



The Prove The Way The Price

“Case study of Cos lettuce”

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Abstract

Healthy trend is becoming popular and growing in Thailand and all over the world as organic foods now occupy the shelf space of most mainstream department stores. Likewise, believable statistic data shows that there is an increasing overall organic value through intermediary handler from suppliers to consumers. However, some group of people is reluctant to purchase this kind of goods because of the so high selling price. Therefore, this paper aims to determine the reason why price of organic foods is so expensive when compared with intensively farmed products. It is actually from cost of production or demand that pulls up the price of these goods. In order to find out this research question, we specify the case of Cos lettuce as being usually consumed and popular among healthy people by focusing only on grocery store in Bangkok area. The research was proven by: (1) conducting in depth interviews both farmer and entrepreneur, (2) finding the relevant literature reviews, (3) observing the retail price of organic and inorganic products from grocery stores. The results show that there is insignificant to confirm that cost of certification and distribution channels drive price of organic foods because producers can spread this cost by selecting other providing choices. In contrast, cost of production (variable cost) highly impacts on organic price especially in hot season that is accounted more than 50 percent. In addition, the intervention of Department of Agriculture helps to solve the problem of asymmetric information that misleads producers to opt IFOAM. That leads domestic organic food price to be able to get rid of certification cost. This is the great contribution toward producers, consumers and societies. For further study, if we have time series data of farmer revenue and organic price, we could figure out whether the farmer or the consumer would have to bear more burden of the increase in price.

1. Introduction

Thailand is the primarily agriculture-based country which has suitable climate and favorable environment for cultivating crops. That is why Thailand is among the top ten agricultural exporters in the world. Many farmers and local non-governmental organizations (NGOs) work together to launch the Alternative Agriculture Network to support organic and sustainable farming practices in Thailand. In the last few years, many innovative organic plans have been introduced and are now important actors in the Thai organic movement (Rural Infrastructure and Agro-industries Division, 2007). With the importance of certification signaling consumers for healthy quality, Department of Agriculture launched Organic Thailand and ACT also initiated IFOAM to certify the organic products. Many organic operations in Thailand and South-East Asian countries are at the early development stage so they need a lot of help from government to subsidize this kind of cost. Distribution channel is also important factor for organic product as organic products usually sell in Bangkok or place that people have high income as these people are more likely to care about health and buy organic product. Moreover, normally organic farmers are originally conventional farmers so they usually take some time to adjust with this new cropping during transition process.

From the observation of red brown jasmine rice, typical red brown jasmine rice price is about 70 baht per kilogram while organic jasmine rice price is about 115 baht per gram this is 64.29% difference (Khun kaow 2013; Puntwilai 2014). Organic Chicken price and normal chicken price also show the price difference of 8-10 baht per kilogram (Meedej, 2012). Since the price that quite high relative to conventional food, makes us feel curious that high price resulted from high cost of production or other factors that affect the price of organic foods. Because of this problem, firstly this paper will compare and contrast types of organic food to traditional food

in terms of selling price at different department store where sell organic foods. Secondly, we will look at consumer side which is important for firm to expand the business toward organic food purchasing. This acts as a signal to discriminate the group of people whom have willingness to pay and company can charge at higher price. Lastly, we will figure out that whether the cost of production or other factors really drive the price of organic foods to be high in Bangkok area. In economic term, this paper is summarized according to both demand and supply sides that indicate how the cost of production does really affect organic food prices.

2. Objectives

Currently, there is a growth and popularity of healthy trend in Thailand and all over the world. That means the demand of customers who are willing to pay for safe foods is increasing. Not surprisingly, the price of organic products in grocery stores is typically more expensive when compared with conventional products, costing at least 10 to 30 percent more. In economic theory, we know that not only demand that drives the price of products but also supply affects. Therefore, it arouses me to find out that which factors have an influence on the high selling price. I will analyze to compare between the cost structure of organic foods and conventional products. Moreover, I study the effect of certification and distribution channel and also how the price is transferred within the supply chain since harvesting until retailing. Last but not least, I will suggest the contribution and policy implication imposed on this topic.

