

## **Development initiatives on mango quality and marketing in Thailand**

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### **Varieties and Region of growing**

Thailand is recognized as a major mango production area of the world which account for 305,000 ha with 2.3 million tones of fruit in 2008. Fresh, canned, dried and frozen mango worth 12, 22, 9 and 9 million dollar respectively. The major variety is Nam Dok Mai No.4, Nam Dok Mai Si Thong and Mahachanok. The main production area is spread throughout the country. The harvest time varies with longitude and latitude. For this reason, mango can be harvested all year round starting from central, northeastern, northern and southern respectively.

Most of the fruit is sold as fresh fruit in the domestic markets. About 2% is exported overseas in fresh form, mainly to Singapore, Malaysia, China, Japan, South Korea and EU. A small percentage of production go to industry into canned mango, dried mango and frozen.

There is also a growing need in Thai mangoes especially Namdokmai. Consumers are becoming more interested in and have discovered the taste and sensation that mango can give. Small amount of Mahachanok be used for the alternative when Namdokmai is quite end of season. It is a natural hybrid between Thai variety and out coming variety.

### **Production Process**

Characteristics of the farms in Thailand are quite different. Some areas in central part, cultivation is in bed systems, soil is raised in a ridge-and-furrow configuration. In northern Thailand, most are cultivated nearby the foot-hill zone or in a highland areas. In northeastern area, its location take a big advantage as it located in the rain shadow make it possible to do an off season.

#### *Dwarf tree*

Dwarf tree is beneficial to harvest. In horticultural practice, a tree artificially kept to a smaller size than is normal in order to get a minimum damage from harvesting and decrease cost.

#### *Tip pruning*

Synchronization of the vegetative growth of tree canopies is a necessary first step in the flowering management program. Synchronous growth throughout each tree allows all of the stems in the canopy to be in the same physiological stage of maturity so that management can be most efficiently achieved uniformly throughout a section of orchard. It not only causes a uniform flush of growth throughout the canopy, it removes growth – and flower – inhibiting factors in stems derived from the previous season's flowering and fruiting panicles. Tip pruning also stimulates lateral shoot development forming 5 to 10 times the

original number of productive stems, thus, increasing potential yield. It is essential that trees have adequate water at the time of pruning to facilitate a rapid flushing response because even mild water stress during the tropical dry season discourages shoot initiation.

The flowering program can be started at any time regardless of the presence or absence of fruit. Other factors, however, such as harvest of the previous season's crop, timing of the dry and wet seasons, and high susceptibility of flowers and fruit to disease during rainy seasons, are important considerations when deciding on the starting date of the flowering program.

### *Thinning*

Thinning immature fruit at the appropriated time allows each remaining fruit to develop to its maximum size. Less-crowded fruit receive more sunlight, so fruit color and flavor may be improved. Fruit thinning also reduces alternate bearing.

### *Bagging*

Bagging are used to prevent laying egg from oriental fruit fly. There are two types of bag. One is carbon bag, another is white bag. Carbon bag does not allow the light to penetrate to the fruit. This situation provide the completely uniform mango skin like Nam Dok Mai No.4 and Nam Dok Mai Si Thong variety. Bagging not only protect laying egg from fruit fly, it make skin cleaner and more attractive. While the white bag allow the light penetrate to the fruit. This kind of bag is suitable to some varieties that still need lighting for color skin development like Mahachanok variety. Bagging the individual fruit should be done at about 45 days after fruit set or just after natural thinning or dropping when the mangoes are about the size of a chicken egg.

### *Increase yield*

Mango shoots are grafted onto the mother plant to increase yield in a small space within season. This technique can be used in almost variety and become beneficial for farmer who need to get the high profit in limited situation.

## **Postharvest Process**

Cutting the fruit off the tree with the bag and stem attached to protect the fruit from defect and sap burn during transport to the packing house. The optimum maturity of fruit for distance market is 85% (From 100-120 days after fruit set depend on area). Specific gravity is provided to check maturity of fruit before bringing to the sequence of operation in packing line.

### *Grading*

Fruits are separated into different grades according to the level of blemish and other visible defects on each fruit. Mangoes are typically graded into various classes that are distinguished by the levels of minor defects on the fruit. Range of standard for example class A, class B, and class C. Defect levels determine whether the fruit is classed as class A, class B, or class C. An allowance is the amount of defect allowed on a piece of fruit not more than 5%, 10%, and more than 10% respectively.

### *Packing*

For EU market

Divided into individual fruit packing, 2, 3, 5 and 10 kilogram per box.

SIZE	WEIGHT IN GRAMS
X L	380-450
Large	330-379
Medium	280-329
Small	250-279

### *Storage conditions*

Fruits are storage at 13°C throughout the cool chain. Storing fruit below 5°C leads to chilling injury. Consumers are advised to keep mango under the temperature between 18 to 22°C to stimulus the ripening, otherwise mango could not be ripen during winter temperature in many countries.

### **Marketing and Branding**

The fresh fruit marketing system is increasingly focused on adding value and decreasing costs by streamlining distribution and understanding customer demands. There needs to be a commitment to reform production processes throughout the supply chain to enhance the competitiveness. Therefore, a focus on branding would add value to mango exports.

Under brand loyalty concept, which in marketing, consists of a consumer's commitment to repurchase products or services. Consumers are recognized and familiar with a mango talk campaign.

### **Quality assurance measures**

The traceability system is the first step in ensuring an effective food safety quality program. Food safety means that agro-products should undergo a certification process and be evaluated according to MRLs. Therefore, aspects of farm management such as the following should be closely monitored: sources of seeds and seedlings, pests and weed elimination, pesticide application, dates and amounts of fertilization, harvesting or post-harvesting treatment and

basic information regarding the individual farmer. The standard for those works could become very relevant for the trade in mangoes.

A traceability system is vital to ensure the accuracy of all information from farm to table. Safety, hygiene and pest control are very important aspect of fresh vegetable and fruit marketing. It is necessary to continue improving and enhancing those aspect by giving them an education and information regarding the latest data, technique and marketing concept. I and our staffs play most of our life time to do this work on cultural practice, on my own tv. show and my own agricultural magazine, name the plant magazine. I believe that, implementation of the above measures would allow consumers to enjoy the unique flavor of Thai mango with safety concerns.