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Present Status of Tea Industry in Taiwan

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ABSTRACT

Taiwan tea industry has undergone sweeping changes from the export market to the domestic market over the past years. Export of green tea has sharply shrunk, whereas import of black tea and jasmine tea is fast growing. There have been the expected increasing demands for partially fermented tea of high quality, partly due to the prosperity of Taiwanese living standard. Some production data of Taiwan's tea are: total acreage 21,3 34 ha; annual production, 24,486 tons; export, 3,172 tons; imports, 8,065 tons in 1995; and key varieties, Chinsin Oolong, Chinsin Dapan and TTES No. 12.

As that of tea plucking in most tea growing areas, tea manufacture is also facing deep labour shortage, because work force is mainly involved in processing tea. Labour shortage is the most important problems facing the tea industry in Taiwan. As a result, the production cost of the tea is pretty high, being not able to compete with foreign imported tea. The over-all tea industry in Taiwan is facing difficulties. In order to lessen the dilemma of tea industry, governmental policies and actions were established and conducted to help tea growers, manufacturers and marketers to solve the crisis.

INTRODUCTION

Taiwan is located in the middle of a chain of islands in the West Pacific stretching from Japan in the North to the Philippines in the Southwest . It is situated 160 km off the southeast coast of mainland China. Although Taiwan is small (36,000 sq. km), it is one of world famous places producing partially fermented tea.

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Tea was introduced to Taiwan about two hundred years ago by immigrants from the Fukien province of mainland China. The climate of most part of Taiwan is subtropical, with an average annual temperature, 22℃ and average annual rainfall, 100 inches. Taiwan's environment is perfect for tea cultivation. Tea is one of important specialty crops on the island of Taiwan. Estimated worth of annual production amounts to about US$ 300 million.

Although annual tea production in Taiwan was only approximately 24,000 tons in recent years , Taiwan still occupies a unique position among tea-growing regions of the world. It alone can supply every type of tea for domestic and world markets, with products ranging from non-fermented green tea, partially fermented Oolong tea, to black tea.

The rise of the New Taiwan dollar against the US dollar since 1986 has created a tremendous hardship for exportation of Taiwan tea. This problem compounded by a dramatic increase in production costs because of past sharp increases in general wages due to economical growth and enormous investment of national construction projects that require a lot of labours. Moreover, the open diplomatic policies of the government and that of the internationalization of trade in which cheaper and quality agri-products, including tea, are allowed to be imported in quantity. Recent quantities of imported tea were 6,045 tons in 1991; 6,752 tons in 1992; 9,928 tons in 1993; 10,388 tons in 1994 and 8,065 tons in 1995, showing drastically increases in imports and causing serious slow demanding for domestic tea.

There is an inclination that voluminous imported Oolong tea of good quality is soliciting in the Taiwan market. Such kinds of tea were predominantly imported or smuggled from Vietnam, Indonesia and mainland China where tea-related entrepreneurs of Taiwanese made the investments to produce Paochung-Oolong tea about 5 years ago. In addition, the high profitable tea crop and extension of plucking machines in many tea producing areas has brought over-production and massive by-products of made-tea, especially the summer tea with low quality. Late economic recession has also made the situation even worse. Taiwan's canned tea beverages enjoyed annual big growth in the past several years. However, pretty exhausted development of canned tea industry has produced somewhat low requirements for the locally made tea. Indeed, all the Taiwan tea industry is facing a crisis as well as a structural change now.

In order to alleviate the afore-mentioned impacts on Taiwan tea industry, government's approach, R&D measures of reducing tea production costs and promoting tea consumption are taken in hand to sustain the industry progressive and promising. Particularly, the COA (Council of Agriculture), PDAF (Provincial Department of Agriculture & Forestry) and the Taiwan Tea Experiment Station (TTES) have resolved several developmental strategies to keep the industry being able to persist. The objectives of this paper emphasize on the hindrance presently facing the Taiwan tea industry and simultaneously on the strategies for solving the industry difficulty.

TEA CULTIVATION

According to 1995 statistical data, Taiwan had 21,334 hectares planted in tea, predominantly in the north and certral parts of the island (Table 1). The main tea plantations in Taiwan were found in Taipei, Taoyuan, Hsinchu, Miaoli, Nantou, Chiayi, Yunlin, Yilan, Hwalien and Taitung counties . About 54% of planting area under tea adopts machine- plucking systems. The hand-plucking tea farms are mostly located at high elevation areas, producing good quality tea.