3. Literature Reviews

3.1 Definitions of organic agriculture

According to international federation of organic agriculture movements, they provide the definition of organic agriculture that “Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.”

In addition, Morgera and Caro (2012) believed that organic agriculture is holistic and ecosystem-friendly production management system that is produced global interest in aspect of social, economic, biology, ecology and environment. It is emphasized on pursuing of sustainable soil, plant and animal health and reducing of using chemical, pesticide, herbicide fertilizers.

Likewise, Choksiriwatchara (2011) distinguishes the difference of manufacturing process including organic, nontoxic, hydroponics and hygienic plants according to the usage of chemical as portrayed in table1 on appendix section. Table1 shows that organic vegetables must not be contaminated with chemical fertilizers, insecticides, herbicides and hormones but non-toxic, hydroponic and hygienic plants are allowed to contain some of chemical usage in processed production.

3.2 Overall Organic Agriculture Trends

3.2.1 Marketing

Turnover value of worldwide organic products tends to expand with a growth rate of 10-20 percent per year. The organic market in Thailand is the market that manufacturers can

determine the direction of the market price or it is called the market of producers. Generally price of organic products are higher than conventional products around 20-50 percent. Not only because the volume of production is less than demand of the market, but price of organic farming is secured to be fair to the manufacturers. It causes cost of production of organic products is higher. Most distribution channels for organic products are large supermarkets but recently some small and medium ones also have the expansion of sales of organic products. The expected value of organic product exports in 2010 increased to 5,000 million baht or grew by almost 40% from 2009. Thailand has been recognized as a source of productivity, quality and reliability. Although Thailand's organic sector is small, it has grown rapidly in the last 5 years. In addition, the organic market can be classified into 4 types that included market members, most flea markets, niche market system and general market (Sribrorikrit, 2011).

3.2.2 Trend of organic agricultural market

The organic food market as a whole has an increasing demand every year particularly United States, Europe and Japan. This is a good chance for farmers to upsurge the production and export more to those countries. However, public-private partnerships need to be taken seriously in the development of organic standards to meet the requirements of importing country. Furthermore, farmers and entrepreneurs should cooperate to ensure both production and marketing for the reason that the organic food must be reported as confirmed by scientific evidence and information must be accurate. Currently, Department of Agriculture by the Ministry of Agriculture and Cooperatives will serve the certification mark "Organic Thailand" for free to companies and farms that produce organic foods (Sribrorikrit, 2011).

3.3 Cost structure of organic products

The Daily Meal (2012) said about the reason why organic food is so expensive. There are ten factors contributing to the high price of organic food that are more substitution of labors for tasks like hand-weeding, cleanup of polluted water, and the remediation of pesticide contamination; the demand overcomes supply; higher cost of compost and animal manure fertilizer for organic crops; sophisticated crop rotations to keep their healthy land and prevent weed growth; incurred higher cost of post-harvesting since the organic products can be handled and shipped in smaller amount; fee of certification and inspection which are ranged depend on size of agency and management; cost of covering higher loss because organic products typically have shorter time of storage; higher standard of living welfare for cattle; higher time for taking care of organic plants since they are prevented from using synthetic pesticides and herbicides; the lower amount of money from government to subsidize the organic farming.

Furthermore, Food and Agriculture Organization of the United Nations stated the key factors that have an effect on higher price of organic products are classified into four types. Firstly, organic product supply is limited. Secondly, cost of production of organic food is greater than intensively-farmed products resulting from demanding higher number of workers per unit of production. Thirdly, higher cost of after-harvesting such as compulsory segregation of organic and conventional produce. Lastly, marketing and the distribution channel for organic products is relatively inefficient. Besides, there are hidden costs should be considered which are the increasing awareness of environment and society, higher standard of living conditions and prevention of health risks to labors.

