627,000 in the mid-1980s, to \$12 million in 1995 (1).

### Outlook

At present, China is a major world producer, consumer, and exporter of horticultural products. Output of most horticultural products expanded after rural economic reforms were instituted in the early 1980s. Given China's vast land area with a wide variety of agro-climatic growing regions, its large supply of a disciplined labor force, and expanding domestic economy, China's farmers producing horticultural products have good prospects to expand output into the 21st century. In fact, for most years since 1990, horticultural exports earned enough foreign exchange to cover grain imports. Whether or not horticultural trade will expand depends on government policy regarding food security issues, decisions to increase foreign trade protectionism, or expand policies to increase freer trade. It will also depend on China's ability to increase capacity to process, store, package, and transport horticultural products.

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Table 27--China's top vegetable exports, 1992-96

Item	SITC Code	1992	1993	1994	1995	1996
Million\$US						
Canned mushrooms	20031010	148	136	163	254	189
Broad beans	7135000	118	85	144	143	30
Dried broad beans	7133300	74	47	70	57	116
Dried sweet potatoes	7142020	73	43	52	6	2
Canned bamboo shoots	20059030	68	90	99	142	146
Garlic	7032000	68	111	76	80	92
Mushrooms preserved in salt water	7119011	62	49	98	83	64
Canned asparagus	20056010	60	76	80	89	73
Other dried vegetables	7129090	59	64	87	110	133
Other fresh and chilled vegetables	7099090	45	47	72	83	117
Other preserved vegetables	20059090	49	42	43	55	48
Other simply preserved vegetables	7119090	46	43	48	60	81
Other dried mushrooms	7123030	46	44	154	259	74
Frozen, other vegetables	7108000	36	55	86	93	110
Mushrooms	7095100	31	77	106	124	118
Mung beans	7133100	31	36	66	81	55

Source: China Customs Administration, Annual Customs Statistics, 1992-96.

**Table 28--China and U.S. fruit production compared, 1995**

Item	China		United States	
	1,000 tons	Percent	1,000 tons	Percent
Apples	14,011	33.2	4,870	16.7
Citrus	8,222	19.5	14,333	49.1
Pears	4,942	11.7	860	2.9
Bananas	3,125	7.4	6	0.0
Grapes	1,742	4.1	5,358	18.4
Pineapples	539	1.3	313	1.1
Dates	782	1.9	20	0.1
Persimmons	969	2.3	na	na
Other	7,814	18.5	3,404	11.7
Total	42,146	100.0	29,191	100.0

Sources: China Agricultural Yearbooks, 1995-96; and Fruit and Tree Nuts Situation and Outlook Yearbook, ERS, Oct. 1996.

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**Table 29--China's processed fruit products, 1992-94**

Item	1992	1993	1994
	Metric tons		
Candied fruit	39,034	39,027	28,900
Jam	11,520	11,529	NA
Canned fruit	78,323	69,668	85,000
Juice	160,000	200,000	230,000

Source: China Commerce Yearbook, various years.

**Table 30--China and U.S. nut production compared, 1995**

Item	China		United States	
	1,000 tons	Percent	1,000 tons	Percent
Walnuts	230	na	212	33.8
Chestnuts	218	na	na	na
Cashews	1	na	na	na
Macadamia	na	na	168	3.7
Almonds	na	na	35	26.8
Pistachio	na	na	23	10.7
Hazelnuts	na	na	67	5.6
Pecans	na	na	122	19.4
Total	na	na	627	100

Sources: China Agricultural Yearbook, 1996; and Fruit and Tree Nuts Situation and Outlook Yearbook, ERS, Oct. 1996.

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**Table 31--U.S. horticultural exports to China, 1994-96**

Commodity	Quantity (tons)			Value (1,000\$US)		
	1994	1995	1996	1994	1995	1996
Fruit and preparations	992	3,018	1,063	802	2,550	1,022
Fruit juices	3,574	19,906	11,300	184	799	492
Nuts and preparations	2,901	123	1,284	4,092	371	2,314
Vegetables and preparations	--	--	--	3,135	4,811	12,191
Tea	2	7	11	9	46	66
Nursery and flowers	--	--	--	268	253	209
Spices	16	30	44	18	108	102
Total	--	--	--	8,508	8,938	16,396

Source: USDA FATUS database.

**Table 32--U.S. horticultural imports from China, 1994-96**

Commodity	Quantity (tons)			Value (1000\$US)		
	1994	1995	1996	1994	1995	1996
Fruit and preparations	23,973	16,975	37,629	20,216	18,206	43,229
Fruit juices	53,503	86,065	171,842	1,223	3,049	8,229
Nuts and preparations	5,645	4,338	5,782	16,334	12,783	20,454
Vegetables and preparations	na	na	na	na	106,797	135,981
Tea and Coffee	35,730	23,064	24,125	33,045	29,748	36,247
Nursery, flowers	na	na	na	8,802	9,205	20,931
Spices	11,313	12,259	7,591	22,514	24,374	24,612
Total	na	na	na	208,931	233,070	294,730

Source: USDA FATUS database.