

Investigation of Appropriate Cultivated Cultivars in Lugu Tea Plantation
Cheng-Chun Chiang

Objective of this study is to determine the possibility of planting new tea cultivars in retrograde tea plantation in Lugu Township, Nantou County. Five cultivars including Chin Shin Dah Pan, Chin Shin Oolong, TTES No. 18, TTES No. 19 and TTES No. 20 were planted in No. 7 tea plantation of Tungding Branch of Tea Research and Extension Station from the year of 2007 to 2010. Investigation of agronomic characteristics and plant disease and insect pest occurrences revealed that TTES No.18 was leading in plant height, hundred-bud weight, diseases and insect pest resistance. In final, it is suggested that TTES No. 18, TTES No. 19 and TTES No. 20 are suitable for planting in Lugu tea plantation.

Key words : Tea; Chin Shin Oolong; Chin Shin Dah Pan

Using EST-SSR Markers to Identify Tea (*Camellia sinensis*) Cultivars in Taiwan
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The research was aimed to analyze the 12 main tea cultivars in Taiwan using 24 EST-SSR primers, including 12 newly designed by the authors and 12 from previous references. In this study, the agarose gel with high resolution was replaced by the method of Genetic Analyzer for separating EST-SSR markers. The number of alleles was ranged from 2 to 9, with an average of 5.5, and the polymorphism information content (PIC) was ranged from 0.28 to 0.81, with an average of 0.62. Based upon the results, these markers have demonstrated their high-polymorphism. Besides, by using two EST-SSR primers only is sufficient to distinguish 12 main tea cultivars in Taiwan. These EST-SSR markers are used not only for identification of main tea cultivars in Taiwan, but also for tracing the parents of cultivars.

Key words : Tea; *Camellia sinensis*; EST-SSR; DNA Markers; DNA Fingerprinting; Cultivar identification

Biological Control of Tea Tree Pests in Taiwan
Hsin-Kuang Tseng Su-feng Roun Iou-Zen Chen

This paper reviews pest biological studies and field control of tea tree pest, included insects and mites. Biological control methods included Parasitoid and Predator released the utility of sex pheromone. Some studied results had extended in tea plantation included, *Trichogramma* spp. *Amblysiens womersleyi* and *Mallada basalis* (wolker) released, and the sex pheromone of tea tortrix. Some methods have utility potential include the parasitoid of tea silk worm. The main studied targets right now are focus in the utilization of *Mallada basalis*, *Cantheconidea furcellata*, and Mantis. The paper also discussed the studies of cultivation practices which utilized farming methods to decrease the threats of pests and some research situations of non-chemical pest control.

Key words : Tea tree pest; Biological control; Sex pheromone; Microbial control

Investigation on the Present Status of Cultivation and Production in Organic Tea Gardens in
Mingjian Township, Nantou County
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The aim of this study was to understand organic tea cultivation circumstance, verification and its potential contaminants. According to the Directory of Taiwan Organic Farms database, the investigation revealed that there were 59 organic tea cultivation households in Nantou County. Moreover, there were 60% of farmers using isolation zone facilities, *Bacillus Thuringiensis* and organic fertilizer to manage organic tea cultivation. There were also 62.5% of farmers using independent equipments in organic tea processing, additionally. The soil and irrigation water in organic tea cultivation were analyzed and there was no pesticide residue in there based on multi-residue analysis methods (3) and (4) which announced by the Department of Health. The investigations showed that using independent equipments and isolate facilities in organic tea cultivation would be appropriate to conform to the law of organic agriculture product management.
Key words : Organic tea; Pollution source; Pesticide residue

Studies on the Tea Quality Influenced by Rolling Process and Ball Rolling Times
Teng-Feng Huang Ming-Chun Liu

In manufacturing traditional semi-ball Oolong tea, it is necessary to take one workday for ball rolling. During the ball rolling process, teas must re-heated by panning or drying machine, and then several times of ball rolling are conducted repeatedly, the times of re-heating may change from 4~7 times for different tea manufacturer.

The re-heating and ball rolling process between hand plucking and mechanical plucking tea areas showed that not only differ in times of re-heating, the difference of times of ball rolling after re-heating was also bigger from 5 times to 8 times. The bulk density of made teas were different for the same tea area in different tea season, the difference might up to 10%. The aroma of made tea of hand and mechanical plucking tea area got decreasing tendency under the increasing of re-heating and ball rolling times, the tightness of made teas for the last 2 re-heating and rolling processes were very close and their appearance were acceptable for consumers.

Key words : Tea; Ball rolling times; Rolling process

Developing a Tea Cuisine Tourism in Taiwan
Ju-hwa Chang Hui-shung Chang

special functionalities for good health and, more importantly, for pure enjoyment. Tea, especially green tea, is well known for its many health benefits arising from its high contents of powerful polyphenols, antioxidants and catechins that individually or combined strengthen the immune system and prevent chronic diseases and cancers. Research has shown that it is good for the heart by reducing blood pressure and cholesterol and it is good for weight loss by helping burning more

calories. In addition to the traditional use of tea as a drink, many new products have been developed in recent years using tea as a key ingredient, eg tea ice cream, tea jelly, tea noodles, tea cocktails, etc.

Gastronomy tourism is a new focus for the tourism industry in Taiwan. Given the unique features of the Taiwanese tea and Taiwanese cuisine, we believe the combination of tea, tea cuisine and tourism presents an opportunity for both the Taiwanese tea industry, the food industry and the tourism industry.

There are some challenges, however. Firstly, “food and wine” has been used by many wine producing countries such as France, Italy, Australia and New Zealand to promote tourism. At the wineries and restaurants, there are chefs and connoisseurs who make recommendations on the best combinations of food and wine, eg white wine with fish and chicken and red wine for red meats. However there is no such practice or research for tea. Secondly, having a good product does not necessarily guarantee a market. More needs to be known about consumer demand and how such a demand, if exists, can be satisfied with appropriate marketing strategies. This study investigates the opportunities and challenges presented to developing the tea tourism in Taiwan.

Preliminary results suggest four possible market segments exist: the tea eco-tourism, the banquet market, the specialty tea market and the snack market, each with its own unique tea product combinations and supply chain configurations. Promotion for these market segments may include: (1) promoting local food and specialty tea in tea producing regions; (2) promoting tea banquet and specialty tea as a choice of fine dining at international hotels and restaurants; and (3) promoting tea drinks with snack food at the night markets and convenience stores. However, more research is needed to identify target markets, assess their potentials and develop a set of appropriate marketing strategies (the 4 Ps) to meet market demand.

Key words : Tea; Tea cuisine; Gastronomy tourism; Tea tourism; Tea cuisine tourism