3.4 Organic certification

Certification is the main key to signal consumers to have the confidence in organic production and food integrity from seed through sell. Lack of this guarantee, people will be reluctant to purchase this kind of products. Certification also confirms that production and process are handled under an all-inclusive system that increases dietary health (Rural Infrastructure and Agro-industries Division, 2007)

Williamson (1985 as cited in CERTCOST, 2009) said that organic food products are credence goods. That means there is asymmetric information between producers and consumers. So it is necessary to have certification to decrease the costs related to the exchange of a good which are called transaction costs. CERTCOST (2009) also explained cost of certification that it is included not only monetary based costs but also significant non-monetary based burdens. For example, cost of substantial amount of time in order to satisfy the requirements; transaction costs of the conversion of an operation; and cost of setting up, maintaining and changing the organic control system which is regarded as administration costs are the momentous part is borne by the operators paying certification fees. However, it is difficult to identify the exact share, which accounts to organic production especially opportunity costs.

Besides, Rural Infrastructure and Agro-industries Division (2007) stated that cost of certification is considered both direct monetary cost and inspection record cost (indirect cost). The first is depending on how the organic project is managed and the size of organization. The latter such as detail of inputs used during production is a requirement for organic producers and it can be viewed as the burden for farmers because they must put more effort on record-keeping.

For IFOAM certification, IFOAM announces its duty as “leading, uniting and assisting the organic movement since 1972” in its full diversity that based on the Principles of Organic Agriculture to affirm organic standard that can be used directly for certification. This certification aims to assist farmer

use sustainable activity to promote long term health of land and also signal to consumers that this product free from using synthetic fertilizers, pesticides and herbicides. For exporters, importers in several countries accept organic products certified with IFOAM Accreditation such as Malaysia, Singapore, Hong Kong, Australia, and New Zealand (IFOAM, 2012).

According to Department of Agriculture and Food merchandising (ACFS), They provided the definition of organic farming that it is referred to the management system of agricultural production encouraging a holistic ecosystem and biodiversity, biological cycles by using natural materials to avoid the use of synthetic materials including both pesticides and herbicides or microorganisms that derived from genetic modification or genetic engineering. These special standards also include bee-keeping, livestock, and organic menu standards for restaurants (Thai organic, 2012).

3.5 Distribution channels

A distribution channel is the chain of individual intermediate handlers involved in getting a product or service from the farm to the retailer (Dimitri; Oberholtzer, 2009).

Atănașoaie G. (2011) said that distribution channels are significant factor for the development of organic products chain. The lack of available and efficient distribution network is considered as main problems to achieve the goal. Hence, farmers should choose optimal distribution method according to their size of production and organization. For example, bigger farms are suggested to adopt indirect distribution channels which can be sold in large amount of products via supermarkets, organic shops specialized, and processors. For small-sized farmers, they are recommended to use a direct closer connection with customers (without middleman)

through box schemes, community supported agriculture, peasant markets and shops at the farm gate.

Pejnović, Ciganović and Valjak (2012 as cited in Petljak, 2013) found that local market is the most important distribution channel for national producers. There is a great signal to inform that organic associations and the tourist market are significant for future development of organic agriculture in Croatia. Most of larger suppliers sell their organic product foods to super department store, while smaller producers choose to sell them to intermediaries. Moreover, Petljak (2013) narrated that the distribution channels of organic food have been classified into direct, indirect and emerging distribution channels. In Croatia, there are the following direct distribution channels of organic food: on-farm sales; door-to-door sales; farmers markets; fairs and fair exhibitions; farm shops. For indirect distribution channels, the organic products are sold via wholesale and retail. Lastly, the emerging market such as café, school, army and especially organic agrotourism is limited.

Singleton (2011) stated that the high selling organic prices resulted from many reasons. One reason behind that is the inefficient distribution channels incurred more cost on consumers. The improvement of efficient supply chain and accessible healthy food such as upgrading of distribution operations, initiation of better consumer and producer relationship and coordinated purchasing lead to lower prices on buyers.

4. Methodology

In order to define the reason behind so high price of organic Cos lettuce at grocery stores in Bangkok area. The paper divided to two methods that are by conducting interviews and finding relevant literature reviews. Initiated by conducting in depth interviews, we questioned through farmers and entrepreneur. The first, by asking Setabaandhu, Siriwansayan and Chan-

otan (2014) as they are farmers about: (1) all of their cost of production both explicit variable costs such as cost of irrigation, organic fertilizer value and implicit costs which are difficult to collect such as cost of certification and learning cost, (2) the reason why they choose these kinds of certification between Organic Thailand and IFOAM, (3) which distribution channels they adopt to be proper for their size of operation, (4) how much they received from farm gate price if they opt for direct approach. The latter, asking Kritsakul (2014) as she is an entrepreneur being the manager of merchandise allocation and development at the mall group company limited about: (1) the demand of customers toward organic products, (2) the management of contractual and institutional arrangement (how department stores got organic goods from suppliers), (3) retail price her profit margin both organic goods and inorganic products to get the clear picture of price transfer in organic food market chain that will be analyzed later on in interpretation of results section.

