

Studies on the Production of Grapes and Winemaking in  
Thailand  
Cooperative Research Program between Thailand and Japan

PRADIT KARUWANNA<sup>1)</sup> and KOKI YOKOTSUKA<sup>2)</sup>

- 1) *Institute of Food Research and Product Development,  
Kasetsart University, P. O. Box 4-170, Bangkok 10400,  
Thailand.*
- 2) *Institute of Enology and Viticulture, Yamanashi  
University, Kofu, Yamanashi 400, Japan.*

High humidity is the rule in Thailand and Japan. As a result of this, grape varieties must be tolerant especially to fungal diseases and viruses caused by high humidity in the growing season. Furthermore, the grapes produced in the two countries are of low acidity and low sugar even though the air temperature in Thailand is rather high. Thus, it has proven difficult to establish European grape varieties in the two countries, although north American grape varieties grow very easily under such climatic conditions.

Koshu grape variety and Muscat Bailey variety are typical grape varieties for white wine and red wine, respectively. The Japan's climatic conditions are very suitable to the growth of these varieties. However, with the above two varieties, we cannot get enough grapes needed for commercial wine production. The two varieties are expected to match the Thailand's climatic conditions. Therefore, we are planning to plant various wine grapes including the two varieties in Thailand. Production of wines from these grapes will be carried out in near future. One advantage in growing grapes in Thailand is that there are 5 harvest seasons for grapes per 2 years.

As the first stage of this joint research between Thailand and Japan, we investigated the real situation of grape and wine industries in Thailand.

## Grapes and Wine Production in Thailand

PRADIT KARUWANNA

### Development of grape growing and wine making in Thailand

Thai people have been drinking wine for hundreds of years without knowing or mentioning the alcoholic beverages they drank as wines. The turbid wines they made and consumed at that time were (glutinous) rice wines and palm wines. The process of making was almost the same as nowadays' rice wine making. It was quite simple, using Looke-pang (Ragi) as an inoculum. There are many kinds of Looke-pang. Some consist of only yeasts or molds and some consist of mixtures of both. Mostly Looke-pang are contaminated with bacteria. To prevent the undesirable action of bacteria, small pieces or powders of herbs, spices and medicinal tree barks are usually added to Looke-pang and fermenting wines. The quality of rice wines and palm wines was not so good and consistent. They had to drink them within a few days after the end of fermentation or even drink before fermentation was terminated, otherwise the wines would have turned into vinegar.

The first European wines may be brought to Thailand by French Missionaries and representatives of King Louis XIV in the reign of King Narayana the great of Thailand (1656-1688). They brought the wines for their own consumption. The more new countries Thailand contacted with, the more kinds of wines and alcoholic beverages from foreign countries came in. But there was no idea of establishing a winery in Thailand. This may have been due to lack of grapes and vineyards. Another reason was that very rare or few Thai people drank wine or knew about wines at that time.

Seeds and cuttings of table grapes from the United States and European countries may have been brought into Thailand during the reign of King Rama VII of Thailand (1925-1934) and cultivated since then. Cultivation

developed gradually. Viticulturists and local grape growers found out by many years of trials that the central plain area around Bangkok is the suitable place for table grape cultivation. So in 1960 many table grape vineyards were established for commercial purpose in Nakorn Pathom Province and then expanded to the nearby provinces of Samut Songkram, Samut Sakorn and Ratchaburi. *Vitis vinifera* varieties of white malaga (white) and cardinal (red) are the main commercial varieties at present.

