

The Factors Attributing the Successful Management for Mango Orchards in Chachoengsao Province, Thailand

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Abstract

The modern management for mango orchards in highly competitive market needs the professionalism in production and marketing. This research was aimed to study further the mentioned factors attributing the success management for mango orchards in Chachoengsao Province, Thailand.

The instruments were 175 questionnaires, 30 mango farmer interviews and literature reviews during June 2015 to April 2016.

The results of this study showed the details of the two factors contributing the success in mango orchard management: production and marketing. First, the production management needed a full range of modern technologies to increase the quantity of the agricultural products, good agricultural practices to promote GAP standard, zone separation to simplify the quality control procedure and the harvesting, and also the quick response codes or QR code for customers to investigate. The other one, the marketing management needed the center of information technologies, the modern technologies for rapid communication, agricultural tourism, certain brand name, a product story line in three languages: English, Thai, and customer's language.

Keyword: Successful Management, Mango Orchards

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Introduction

Mango is a tropical fruit which is important for Thai economy, it can grow well in all areas of Thailand. Mango needs of domestic and international market increase rapidly every year. Markets needs quality mango: fresh, good taste, perfectly formed skin with good colour, without residue and storable. These propositions will be responded by producers: looking after mango production professionally and be able to closely compete in price and quality in world market (Department of Agricultural Extension, 2013).

Chachoengsao province has cultivated area for agriculture of over 62 percent or approximately 790,826.41 acres. Approximately 11,862.39 acres of this area is used for Mango cultivation, it can produce about 768 kilogram of mango per 0.3954 acre, approximate total of almost 20 tons. (<http://www.touronthai.com/forum/review.php?topic=3558>) Costs of mango production including all species average 8,661.35 Baht per 0.3954 acre (about 247 U.S. dollars) and remuneration on average net 9,881.74 Thai Baht per 0.3954 acre (about 282 U.S. dollars). The study showed that Namdokmai had the highest cost, then Mahachanok, Khiaosawoey, and Chok Anan: the productive costs were 336, 274, 227, and 198 U.S. dollars respectively (6th Regional Office of Agricultural Economics, Chonburi, 2009 :1). Mango is grown in every district of Chachoengsao province. It is plentiful in Phanom Sarakham, Bang Khla, Khlong Khuean and Plaeng Yao districts. Besides, mango is a famous product of Chachoengsao. It is tasty because of soil: mixed clay and alluvial soil which is full of plant nutrition. Thus, it is suitable for mango planting (Office of Commercial Affairs Chachoengsao, 2010). Most of mango farmers plant Namdokmai Sithong because it is in high demand in export market: in Asia and Europe. Currently, mango farmers have changed to produce non-toxic Namdokmai to meet quality and standard of consumers in international market needs. This may give opportunities to mango farmers exporting their product into international market more and earn about 1 billion Baht per year (about 28.56 million U.S. dollars) as income to Thailand and mango farmers themselves (Rojanapornthip, 2014: 66).

At present, agriculture goods have changed increasingly and are highly competitive in quality, quantity and cost. These caused crofters to face problems in agriculture goods production and distribution, including low opportunities to access investment information, resources and marketing. According to production of each crofter, it makes it difficult to manage effective production and have quality product consistently with market needs.

This research aimed to study factors which affect management of mango orchards in a highly competitive market. The results will be useful to mango farmers and related organizations in future.

Materials and Methods

Survey research is used and questionnaires were provided as instruments from documents and research analysis to obtain quality with Item Objective Congruence: IOC and test reliability. Then applied instruments which passed quality test to collect data: a field trip

was arranged to provide questionnaires for 175 mango farmers who registered with list of mango farmers in Bang Khla, Khlong Khuean, Plaeng Yao and Phanom Sarakham districts in Chachoengsao province, 30 mango farmers were interviewed, analyzed and evaluated of statistical mathematic and content analysis.

Results

The results of this study showed the detail of mango farmers were mostly male 78.57 percent, female 21.43 percent and the average age was 56.21. Most of them had primary education 46.43 percent, secondary education 35.72 percent and Bachelor degree 10.71 percent. The level of vocational college and Master degree were similar at 3.57 percent. The amount of mango orchards was approximately 58 acres.