There is a clear trend that north tea producing area is decreasing, whereas that of central-south tea is increasing (Fig. 1). North tea production is not competitive, mainly due to varietal and environmenal reasons. The dominant variety in the area, Chinsin Dapan, is only good for making ordinary tea with plain aroma and flavour, having lost its competition in the market. Besides, the geographical locations of north tea, low elevations, are generally not suitable for making quality. Its spring crops tend to mature late, owing to air temperature and rainfall regimes. Although the tea acreage has decreased to less than half of the past highest total area, the total production still maintained as much as 24,486 ton in 1994, which was 85 % of the past highest total tonnage (Kan, 1995).

Table 1. Tea distribution in different producing zones in 1995.

North		Central South		Others	
County	ha	County	ha	County	ha
Taipei	3,404	Nantou	8,252	Kaohsiung	164
Yilan	603	Yinlin	497	Taitung	953
Taoyuan	1,501	Chiayi	2,051	Hwalien	306
Sinchu	2,409	Taichung	34	Tainan	3
Mioali	1,337	Chanhwa	12	Pingtung	28
Total	9,254		10,843		1,454

* PDAF (1996); The land area in Taipei and Taichung counties contains that of Taipei and Taichung cities, respectively.

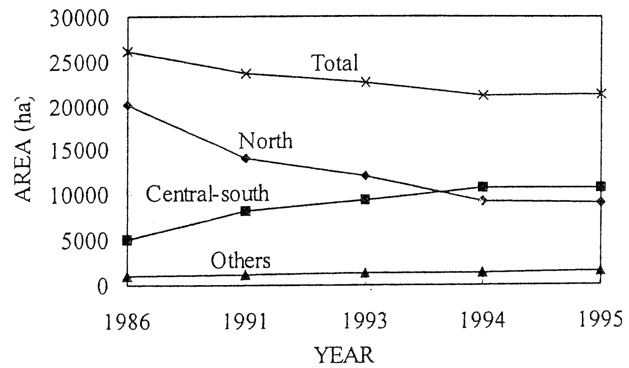

Fig. 2. Changes in land area under tea of different producing zones.

Chinsin Oolong, Chinsin Dapan and TTES No.12 are the dominant tea varieties in Taiwan (Table 2), particularly the fact that the Chinsin Oolong is Taiwan's precious assets in making partially fermented tea. The teas produced from the different elevation categories and the respective agro-ecological zones have distinctive features, in term of liquor, aroma and flavour. The minor varieties include TTES No. 13, Evergreen, Assam, Yinchu Honsin and Chinsin Kanchu. Each variety has its unique agronomic characteristics and qualities for manufacturing different kinds of tea to meet market requirements. There is a clear tendency that growing area of Chinsin Dapan is gradually decreasing for the setback of Taiwan's green tea export. However, the new local variety, Evergreen, has obviously attracted farmers' attention because of its early-matured characteristics and sound made-tea quality, with totally expansive planting acreage.

Table 2. Distribution of major tea cultivars in Taiwan.

Variety	Area, ha	Percentage
Chinsin Oolong	10,245	48
Chisin Dapan	3,900	19
TTES No.12	2,541	12
TTES No.13	922	4
Evergreen	672	3
Others	2,961	14
Total	21,241	100

* Liu (1994)

The reasonable total area under tea seems to be better maintained around 15,000 ha to 1,7000 ha based on the recent COA estimation. The past booming demand in the domestic market for partially fermented teas has resulted in 6,000 ha more tea lands in central and southern Taiwan, locating at Nantou, Chaiyi, Yunlin and Kaohsiung counties. Such increased cultivation has compensated the decreased production of north tea out of Taoyuan, Sinchu and Miaoli producing areas.

There is a strong tendency that there will have serious glutting problems as Taiwan lifts its tariff barrier on tea importation after the country joins the international trade organization, WTO . Economic influences on north-tea growth areas would be significant by reason of commodity similarity between the north tea and imported tea. Most north tea cultivation is located at low-altitudes areas. Its environment and labour conditions make yielding high quality tea with good aroma and flavour not so possible. The area of such type plantations amounts to about 5,000 ha.

The teas produced in high elevation areas are liked by most consumers and sell well. This has generated a trend in which high grade teas are in high demanding, whereas the ordinary grade teas produced from low elevation areas are in discouraged demanding. There are still cultivation problems encountering in high-grade tea production due to its soil conservation, and labour requirements in tea plucking and manufacturing. Production revenues are impressive. However, the expenses are too high as shown in Table 3 (Shyu, 1993).

