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Taiwan's Mushroom Industry: A Study in Export Growth

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Taiwan's Mushroom Industry: A Study in Export Growth

Taiwan's mushroom industry provides an interesting case study of the development in a relatively short period of a new and important export product. Taiwan first began to export canned and bottled mushrooms on a regular commercial basis in 1960. By 1963, Taiwan had become the world's foremost exporter of mushrooms, shouldering out France and Japan, and supplying one-third of the total amount of mushrooms imported by all countries; exports rose from \$150,000 in 1960 to \$16.2 million in 1963. It is expected that by 1964 mushrooms will be Taiwan's fourth largest export. Further details are presented in Table 1 below.

Table 1

Taiwan's Exports of Canned Mushrooms  
(Millions of U.S. dollars)

	1960	1961	1962	1963	1963 Jan.-Aug.	1964 Jan.-Aug.
United States	n.a.	0.4	3.3	5.9	n.a.	n.a.
West Germany	n.a.	0.8	4.0	8.0	n.a.	n.a.
Other	n.a.	0.4	0.8	2.3	n.a.	n.a.
Total	\$0.15 <sup>1/</sup>	\$ 1.6	\$ 8.1	\$16.2	\$12.8 <sup>1/</sup>	\$13.2 <sup>1/</sup>

<sup>1/</sup> Export exchange settlement data; otherwise, customs data.

SOURCES: The Trade of China, Statistical Department, Inspectorate General of Customs, Taipei, Taiwan, China; and "Taiwan's Newly Developed Mushroom Industry," Industry of Free China, February 1964, Taipei, Taiwan, China, p. 32.

This phenomenal growth of the mushroom industry has been achieved mainly by the islanders, including farmers, canners, trades people, and the Government, with relatively little financial and technical assistance from abroad. Local mushroom production for many years was in relatively small quantities and solely for domestic consumption. As a result of a series of developments, however, Taiwan saw an opportunity to develop a new export market, and has done so with remarkable success.

Probably the original factor contributing to the development of the industry was a domestic mushroom shortage which appeared in the middle 1950's. At first, it was suggested by interested parties that this problem could be solved by expanding imports of canned mushrooms, but the Joint Commission on Rural Reconstruction (a combined U.S.-China group formed to develop China's agricultural resources) stated that this was unnecessary as Taiwan had excellent resources for expanding domestic production to meet this problem. The JCRR then proceeded to take various measures to expand and develop the local mushroom industry.

In 1957, an early experimental program in growing mushrooms was carried out in a mountainous area, and in 1958 some successful trial exports of canned mushrooms were made to the United States and Europe. By mid-1959, the JCRR had settled 100 retired servicemen in the Lishan and Hsipao areas for the purpose of raising mushrooms.<sup>1/</sup> The JCRR also undertook efforts to interest farmers in the cultivation and production of mushrooms. Today a large part of the mushroom production is carried out by the farmers in the West-Central part of the island, or more specifically, in the Changhua district.

The United States' Agency for International Development also provided financial assistance to the mushroom industry, although in relatively small amounts. The equivalent of \$45,074 in local currency counterpart funds was granted to help develop proper standards and procedures in mushroom canning, and in the application of sanitary practices in producing, harvesting and market handling. An additional \$37,500 in local currency was used for loans to a Chinese farmers' organization for construction of production and processing facilities, and for mushroom production.

In order to improve the strain of mushrooms, spores were obtained from abroad, mainly Japan. But except for this aspect, the Japanese do not appear to have invested, or otherwise assisted, in the development of the mushroom industry. Most of the advice and encouragement came either from the JCRR or local farmers' organizations.

#### Conditions propitious for the development of the industry

The remarkable growth of the mushroom industry has been due to a combination of several favorable factors. These include: an appropriate climate; adequate human and capital resources obtainable at low cost; and suitable foreign outlets for the product.

For most farmers, the growing of mushrooms is an off-season occupation since cultivation occurs in the winter between rice harvests. In fact, one of the aims of the JCRR was to promote growing of mushrooms as a profitable use of farm labor during the winter months when there is relatively little other work to occupy the farmers. Primarily family labor is used in the production of mushrooms, thus helping to hold down out-of-pocket production costs. After the mushrooms are harvested, the family selects the best ones for export. The next best are sold in the local market, and those remaining are consumed at home.