Another approach, we developed finding relevant literatures like The Daily Meal (2012), Food and Agriculture Organization of the United Nations, CERTCOST (2009), Rural Infrastructure and Agro-industries Division (2007), Atănăsoaie G. (2011), Pejnović, Ciganović and Valjak (2012 as cited in Petljak, 2013) and Petljak (2013) to find out cost of production, cost of certification and distribution channel methods to generate the theoretical background. Moreover, this research using secondary data of organic and nonorganic goods cost from Moohammadare (2005) and Department of Agricultural Extension Office of Technology Development Promotion and Dissemination Extension Media to compare whether it is significant enough to conclude that this factor drives the high price of organic foods.

In addition, we observed the price of organic and nonorganic Cos lettuce from Central Chidlom department store (2014) to collect the data analyzed further that this high price actually came from which factor.

5. Interpretation of Results

In this section, we will discuss the results received from methodology part. Later, will analyze the results, answer the research question and provide the reasons behind.

5.1 Cost of production

From table2, 3 and 4 inform cost of production and quantity of organic Cos Lettuce by table4 shows the average of several secondary data sources. They show detailed explicit variable cost of production vary from season to season. Table4 expresses that cost of organic fertilizer value is accounted in high percentage of cost of production comparing to the other costs 794.30 Baht from 3,362.49 Baht or 23.62 percent in rainy season, 814.55 Baht from 3,635.46 Baht or 22.41 percent in cold season and 752.23 Baht from 3,611.98 Baht or 20.83 percent in dry season respectively. Moreover, this also shows average product of organic Cos lettuce (Kg) is high in cold (355.50 Kg) and rainy season (339.95 Kg) especially in cold season and low in hot season (271.50 Kg). According to Cos Lettuce and Romain Lettuce (2008), Cos Lettuce prefers cool weather and optimum temperature is between 10 and 24 Celsius. At high temperature, the growth is falling.

In aspect of productivity, statistics depicted in table 4 presents average products (Kg/Ngan) are 339.95 in rainy season, 355.50 in cold season and 271.50 in hot season. To sum it up, the average product per year is 966.95. From table shows that average products (Kg/Ngan) are 270.14, 456.24 and 462.09 respectively or 1188.47 per year. This implies that there is higher

productivity within conventional farm because there is learning cost or opportunity cost incurred within organic farm in starting period. As from interviewing Setabandhu (2014), he told that he spent time for seven year to gain stable and satisfied yield. This factor supports the reason why price of organic food is so high.

In term of comparative cost, again from table4 expresses average costs (Baht/Kg) are 10.47 in rainy season, 10.20 in cold season and 14.07 in hot season and table5, average cost of production of inorganic Cos Lettuce (Baht/Kg) are 8.49, 8.11 and 9.00 respectively. Ultimately, cost of production is higher in organic Cos lettuce 23.32 percent, 25.77 percent and 56.33 percent respectively. Especially in hot season, cost of organic products has highly effect on high price of selling price. This data also explains the reason why cost of production is so high in hot season because of low quantity in this period.

There is barrier to entry for entering this market. For farmers in order to change from conventional crop to organic crop there will be opportunity cost of about 500,000 baht (Siriwansayan, 2014) because in the first two year even though farmer decide to totally stop the use of chemical but they cannot sell their product as organic because there is a standard that they have to wait for 2 years. Moreover farmer have to take about 7 years in order to as specialize in this new way of cropping as before so they incurred also opportunity cost(Setabandhu, 2014). Even though government try to subsidy the farmer but still farmer have to incurred some cost this make the farmer when they are able to sell their product as organic they will price their product high to compensate the loss at the beginning.