Table 3. Production costs in high-grade tea areas (Shyu, 1993)

Location	Total costs	Production worth	Net revenue
		US$/ha	
Zenai	16,615	30,532	13,917
Alisun	35,520	48,492	12,972
Fanlu	31,058	42,698	11,641
Chuchi	39,973	56,193	16,221

* Costs included self-labours.

The second crops of summer tea in the most ordinary grade tea areas are not plucked because of its lousy quality and low sale prices. In some producing areas such as Wensun and Yilan, only spring, autumn and winter crops are harvested. This kind of production system has better allocation of farm labourers and at the same time is able to exempt from over-production. Research results have shown that giving up plucking summer crop and keeping flush shoots growing with appropriate pruning before fall crop can increase succeeding plucks such as autumn and winter harvest (Ho et al., 1994). This technology has been widely used in most tea areas to reduce the pressure of over -production in summer tea.

TEA MANUFACTURE

Generally speaking, through over 100 years development the manufacturing technique of partially-fermented tea in Taiwan is pretty matured, either in hand-made tea or in machine-made tea. The current problems of tea making is that the hand-made tea requires a lots of labour and time inputs, making manufacturers frequently doing inevitable night-shift works and competing for tea making labours. This is because hand-tea making has to go through numerous procedures such as solar withering, indoor withering, panning, rolling, mass rolling, tea-ball breaking, roasting and drying. Delicate skills and experiences are needed to control every making steps in order to gain high quality tea. Consolidated automatic controlling machines for making this kind of tea have not been available. Therefore, during tea manufacturing seasons competing for tea pluckers as well as tea making labourers nearly confronts in every high grade tea producing area, creating labour-wage hike year by year.

In addition, tea production systems are very unique because most tea farmers have their own tea manufacturing sets which currently amount to over 7,000. The farmers are growers and are also processors. It is very difficult for large scale tea manufacturers to remain competitive due to the failure of obtaining enough tea leaves for processing quantities of tea needed to maintain profitable in domestic and world markets. For the past 10 years, there were numerous big tea factories closed down due to the above-mentioned reasons. As for the survived tea manufacturing companies, most of them like to cut down the buying price of fresh tea leaves supplied from growers who do not make tea by themselves. Consequently, farmers' revenue is seriously affected, losing willingness to run their tea farms and even asking the government for solutions. This phenomenon especially occurred in the areas producing ordinary grade tea.

Chinsin Oolong is a key variety for manufacturing partially fermented tea. Consequently, the plucking period is too concentrated among tea gardens, resulting in tea growers competition on plucking and manufacturing labours.

Domestic consumption on partially fermented tea with curly spherical shape is in high demand . As the course of manufacturing, frequent rolling on hot tea balls is adopted, which creates labour intensive and brings on high production costs of the tea made. Fortunately, automatic stalk-removing machines under utilization have been quantitatively introduced from Japan or made domestically, which have successfully reduced problems of manual tea-stalks elimination and helpfully upgraded tea quality, particularly in Minchen area.

The selling price of tea produced in high grade tea areas is very attractive for the tea growers but the price is too high for most consumers. Although the price of intermediate and low grade tea is reasonable, the quality may not meet the consumers' requirements. The singularity of Paochung tea and Oolong tea on the market is facing new rivals, imported tea bags and canned beverage made of foreign black tea and jasmine tea.

TEA MULTIPLE UTILIZATION

Through the governmental and private sectors promotion, tea multiple utilization in Taiwan is steadily growing. The driving forces are probably from the promotional efforts made by the COA , PDAF, TTES, Farmers' Association and countless tea-shop runners. Both the COA and PDAF are the funding agencies. The TTES is one of executors of promotion projects such as tea multi-product manufacturing workshops, technology transfer to local food companies, point-of-purchase display and fairs. Development of tea diversified products has satisfied our local consumers convenience and more choices about tea requirements. Besides, it has raised the added value of intermediate and ordinary grades tea (Juan, 1993; Kan, 1995).