Mango farmers in Chachoengsao are a strong mango productive organization together, professional and able to produce quality mangos. The research showed coalition of mango farmers to be Cooperative of mango farmers of Chachoengsao. There are members of 7 districts from 11 and the total member is 180 (Khantipalo, 2016). In addition, Community Enterprises group for Mango production in Bang Khla, Chachoengsao province: there are about 50 members (Khaewwongnukul, 2016). All mango farmers who are members of these organizations will be better in productive management and improve mango production into Good Agriculture Practices –GAP for good result with environment and safe consumption (Sinchaisri and others, 2008:5). Mango farmers with commercial planting in the large area will have to be skilled to produce good quality to meet market needs with suitable cultivated area, prepared labors, and investment. The weakness point currently is mango farmers cannot develop all mango quality to meet customer demand due to climate as an important variable it can cause farmers to produce less, thus export less and is an out of control factor. This is consistent with Rojanapornthip (2014: 66) and lack of full time labor working in mango orchards. Most of labors are aliens and labor cost is close to Thai labor. However, there is Thai labor shortage in mango farms because they have more opportunities to work in other occupations. Moreover, this research also discovered some mango farmers had advanced knowledge in using the specific fertilizers to fulfill the soil in each period of the time that mango leaves bloom and produce. Mango trees need different minerals; soil in the orchards was analyzed by controlling organizations at Khao Hin Sorn Royal Development Study Center. This location is selected for the use of soil analysis because the mango orchards are close to that center. The analysis is to check for the lack of minerals in the cultivated area (Nopparit, 2016). This is consistent with Sinchaisri and others (2008: 68) and it can decrease productive cost. As necessary of productive factors that mango farmer groups will buy the factors together from trustworthy trade dealers. This is aimed to decrease productive cost (Khantipalo, 2016: 14) and attempts to negotiate with traders to have lower price than the current price. There are 3 provinces as pilots in this cooperation: Phitsanulok, Phichit and Chachoengsao provinces which accords with Rachalet (2015: 16).

Mango orchards management in commercial way: the mango farmers of the large cultivated area should apply technologies into their production, for example using a tractor as a laboring saving device and planning for planting with the distance of width at a minimum of 4x6 square meters from each tree in order for the machines to get through, on applying fertilizer at mango trees, crop dusting for protecting trees from insects, weed killing, collecting branches after trimming and carrying products out of orchards (Khantipalo, 2016). The massive cultivated area will be separated into zones (Kaprasit, 2016) for easier products management and decrease damaged product problem from not harvesting in time. Besides, mango farmers should manage the mango production so not to produce mango at the same time with mango season, as its price will be lower because there are plenty of mangoes in the markets. Besides, production has concerned in sanitation of people and plants for example, cultivated area, inside the standard selected building to follow principles of Good Manufacturing Practice-GMP, inside the store and logistic. All of these aimed to have Good Agriculture Practice (GAP) and has become a public safety fruit by applying risk management system into production process. The systems for recording all practical process and maintenance are used; thus, they can recheck in every process from cultivated area until harvesting, including the risk management in sanitation of people and plants in other processes. These possibly occur during productive process until products are delivered to customers. All of these can gain consumers' trust that mango products are safe and the residue amount is under the standard of residue in each country. Therefore, customers can investigate products via QR Code system from the sticker on each product which shows member code and history of this mango; thus, customers can have information of where the mango comes from, who produces it, the process of production and so on. These can create confidence of customers for exporting markets. Cooperative of mango farmers of Chachoengsao has developed traceability system; therefore, consumers can use this code to investigate the products on the website www.coopthai.com/mangoccs. It is developed and has both Thai and Japanese languages as public information (Khantipalo, 2016; Office of Commercial Affairs Chachoengsao, 2010: 8, 12).