5.2 Certification

(1) International Federation of Organic Agriculture Movements – IFOAM



Figure1: Fundamental structure of IFOAM

Certification	6500 Baht/year
Inspection (If land area is large, it can take longer time)	5500 Baht/day
Traveling, food and residence expenses	Vary (Center point is Bangkok)

Source: www.actorganic-cert.or.th

(2) Organic Thailand



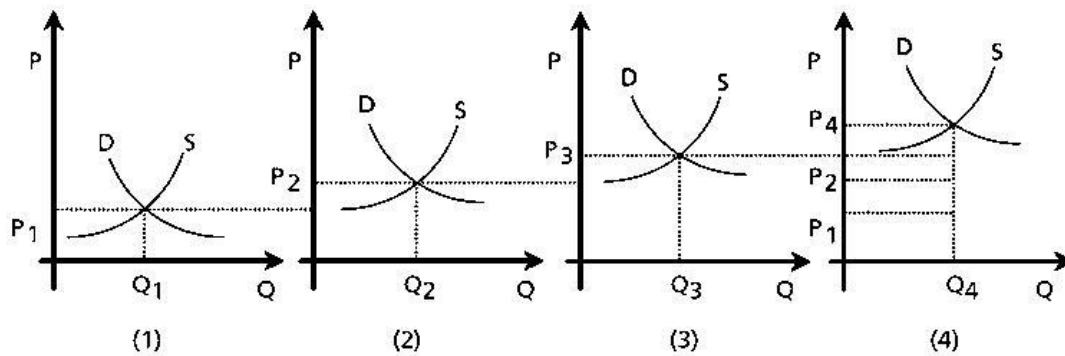
Department of Agriculture intended to provide certification for free because they want to support and do not want price of organic food is great higher than conventional price. This certification makes farmers can sell organic products within Thailand. But in the same time people who got IFOAM should sell their product mainly international however they sometimes sell in domestic market. This is because sometimes when there is a price shock in organic price a lot of farmer will try to get the IFOAM certification however when the world organic price get back to normal farmer who got IFOAM certification have to sell in domestic market and they

have to sell at a higher price compare to farmer who got a free certification from Department of Agriculture. This is because farmer mislead their future income when they decide to get the IFOAM so this problem could be alleviate by Department of Agriculture to give information to farmers about their real future income so that there is no excess supply of IFOAM organic food that farmers have to sell in domestic market so the only organic food sell in domestic country is the farmer who got the organic Thailand certification. This will make domestic organic food price to be lower. In aspect of larger producers, they initially select to adopt IFOAM on their farms because they see opportunity in the future to export their organic goods to the global market although it incurred high starting cost (Setabandhu; Chan-otan, 2014). In contrast, smaller suppliers tend to implement Organic Thailand.

5.3 Distribution channels

According to table6 and table7, selling price of organic Cos Lettuce sold to grocery store is greater than From Farm to Home system because entrepreneurs will mark up the margin profit around 30 percent from intermediates price. Not surprisingly, Kritsakul (2014) said that it is indifferent margin for both organic and non-organic vegetables. The difference in price of organic Cos Lettuce comes from dissimilar used distribution channels. For big-sized producers tend to use indirect distribution channels such as supermarkets, organic shops specialized, and processors because they can sell in the large amount. In other words, small farmer select to implement direct closer relationship with buyers via box schemes, community supported agriculture, peasant markets and shops at the farm gate (Atănăsoaie G. 2011).

Figure2: Price transfer in supply chain



Source: Nuchmorn (2014)

Available at: Thammasat University, Economics of Agricultural and Rural Development

There are a lot of stages from farm to fork. Theoretically from farm to fork approaches is that there are a lot of intermediates between farmers and consumers like post-harvest process, storage, transport, distribution, wholesale, processing, packaging, retailing. From my study at the first stage farmers will sell their products which partly according to their costs which become a farm gate price. Then farmers sell to retailers and wholesalers which also have marketing cost and logistic cost making the organic price to be higher. Then when the retailer after adding shelving cost become a high retail organic price to consumers. This is called price transfer in supply chain. This can be seen that if one of the cost factors has been increased the organic price will be also increase and since the main difference is incurred from the certification which is the cost that only organic farmer incurred which partly lead to the difference in price as you can see more in table8.