Main developed diverse tea products include 1. beverage category: flavoured tea, tea bags, instant tea, GABA tea, organic tea, fruit tea, herbal-fruit tea and canned tea; 2. snack food: tea candy , tea jelly, roasted tea eggs, tea cake and tea chewing gum; 3. tea liquors: tea wine, tea cocktail; 4. tea dishes: miscellaneous tea recipe; 5. utilization of tea powder: tea dessert and tea ice products; 6 . tea extract: tea paste, tea bathing bags, deodorant, mouth rinsing water and antioxidants; and 7. application of infused tea leaves: tea pillow and tea compost; 8. others: tea bonsai.

Successful market-products cover tea bags, tea jelly and tea beverage; whereas tea candy and tea cake are marketed in little quantity locally. Tea powder has been used in many wheatflour products such as tea noodle and tea biscuit. There is a predicted booming demand in tea diverse products because most people have a good thinking that tea is a health-protected product. Meanwhile the local food industry has utmost concern for new product development, in which tea multi - products are some of their new merchandise.

TEA MARKETING

Taiwan tea industry has gone through its prosperous export period (1945-1982)(Chiu, 1991). Since 1978 export quantity of tea became declining. Statistical data (Fig. 2) revealed that export tonnage of non-fermented tea sharply decreased, so did partially fermented tea. Imports of sizable amount of tea commenced in 1981, and 8,065 tons of tea were imported in 1995. There was a clear trend that imports of foreign tea were increasing (Fig. 3). It is interesting to note that started from 1988 there were gradual decreases in year unit price of imported tea.

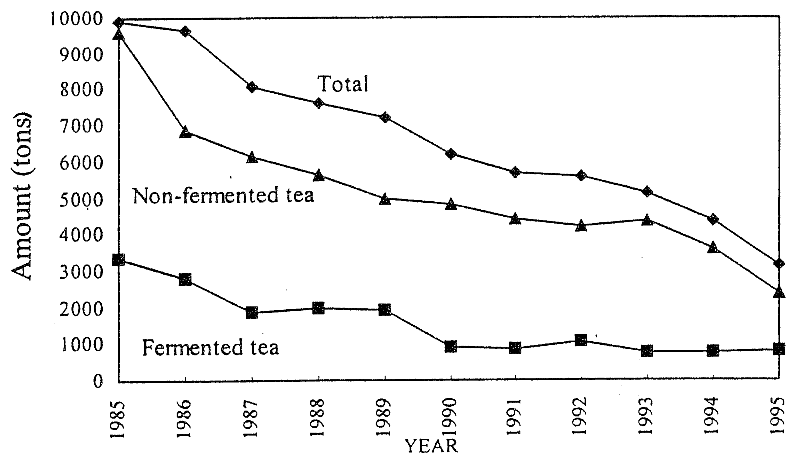

Fig. 2. Exports of tea from 1985 to 1995.

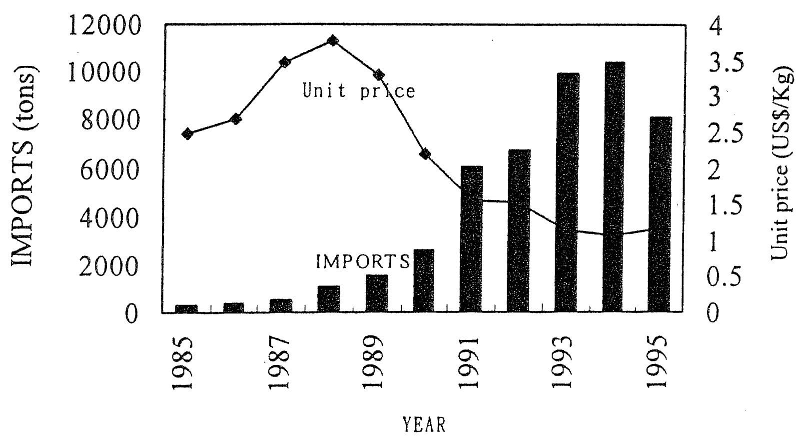

Fig. 3. Imports of tea and its unit price from 1985 to 1995.

Due to the great shift of Taiwan's tea industry from the international to the domestic market , tea marketing structure has also changed dramatically. Tea marketing channels in Taiwan are multiple. Basically, the tea market system in Taiwan (Chiu, 1991; Shiu, 1991) includes the followings:

- The market in the production areas between tea growers and tea merchants.
- The wholesale market between tea growers and tea manufactories.
- The wholesale market between gross tea manufactories and refinery tea factories.
- The wholesale market between tea manufactories and tea wholesalers.
- The wholesale and retail tea markets between wholesalers and retailers.
- The retail market between tea retailers and consumers.
- The retail market between tea growers and consumers.