The first commercial fruit wine production in Thailand began in 1939 by Siphya Fruit Wine Factory in Bangkok. The products were sometimes found on the market for about 20 years, but finally the winery was completely closed. Local grape mixed wines were introduced to the market in 1967 by Pramualpol Co. Ltd., Nakorn Pathom Province, and are still on the market at present. Rice wines (Ou, Sato, Kachae) were at that time produced in a modified process by Sura Thaidirm Co. Ltd., Ayuthya Province, but disappeared from the market only a few years later. The first Thai brandy "Regency" was produced in 1977 by Suwannapoom Distillery Co. Ltd., Nakorn Pathom Province, and is still on the market with increasing volume of production every year. Three coolers: Cooler Club, SPY and Seagram were produced in Thailand since 1987 by Pramualpol Co. Ltd., TC Pharmaceutical Industry Co. Ltd., and Seagram (Thailand) Co. Ltd., respectively. Masala (white and rose) table wines are also produced by Pramualpol Co. Ltd. since February 1988.

Wines, brandy and some coolers in Thailand are produced from table grapes. Hopefully in the next few years, new modern wineries will be developed in Thailand since many old and new vineyards are now active in cultivating suitable new wine grapes for quality wine making.

**Meteorological conditions**

Thailand, a tropical country, has 3 seasons a year : summer (March-June), rainy ( July-October) and winter (November-February). The average temperature is 30-35°C . The winter is

very short and not so cold. The wet monsoonal period starts against the end of the summer. The annual rainfall and rainydays are shown in Table 1 and 2.

Table 1. Annual rainfall by region (1982-1986)

Region	1982	1983	1984	1985	1986	average
North-Eastern	1438.8	1341.3	1477.9	1361.8	1428.3	1409.6
Northern	1041.1	1238.5	1081.3	1260.3	1100.7	1144.4
Central plain	1453.4	1773.1	1250.5	1434.2	1431.3	1468.5
Southern	2168.1	2256.4	2289.9	2280.7	2472.0	2293.4

unit : m.m.

Table 2. Annual rainy day : location by region (1982-1986)

Region	1982	1983	1984	1985	1986	average
North-Eastern	120.0	116.7	124.4	120.4	109.8	118.3
Northern	112.8	119.9	115.9	126.6	106.7	116.4
Central Plain	124.1	122.5	113.2	131.2	113.7	120.9
Southern	166.3	154.5	178.5	176.7	167.0	168.6

unit : day

**Viticultural practice**

The four main grape growing provinces around Bangkok are Nakorn pathom, Samut Sakorn, Samut Songkram and Ratchaburi. White Malaga(95%), Cardinal and Muscat Hamburg (5%) are the three varieties of table grapes grown there. Under tropical conditions, vines keep on growing. Fruiting is induced by pruning and artificial defoliation. The vines are planted 3.0 m. apart in rows approximately 4 m. wide. In the low land areas where the water level is relatively high there is a 3m. wide irrigation canal between the rows. The vine bank is about 0.8-1.0 m. above the water level. The vines grow year round and the harvesting time can be manipulated by adjusting

the pruning time so that grapes can be harvested every month. The two principal trellis system are a seven wire overhead trellis and an overhead pergola system. The overhead training system results in a main trunk to 1.6 m. high and a 2 m. wide fruiting framework of four arms at perpendicular to each other spread over the wire lattice. The developing shoots of the main framework are pruned to 7-10 buds and all the leaves are plucked from the vines by hand. The first pruning can be made when the vine is only 10-12 months old. Harvest takes place after pruning approximately 110-130 days then the vines are left for 1 month before being repruned and defoliated. After three crops the canes are pruned

back to two-bud replacement spurs. Cardinal and Muscat Hamburg varieties can be pruned to produced three crops a year whereas white malaga variety will only produce 2 crops a year or 5 crops over a 2 years period. The average yield per vine per crop is 15-30 kg. Planting density will average 100-130 vines per rai (0.4 acre). The life of a vine is short normally 5-7 years on the low land areas and

more than 10 years on the normal or highland. The current market price for white malaga is US\$ 0.6-2.0. Cardinal and Muscat Hamburg sell at about US\$ 0.6-1.5. The berries usually have the following composition : 14-16° Brix, pH 4.0±0.5, total acidity 0.3-0.4% (as tartaric acid). The annual production of grapes (1982-1986) is shown in table 3.