6. Concluding Remarks and Contributions

The impact of high organic product price significantly resulted from explicit cost of production such as the greater cost of organic fertilizer value. For cost of certification and

distribution channels, the farmers can diversify this burden by choosing other alternatives. For instance, smaller producers opt Organic Thailand as certified and sell their by yourself via from farm to home approach. Hence, we can conclude that cost of certification and distribution channels approach have an influence on so high price of organic goods but they are not highly significant to confirm.

Since there is factor behind the difference of the cost between organic and inorganic price which is certification, when having price shock in organic price many farmers would adopt IFOAM but then if the organic price go back to normal many farmers who already have IFOAM cannot sell internationally that well so they have to sell in domestic market, this make domestic organic food price to be high as these farmer have incurred high cost from certification. If department of agriculture come to help solve the problem by providing farmer about the behind reason of the increase in organic food price farmer can better to decide to have an IFOAM certification or not so that the problem of excess supply of IFOAM certified organic food would not occur, leading domestic organic food price to be able to get rid of certification cost. This is the great contribution toward producers, consumers as well as societies.

The research suggests that if we have a better data of farmer revenue and organic price in each season not like just an average price and revenue, we could find that when the organic price change according to the season, whether the farmer or the consumer would have to bear more burden of the increase in price. Also if we have a better data of farmer revenue and organic price classified according to difference certification we could further study about it and recommended which kind of farmer should adopt what certification.

Appendix

Table1: The comparison of chemical usage in manufacturing process

Chemical	Manufacturing process			
	Organic	Non-toxic	Hydroponics	Hygienic
Chemical manure	No	Yes	Yes	Yes
Sprayed insecticides	No	No	No	Yes
Herbicides	No	No	No	Yes
Hormones	No	Yes	Yes	Yes

Source: Choksiriwatchara (2011)

Table2: Cost of production and quantity of organic Cos Lettuce (information from Huay Nam Rin)

List	Rainy season (n=6)	Cold season (n=4)	Dry season (n=6)
1. Soil preparation labor	300.50	390.00	373.13
2. Cultivated labor	334.20	371.00	353.45
3. Seedling value	377.93	395.50	379.14
4. Irrigation labor	199.30	563.00	636.14
5. Organic fertilizer labor	219.68	287.50	173.88
6. Organic fertilizer value	580.20	765.30	561.13
7. Sprayed insecticides and plant disease labor	16.82	-	19.81
8. Value of insecticides and fungicides extract	53.94	-	55.75
9. Shear labor	299.40	380.00	285.89
10. Dolomite value	40.00	60.00	-
11. Harvesting and transport labor	200.20	276.25	209.34
12. Average cost(Baht/Ngan)	2,622.17	3,488.55	3,047.66
13. Average product(Kg/Ngan)	327.20	364.00	295.00
14. Average Cost Basis(Baht/Kg)	8.51	9.75	10.77
15. Weighted average cost(Baht/Kg)	8.01	9.58	10.27

Source: Moohammadaree (2005)

Table3: Cost of production and quantity of organic Cos Lettuce (information from Angkhang)

List	Rainy season (n=6)	Cold season (n=9)	Dry season (n=4)
1. Soil preparation labor	475.00	426.67	440.00
2. Cultivated labor	375.00	371.10	345.60
3. Seedling value	918.40	879.20	885.60
4. Irrigation labor	285.60	415.50	741.25
5. Organic fertilizer labor	287.50	278.90	328.50
6. Organic fertilizer value	1008.40	863.80	943.33
7. Sprayed insecticides and plant disease labor	30.00	-	-
8. Value of insecticides and fungicides extract	157.91	-	-
9. Shear labor	270.00	282.20	287.01
10. Dolomite value	80.00	60.60	-
11. Harvesting and transport labor	215.00	204.40	205.00
12. Average cost(Baht/Ngan)	4,102.81	3,782.37	4,176.29
13. Average product(Kg/Ngan)	352.70	347.00	248.00
14. Average Cost Basis(Baht/Kg)	12.44	10.65	17.38
15. Weighted average cost(Baht/Kg)	11.63	10.90	16.86