Investment in facilities for growing mushrooms has been relatively small. In some cases farmers use their homes, simple straw sheds, or other existing buildings. Others construct inexpensive mushroom sheds, with thatched roofs and bamboo supports. Frequently rocky soil or land not suitable for other crops is used. The medium for growing mushrooms is usually a well-potted compost made of rice straw and certain chemical fertilizers. Spawn is obtained from some 70 small commercial growers on Taiwan, and nature provides the proper temperature and climatic conditions on the island.

<sup>1/</sup> Tenth General Report of the Joint Commission on Rural Reconstruction, Taipei, Taiwan, China, 1959, p. 115.

The canning costs are also relatively low as it has been possible to use pineapple canning factories, which are normally idle at the time the mushrooms are ready for canning. The amount of additional, or adaptive, machinery needed to can the mushrooms has been relatively small. The total number of mushroom canneries has grown rapidly, increasing from 31 in the 1961-62 packing season to 78 in 1964.<sup>2/</sup>

Estimates of production costs indicate that wages, straw, and chemicals are the main growing expenses, as indicated below.<sup>3/</sup>

<u>Item</u>	<u>Cost per lb. in U.S. cents</u>	<u>Per Cent of Total</u>
Wages	3.452	41.5
Rice straw	2.315	27.8
Spawn	.752	9.1
Chemicals	1.541	18.5
Bamboo	.232	2.8
Wires	<u>.026</u>	<u>.3</u>
	8.318	100.0

The average mushroom yield in Taiwan is said to be 1.2 pounds per square foot. The above estimate of 8.318 U.S. cents is based on a yield of this amount.

The cost of Taiwan's canned mushrooms is lower, even after allowance for freight and customs duties, than U.S. canned mushrooms. The cost of Taiwan mushrooms to the canners is about 10 cents per pound.<sup>4/</sup> (Presumably the difference between the 10 cents and the 8.3 cents cited earlier represents profit to the grower.) This compares with an estimated U.S. cost of 27 cents per pound. When canned, Taiwan mushrooms are about 52 cents per pound compared to 70 cents for U.S. mushrooms. Freight, customs duties, and other charges for shipment to the U.S. come to approximately 14 cents per pound. Thus the total landed cost of 66 cents per pound is still 4 cents below the U.S. cost. The Taiwan competitive position was also aided in 1962 and 1963 when the U.S. reduced its import duties on mushrooms. The lower landed cost of Taiwan mushrooms has been a major factor in stimulating sales in the United States.

American firms contract to market Taiwan mushrooms

A final major factor aiding the development of mushroom exports has been the willingness of several major American food companies to import and market Taiwan mushrooms. These include The Borden Company and The Green Giant Company. They have had all the resources necessary for a successful marketing of the mushrooms. But it should be noted that Taiwan has had equal success in exporting mushrooms to West Germany.

- 2/ "Taiwan's Newly Developed Mushroom Industry," Industry of Free China, Taipei, Taiwan, China, February 1964, p. 33.
- 3/ "Paper estimates of Formosan Growing, Processing Costs," by James P. Houck and Wen Fu Hsu, Mushroom News, Kennett Square, Pa., February 1964.
- 4/ "The Pennsylvania Mushroom Industry," by James P. Houck, Farm Economics, U.S. Department of Agriculture, Extension Service and Pennsylvania State University, February 1964, p. 2.

On the Taiwan side, exports have been handled by a private canners association known as the Taiwan Mushroom Packers United Export Corporation, organized by the 78 mushroom packers on the island. This company has worked with the Government and the JCRR in developing the industry and raising quality standards.

The large increase in mushroom imports has had an impact on U.S. domestic mushroom producers. Realizing this, Taiwan has voluntarily limited the total amount of mushroom exports to the United States. For the year 1963-64,<sup>5/</sup> Taiwan expects to limit its total mushroom exports to about 1.5 million cases with an approximate value of \$17 million. This compares with a voluntary limit of 1.0 million cases in 1962-63.

Taiwan's success with mushroom exports provides an excellent example of how a country, largely through self-help measures, can develop a new, important export market in a relatively short time. Other countries have had similar experiences in recent years, such as Israel with finished diamonds, Peru with fishmeal<sup>6/</sup> and Thailand with corn. This suggests that export growth can be dynamic, and that new, import export markets can be developed where adequate resources and incentives exist.

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<sup>5/</sup> The statistical year runs from December 1 to November 30.

<sup>6/</sup> For a discussion of the Peruvian experience, see "Export Growth and Diversification: The Peruvian Case," by Michael A. Gomez, May 1964, Board of Governors of the Federal Reserve System.