Table 3. Annual production of table grapes.

	1982	1983	1984	1985	1986
Area( rai)	26,620	23,132	20,884	19,865	16,213
Total harvest (tons/yr)	63.82	45.09	30.02	27.49	25.5
Yield (tons/rai/yr)	2.40	1.95	1.44	1.38	1.57

unit : kg/rai/yr.

1 rai =0.4 acre.

#### Import and local wines

The most important countries which exported wines to Thailand are France, Germany,

U.S.A., Australia and Italy. Quantity and spirit tax of the imported wines to Thailand during the year 1983-1985 is shown in Table 4.

Table 4. Quantity and spirit tax of the imported wines during 1983-1985.

Category	1983		1984		1985	
	lt.	tax	lt.	tax	lt.	tax
Table wines	606,301	1,139,437	676,883	1,285,839	707,400	2,194,058
Champagne Sparkling wines	30,401	61,142	31,947	59,722	31,668	92,301
Sherry, Port and Madiera	10,103	13,852	9,767	13,489	10,907	29,796
Vermouth	17,329	26,759	20,913	31,945	7,157	18,847
Sake	30,040	42,825	34,697	50,189	33,682	93,554
Brandies	143,736	355,640	120,686	291,830	77,699	232,512

Tax in US\$

There are 3 wineries (Pramualpol Co. Ltd., T.C. Pharmaceutical Industry Co. Ltd. and Seagram Co. Ltd.) and one brandy factory

(Suwannapoome Distillery Co. Ltd.) in Thailand. Pramualpol Co. Ltd. produces both wines and coolers but the other 2 companies produce

only coolers. TC Pharmaceutical Industry Co. Ltd. is the largest winery in Thailand. Sales volume comparison of the local brandy, wine and cooler in 1986-1988 is shown in Table 5.

Table 5. Sales volume comparison of local brandy, wine and cooler.

Category	1986	1987	1988 (Jan.-Jul.)
Brandy	301,260	749,540	517,340
Table wines	96,720	57,680	35,340
Coolers	—	1,648,000	1,365,828

Unit : lt.

#### Research and development for wine grapes cultivation in Thailand.

Research and development is being done since 1981 by Seagram and Sons Co. Ltd. from the United States sent cuttings of 18 different varieties of wine grapes to be cultivated at 6 experiment stations in Thailand. The results were quite satisfactory but research and development on many different imported grape varieties cultivated at different places in Thailand are still carried on by both private companies and governmental agencies. Some varieties showed high potential yield with good adaptation to the climatic conditions of Thailand *ie* Chenin blanc, Trebbiano, Marsanne, Chasselas, Excelsior, Portugieser, Seibel, *etc.* The world's well-known varieties *ie* Chardonnay, Portugieser, Seibel, *etc.* The world's well-known varieties *ie* Chardonnay, Riesling, Sauvignon blanc, Semillion, Muller Thurgau, Cabernet sauvignon and Malbec can be grown but the yield is lower and the characteristic is partly lost.

#### Acknowledgement

The author would like to express his thanks to Department of excise, Ministry of Finance, Thailand, for their courtesy in providing some data.

#### References

- 1) Agricultural Statistics of Thailand Crop Year 1986/87. Office of Agric Economics, Min. of Agric and Co-operatives. Thailand.
- 2) Agro-Food. Fac. of Agro-industry, Kasetsart Univ., Bangkok : 1 (1) 2-8. (1988).
- 3) The Australian Grapegrower & Winemaker. No. 282, June 1987. page 36-37.
- 4) Thirty Year of Horticulture in Thailand. Kasetsart Univ., Bangkok, 7-9 Nov. 1987., Page 94-98.
- 5) Alcohol Fermentation Society of Thailand, Kasetsart University. 2 (1) 59-67. (1983).