Source: Moohammadaree (2005)

Table4: Cost of production and average quantity of organic Cos Lettuce

List	Rainy season (n=12)	Cold season (n=13)	Dry season (n=10)
1. Soil preparation labor	387.75	408.34	406.57
2. Cultivated labor	354.60	371.05	349.53
3. Seedling value	648.17	637.35	632.37

4. Irrigation labor	242.45	489.25	688.70
5. Organic fertilizer labor	253.59	283.20	251.19
6. Organic fertilizer value	794.30	814.55	752.23
7. Sprayed insecticides and plant disease labor	23.41	-	9.91
8. Value of insecticides and fungicides extract	105.93	-	27.88
9. Shear labor	284.70	331.10	286.45
10. Dolomite value	60.00	60.30	-
11. Harvesting and transport labor	207.60	240.33	207.17
12. Average cost(Baht/Ngan)	3,362.49	3,635.46	3,611.98
13. Average product(Kg/Ngan)	339.95	355.50	271.50
14. Average Cost Basis(Baht/Kg)	10.47	10.20	14.07
15. Weighted average cost(Baht/Kg)	9.82	10.24	13.56

Source: Moohammadaree (2005)

Table5: Cost of production and quantity of inorganic Cos Lettuce

List	Rainy season	Cold season	Dry season
1. Soil preparation labor	306.69	287.72	365.40
2. Cultivated labor	126.31	113.35	112.15
3. Seedbed value	179.86	281.78	344.86
4. Irrigation labor	135.88	746.87	756.45
5. Chemical fertilizer labor	92	103.65	154.46
6. Chemical fertilizer value	251.48	347.11	370.45
7. Cattle manure labor	54.22	41.64	53.69
8. Cattle manure value	150.21	116.62	155.93
9. Sprayed insecticides and plant disease labor	103.19	122.20	214.73
10. Shear labor	231.28	317.45	214.73
11. Lime value	-	2	0.95
12. Harvesting and transport labor	179.86	272.94	383.83

13. Average cost (Baht/Ngan)	1919.19	2820.64	3464.72
14. Average product (Kg/Ngan)	270.14	456.24	462.09
15. Average cost (Baht/kg)	8.49	8.11	9.00

Source: Department of Agricultural Extension Office of Technology Development Promotion and Dissemination Extension Media

Available at:

<http://www.thaibiodiversity.org/UploadFile/KMFile/%E0%B8%9C%E0%B8%B1%E0%B8%81%E0%B8%81%E0%B8%B2%E0%B8%94%E0%B8%AB%E0%B8%A7%E0%B8%B2%E0%B8%99.pdf>

Table6: Price of organic Cos Lettuce from Grocery Store (Modern trade)

Brands (Organic)	Baht/Kg	Brands (Non-toxic)	Baht/Kg
ADAM	300	Hill	330
Natural&premium food			
Lemon farm	255		

Source: Tops @Central Chidlom department store (2014)

Table7: Price of organic Cos Lettuce from “From Farm to Home” system

	Baht/Kg
Phu Saen Dao farmers	175
Maewang	250
Grand Organic farm	200
Average	208.33

Source: Setabandhu (2014)

Table8: Price transferred in supply chain

Unit: Baht

	ADAM			Lemon farm		
	Rainy season	Cold season	Dry season	Rainy season	Cold season	Dry season
(1)Retail price (1 Kg)	300	300	300	255	255	255
(2)Gross profit (30%)	90	90	90	76.5	76.5	76.5
(3)Marketing cost including logistic cost	122.5	122.5	122.5	91	91	91
(4)Price at farm gate: from Phu Saen Dao farmers (Avg)	87.5	87.5	87.5	87.5	87.5	87.5
(5)Variable Cost of production (1 Kg)	10.47	10.20	14.07	10.47	10.20	14.07
(6)Farmer return (1 Kg)	77.03	77.30	73.43	77.03	77.30	73.43
(7)Farmers share	25.68%	25.77%	24.48%	25.68%	25.77%	24.48%

Note: Gross profit margin = (Revenue – COGS)/ Revenue and (6) = (4) – (5)

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