According to packaging, mango farmers will wrap all mangoes with wrapping bag in order to keep mangoes skin beautiful and also protect them from insects. Productive cost of each mango for this wrapping is about 1.15 Baht and wrapping bag can be used twice: 1 wrapping bag box contains 2,000 bags (Khantipalo, 2016). In addition, the study showed that mango farmers bring their mangoes to Cooperative of mango farmers of Chachoengsao to investigate the residue before the harvesting time of 1-2 weeks (Kaprasit, 2016). Moreover, mango farmers should be prepared for management in many factors: selecting the location with water resource; thus, mango can be easily produced out of season. According to productive buying factors, the reason for buying them with the mango farmer group is because it will be cheaper in large quantities. However, quality of the products will be better because of more supporting system to respond domestic and international markets, due to their requirement for quality mangoes and reasonable price with nice packaging to be sold as presents or souvenirs and also at the retailers.

In the marketing of international exporting by mango farmer groups of Chachoengsao that have signed contracts for advanced trading with contract farming of over 15 companies. In this issue, mango products will be packed and distributed to other countries: Japan and South Korea (Khaewwongnukul, 2016; Khantipalo, 2015:21). Sales promotion for distributing in international markets by government organization arranged for trade representatives to attend Outgoing Mission project which aimed to visit target markets (Prachachatturakit., 2015) as the mango season is at the end of April to early May yearly. Mr.Manob Khaewwongnukul and Mr.Sakda Khantipalo, leaders of agricultural groups in Chachoengsao also attended Fruit Festival in Japan and also brought mangoes from Thailand to distribute there for presenting Thai mango market to Japanese (Mongkhon, 2016) which is consistent with Ratchalet (2007). As mangoes are fresh and good quality because of the professional agricultural group to increase the better production; thus, they can produce quality mangoes to meet market needs and have earned more income. The mango goods are still insufficient for exporting companies' needs. Thai mangoes play an important role in the world market as they are exported to 42 countries worldwide. Important exported mangoes are Namdokmai Sithong, Mahachanok and Chok Anan which the products are mostly distributed to Japan and South Korea, China, European countries and USA respectively. Mango products are divided into 3 grades: A, B and C. A grade mango: each of which should not have more than 2 scratches, the scratches must be within 1 mm in width and 2 cm in length, and the total of the black mark and scratching mark should be within 5 percent of the whole mango. It should not have any antagonistic, downy mildew or black spot. B grade mango: each of which should not have more than 3 scratches, the scratches must be within 1 mm in width and 3 cm in length, and the total of the black mark and scratching mark should be within 10 percent of the whole mango. It should not have any antagonistic, downy mildew or black spot. C grade mango: each of which has no limit in width and length of scratch marks but the scratch marks must be within 20 percent of the whole mango. It should not have any antagonistic, downy mildew or black spot. The average weight of mango is 280-600 gram; mango aged level is 80-90 percent (Komon, 2016; Office of Commercial Affairs Chachoengsao, 2010:7-8).

The competitive countries of Thailand for exporting mangoes to Japan are the Philippines, Vietnam, Taiwan, Mexico and Australia. The competitive countries for exporting mangoes to South Korea are the Philippines, Pakistan, Australia, Vietnam and Peru. Domestic retailers prefer to sell by scale weight rather than selling in bulk, also unripe mango is in demand in the domestic market. Domestic consumers require mango aged 90 percent and upper (Komon, 2016) with tasty, good quality and a good standard size with 330 gram per each mango and it is distributed in the market all year. Popular mangoes are Khiaosawoey, Falan, Mandueangao and Namdokmai. Mangoes are agricultural goods which are easy to be damaged; thus, distributing period is short and most of the products harvested, 95 percent of them will be distributed to domestic consumers as fresh fruits. Local agriculturist will have meeting points for trading that are close to cultivated area or commission merchants will buy and pick up products in the farms. Most commission merchants are familiar to the farmers. There are commission merchants from markets in Bangkok: they hire common carriers for picking up mangoes and deliver to distribute at Si Mum Mueang market, Tai market, Pak Klong Talad market,

Sapankhao market, Mahanark market and so on for distributing to retailers and consumers further (Chumhiran, 2016; Office of Commercial Affairs Chachoengsao, 2010) besides, mangoes are also distributed at Modern Trade: The Mall, Fashion Island, Taiwasadu department store as they can be distributed in higher price and products are packed into cartons and clear plastic boxes as for presents or souvenirs.