The development of such marketing system has its industry's historical and economic backgrounds, resulting in complicated marketing systems. Beginning 1980's, the tea export became unstable. However, economical growth and social progress have made Taiwanese's crave for high grade tea. Governments of various ranks and many farmers' associations frequently held tea contests in tea producing areas have also provided additional incentives for farmers to make top quality tea because the rewarded tea can be sold at the better prices. With simple production facilities and noted tea making experiences, farmers can operate their business with envious profits. That is why there are several thousands tea factories of small scale production on the island.

There are consolidated thinking about the development of Taiwan tea industry. Some thoughts (Huang, 1991) have pointed that major problems of tea domestic marketing in Taiwan are: 1. Too many tea brands fail for local consumers to establish brand loyalty. 2. Tea products head for high selling prices, being hard in increasing market quantity. 3. There is no relative consistency between tea quality and sale price, usually doubted by consumers about their payments for the tea they bought. 4. Shortage of tea grading standards results in possible mimic high quality tea. 5. Most made -tea sticks to traditional consuming styles for lack of product versatility. and 6. It is facing strong competition of alien tea such as the tea made in mainland China, Indonesia and Vietnam.

DEVELOPMENTAL STRATEGIES

In order to revive Taiwan tea industry, several policies and measures have been worked out by the governments and civil organizations in order to adjust and re-manage the production of tea in Taiwan. Key ad-hoc working strategies are as follows:

Tea Cultivation

Presently, Taiwan is prepared to join the WTO. Although Taiwan has lifted its tea trade protectionism as early as in 1971, some difficulties still trouble the industry. To mitigate the pressure of over-production on tea, further expansion of tea hectare is strictly prohibited. That voluntarily abandoning tea farms is welcome by the governments. Shifting cultivation to forest crops is subsidized, particularly for those with illegal use of slopelands. Risk assessment shows that mainland China and southeast Asian tea will quantitatively enter into Taiwan market within 3 years . Ordinary grade tea areas will suffer from depressed running problems. If the growers would like to stay in the industry they should note the survival ways of transitional cultivation in tea. Growers with strong promotion in direct marketing seem to be an alternative approach being able to remain in the industry and to overcome the dilemma facing the industry.

To settle the problems of concentrated tea plucking periods, farmers are encouraged to adopt off-seasonal production approach, such as advancing spring tea crop, discarding summer crop and delaying winter harvest but ensuring the good harvest.

Decreases in tea cultivation costs offer additional tactics of competitive abilities with foreign tea. Rational applications of fertilizers and pesticides are the better clue to sustainable management of tea industry. Currently, the key objectives of plant protection are the promotion of safe, effective and economic tea pest and disease control technologies. The goal is to ensure the safety of tea products. Tasks focused in recent years were on enforcing guidance and education in the safe use of pesticides, developing and promoting non-chemical technologies for controlling tea pests. Stepping up world's tendency, Taiwan nowadays has 10 locations conducting tea organic farming. Organic tea seems to be succeeding in a good-niche market strategy.

Boosting farm mechanization in tea fields is expected to increase farm operation efficiency and to cut-down production costs. In order to encourage farmers to make use of farm machinery, loan policy with low interest rates and subsidies, acting operation of farm machinery, and demonstration of new farm machinery such as fertilizer applicators, rail operation systems and twig crashing machines, are carried out in some tea areas.

Tea Manufacture

Several kinds of tea manufacture problems are facing the tea industry, of which lack of labourers is one of the most serious. Due to inadequate labour force, tea growers have to raise their pay to attract workers. Particularly, there exists in high-grade tea manufacturing areas, since labour requirements are pretty high due to the fact that many tea manufacture steps need high degree of manual operation. Design and manufacture of automatic machines for each processing steps like withering, stirring, panning, mass rolling and drying have become compulsory for reasons of easing off post-harvest handling on raw tea materials. The process of mass rolling requests a lots of labour inputs. Machine replacement for hand rolling is not so successful. Repeated mass rolling and drying seems to be a key step to quality tea making. Development of automatic controlling machines for processing such procedures is urgently needed. Not only it can reduce the production cost , but also it can improve tea manufacturing.

Gradually on-farm changing from hand-plucking to machine-plucking in tea harvest is inevitable and is the best way to save production costs. That mechanization of tea manufacture will generate utmost concern for gross tea with lengthy stalks, made-tea comprised of plucked old- leaves, and yellow blades. Strengthening application of stalk- removing machines, sieving machines, color screening machines and wind-driven graders will be enhanced. In addition, technical improvement on tea blending and refining is a joint venture of the governments, local machinery workers and tea manufacturers.

Tea bags, relatively inexpensive and easy to consume, have become popular among tea drinkers in Taiwan, especially liking by the young generation. However, apart from black tea bags consumed , that of Paochung and Oolong tea bags seems to have tendency being shared sizable percentages in the tea market. The problem is to develop Oolong tea bags with delightful fragrant aroma so that it can be well accepted by most Taiwanese consumers and can compete with imported black tea bags .Tea is a specialty goods. Tea product diversification probably can lead to continued success. R&D effort towards new product development and in finding new market segments will be accelerated.

Tea Marketing

Theoretically, strategies of product marketing include product strategies, price strategies, distribution strategies and promotion strategies (Huang, 1991). Currently, domestic tea marketing measures aiming at solving industry difficulties are stated as follows. Based on different goal markets, adjusting product structures can better expand market requirements and expectations. Enlarging markets of middle-priced tea, ranging from 25 to 50 US$ per kg, are strongly recommended . Because it tentatively has more consuming requirements as compared to that of high grade tea. Mass production of this kind of tea can be at reasonable costs. Meanwhile it can reduce the impact on abused hilly slopelands.

Efforts to help various tea producing areas to set up their own marketing brands for local specialty tea, to design marketing logos and to establish mutual marketing system should be emphasized. The works should be let local farmers' associations, tea cooperatives and other farmers organizations get involved. This push strategy can result in lower advertising and promotion costs because the same name is used on all tea produced in the same area or unit, thus raising the level of brand awareness and image.

Promotive marketing of tea-related products has also to be fortified, not only it can provide consumers more choices about tea but also it benefits tea consumption. Traditional consumer promotion including advertising, personal selling, publicity and sales promotion will be intensified, particularly the fact that purchase displays will be hold frequently on the island.

Mainly due to high production costs, continuing to undertake international marketing may not be so promising. Export of raw tea to Japan for processing is not profitable. Creating customer value through small package with high tea quality is a persuasive suggestion to exporters who may apply this alternative mode to expand Japanese market operations (Kan, 1995) and to strengthen abroad market segments. Long-term tea marketing with Japan has fostered reliable marketing channels between the both sides. The marketing benefits should be grabbed and further extended. The westerners' changing demands for healthy and natural drinks has reflected that Europe and the U. S. are the potential markets for Taiwan's partially fermented tea.

REFERENCES

Chiu, C. F. (1991), "The Present Status on Tea Cultivation, manufacture and Utilization in Taiwan", In: World tea, the Proceedings of International Symposium on Tea Science, Shizuoka, Japan, August 26-29, 1991, pp.34-44.

Ho, H. F., Wang, L. C. and Lin, C. S. (1992), "Effects of Different Plucking Methods on Tea Growth, Tea Quality and Economic Evaluation in the Tea District of Middle Elevation", Taiwan Tea Research Bulletin 11:21-30.

Huang, C. Z. (1991), "Tea Domestic Marketing Problems and Its Developmental Strategies in Taiwan", Proceedings of Taiwan Tea Development, Taicung, Taiwan, Taiwan, ROC, May 31, 1991, pp.54- 68.

Juan, I. M. (1993), "Taiwan Tea Industry", Proceedings of the International Symposium on Tea Science & Human Health, Calcutta, India, Jan. 11-14, 1993, pp.86-95.

Kan, C. N. (1995), "Present Status and Outlook on Taiwan Tea Production and Marketing", Agri. Policy and Review 10:24-31.

Liu, C. T. (1994), "Survey on land area of Taiwan Tea Fields", Dept. of Agri. and Forestry, Taiwan Provincial Government.

PDAF (1996), "Taiwan Agricultural Yearbook", 1996 Edition, Dept. of Agri. and Forestry, Taiwan Provincial Government, p.57.

Shiu, C. C. (1991), "Tea Production and Marketing in Taiwan", The Almanac of Food Industries in Taiwan, ROC, 1991, pp.64-66.

Shyu, S. T. (1993), "The Economic Analysis of Abuse of Hilly Slopeland", Joint Project Report of Council of Agriculture and National Chung Hsing University, June, 1993.