Agriculturists currently have adapted to apply modern technologies in management of production and marketing via mobile phone, Smart phone, Line application, Facebook, E-mail application to communicate rapidly. The coordination is between mango farmers in group to solve problems in production and marketing together and also reach information and news on business between agriculturists and private sectors under basic of admitting in reasonable quantity, quality and price. The language used in products distributing should be in Thai, English and customer's language. Moreover, we should have product story line on the details of production and the advantage of having mangoes which have research supporting the knowledge of the amount of antioxidants in fruits found that is ripe. Namdokmai has high Beta Carotene that is good for brain in order to learn and remember. In addition, ripe Namdokmai also has Gallic acid as a type of antioxidant for anti-fungus and anti-virus (Jongjaited, 2015) and other advantages of mangoes. Thus, trade partnership countries can understand and may make a decision to buy more mangoes. Chachoengsao province recognized the importance of mangoes exporting especially, Namdokmai which is under the brand Quality Mango (QM). In agritourism, Cooperative of mango farmers of Chachoengsao and Community Enterprises group for Mango production in Bang Khla, Chachoengsao province have scholars from Thailand and abroad, agriculturists, students and interested visitors often visit the mango farms (Sirisatawalsa, 2016). Some mango farmers would like to give notices before visiting the farm so they can prepare location for good welcoming tourists (Worapipat, 2016). However, some mango farmers are not interested in outsiders' visiting as they prefer the private area and they do not need any help from outsiders. Some mango farms are not in good agricultural system and they are not members of any mango organizations (Chaiwanitchaya, 2016).

Discussion

Mango farmers must plan for suitable production which is consistent with market needs, also learn on adjustment and seek for modern technologies to enhance effective production and decrease effect in future. Mango farmers also need water sources in their farms. Crafters who have area average within 7.9 acres per case can look after all their products well. On the other hand, mango farmers with the large area farm must have knowledge and skill of profession for their productive processes to pass Good Agriculture Practices (GAP). The products are safe from residue. The effect of global warming because of the climate has changed easily and often; thus, the number of mango products decrease.

Therefore, mango farmers should learn on climate change by recording climate in the farm for applying information into production plan to meet climate condition. This may decrease crop loss and gain more quality products. In other risk problems, labor shortage,

high labor cost, high productive factors; thus, it is important for mango farmers to cooperate and should have knowledge center for searching information and exchanging experiences from related organizations, such as government sector officers, agriculturists, entrepreneurs, carriers, buyers and so on. This aimed to keep connection between mango farmers for information in production and mango markets for competition. The exhibition on mango production for exporting also is arranged by any channel for giving information. Therefore, mango farmers can learn and apply to their practices.

Moreover, Near Infrared Spectrometer (NIR) should be used as quality investigation if mangoes are ready for picking. This equipment can help farmers know that mangoes are ready for harvesting or not. Then data will be sent to computer at the office or knowledge center. Harvesting system will be prepared or cleaning system, grade selecting, packaging and exporting. Selecting process together can control quality of products to have the similar standard. Nowadays, mango farmers use wisdom to see age of mango by floating mangoes, if they sink means they are ready (Mongkhon, 2015) or see from mango skin. Mango farmers can pick their products from trees by hand or if the products are high: fruit pickers will be used for harvesting (Office of Commercial Affairs Chachoengsao, 2010). Besides, researchers and scholars should have cooperation in knowledge research for searching new methods to solve problems on bloom mango trees to produce mango as the knowledge agriculturists needs.

Conclusion

Factors affect the success management of mango orchards production in highly competitive markets. Mango farmers must cooperate and improve qualification to be quality farmers in productive management and agricultural network management forms and knowledge, local wisdom, and suitable technologies to develop production as Good Agriculture Practices to gain quality products. Chachoengsao Province has emphasized to quality of exporting mangoes under product brand QM (Quality Mango) especially, Namdokmai which is popular in domestic and international consumers. This created sustainable security for mango farmers.

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