Quality Control Circle: A Case Study to Reduce Production Costs of Jasmine Rice in Trantip Group Chachoengsao Province, Thailand

Prawach Chourwong, Rajabhat Rajanagarindra University, Thailand

The Asian Conference on the Social Sciences 2014
Official Conference Proceedings
0425

Abstract
Our research objective was to ways management to reduce the cost of cultivation jasmine rice using Quality Control Circletechnology in Tharntip group Banchongsub district, Phanomsarakram district, Chachoengsao province, Thailand. The finding revealed that the estimated costs of production were high up to 2,565 baht/rai with an average yield of 550 kg/rai. The transfer of technology with a Quality Control Circle was proposed to reduce costs of production. Attempts were made to determine before and after the application, and analyzed the cost of problems using technique QC 3 tools, i.e., check sheet, Pareto diagram, and the cause and effect diagram. It was found that the cost of process of using fertilization for the cultivation was high at 510 baht/rai it was recommended that a team work should be applied with a Quality Control Circle. The training methods comprised of organic fertilizerand insect repellent.The results of the training methods could reduce the cost of cultivation jasmine rice down to only 1,200 baht/rai or 46.78 percent.And the average production up 650 kg/rai or 15.38 percent.

Keywords: Jasmine rice, Cost reduction, Quality Control Circle.

Introduction

For the past four decades, the global rice market has been dominated by a few exporters, namely, Thailand, Vietnam, the United States, and Pakistan, accounting for 60–70 percentage of the total exports. During this period, Thailand has remained the top rice exporter in the world. Unlike the export side, the import side looks quite fragmented, with many countries each importing a small amount of rice. The top six importers account for only 20−30 percentage of the market share.Through the years, both China and India, the top two rice producers and consumers in the world, have played a minor role globally with occasional exports and imports. Despite India's rise as an exporter since the mid-1990s, both these countries, which account for half of global rice production, have largely focused on domestic food security. Trade is an afterthought for these two giants and it is mostly used to manage occasional surpluses and deficits.

But, with India's meteoric rise to the top of the export chart and China's unexpected rise to near the top of the import chart in 2012, this might be a thing of the past. In 2012, India displaced Thailand from the top spot by exporting 10.4 million tons of rice vis-à-vis 6.9 million tons for Thailand. India's removal of its export ban on the no basmati market in late 2011 after a gap of 4 years, burgeoning domestic stocks, and a weak rupee definitely increased India's export prospects in 2012. But, Thailand's mortgage scheme should get most of the credit for India's rise to the top by making India's broken and parboiled rice fly off the shelves like hotcakes. Like India, nobody expected China to come close to displacing Nigeria as the top importer in 2012, with 2.9 million tons of imports compared with 3.4 million tons by Nigeria. A majority of these imports have come from Vietnam and Pakistan. Apart from rice, China also imported large amounts of wheat and corn (maize) in 2012. Altogether, Chinese grain (wheat, rice, and corn) imports increased from 2.5 million tons in 2011 to 11 million tons in 2012 tight corn supplies and greater demand for wheat from the feed sector increased their imports. But, it is still intriguing to many why China is importing so much rice because domestic production has no apparent shortfall in the past few years.(International Rice Research Institute, 2012)

The Jasmine rice is the rice varieties reputable of Thailand, which has an area of cultivation around the world of approximate 18,631, 447 rai. The source production the jasmine rice that has the quality of best on North East, has an area in the cultivation 15,383,756 rai, have the plantation area placed at Thung Kula Rong Hai, the area 2,107,681 rai which the territory covering 5 provinces include Surin, Roi Et, Buri Ram, Yasothon and Mahasarakham, The secondary was Northern has the area 2,021,954 rai, Central region has the area 1,220,871 rai and South region has the area 4,892 rai. In the years 2554 to 2555 the export volume of rice 202,000 tones, the total value of export 6,445 million baths. (Agricultural Economics Office, 2012)

For Tharntip group, the situated in Ban Chong tamboon, Phanomsarakham amphoe, Chachoengsao province, the farmer group that grow the Jasmine rice 105 of the organic agricultural, has members 25 persons and has an area in the cultivation of the rice 220 rai which has a small rice mill itself, the member of Tharntip group has a concept for find a way reduce the cost of grow the rice that down original, the researchers make the study and the data collection of process growing the rice, which make the persons that grow the jasmine rice 105 has the cost up to 2,565 baht per rai,

while there the average productivity just 550 kg per rai (Tharntip group, 2012). The show that the farmers use the cost on the rice cultivation of exceed demand of the Tharntip group when compared with price the rice on Phanomsarakham amphoe, about 10,000 baht per ton or 10 baht per kg. when the farmers has the product just 550 kg per rai. The farmers have profitable for grow the Jasmine rice, the average of 2,935 baht per rai. So the researchers have and interest that will find ways to reduce the cost of rice lower. The enhance a high profits with the teamwork, using the quality control circle (QCC) such as ; the research of Mr. Prawach Chourwong (2011), the study for ways to reduce costs of grow the Jasmine rice 105 in Bang Khla amphoe, Chachoengsao province. After bring the quality control circle, to reduce the cost of grow rice, the farmers within the group can reduce the costs, growing the rice down, the average from 4,403.39 baht per rai, as 15 percentage.

Research Methods

Researchers explored the area, which planted with rice and hand out questionnaires. The participants were interviewed with relevant theory and research. Quality Control Circle (QCC) and the proposal of how to reduce the cost of growing Jasmine rice 105 were distributed in Ban Chong tamboon, Phanomsarakham amphoe, Chachoengsao province. All details and steps used were as follows:

The education and collecting information is processing the jasmine rice 105, starting from the preparation grain elevators until processing after the harvest, by interviewing the farmers that are members within the Tharntip group for analysis find the cause of problem the cost of rice, by interviewing the farmers that are members within the Tharntip group for analysis find the cause of problem the cost of rice.

The transfer technology by adopting the principles of teamwork and the process of the activity with activity the Quality control circle (QCC) (Kitisak Proypanitchalend, 2008) and the students in engineering disciplines, the Industrial management participants for the training a lecturer for the farmers in these times, by using the training course 3 days on February 21-23, 2012).

Attempts were made to trained the farmers to participate in using all technologies regarding to cut costs at every stage in the production process for the production of Jasmine rice 105 in Ban Chong tamboon, Phanomsarakham amphoe, Chachoengsao province.

The application of Training Quality Control Circle, QC Story, and QC 7 tool was done to analyze and find the cause of the problem during the cost of production of Jasmine rice 105.

Establishment of cost reduction activities for the Jasmine Rice 105 after training, where the first group was dealing with statements a fixed group.

An analysis of all causes of problems with the Quality Control Circle with QC 7 tools, where the third one consisted of a check sheet, Pareto diagram, and fishbone diagrams or cause, and effect diagram profile, as follows:

The distribution of a check sheet was used to determine the elimination of the Jasmine rice 105's services. The process of preparing soil for the harvesting and storage awareness, the cause of the problem, and the cost of rice production, were given at the beginning of the season.

The Pareto Diagram was applied to compare and see if the individual were very important. The only different was that it was used as a guide in selecting a major cause analysis and to find the correct one.

The cause and effect diagram was used to analyze factors, that could cause an impact on the process of planting rice in both the real and the sub-factors. The factors that affected the cost of cultivation derived from the analysis of the abovementioned diagram were farmers or equivalent to man in the diagram, raw materials that were used in the rice cultivation (chemical fertilizers especially the Eagles that allowed only eliminate pests), and methods or process of rice cultivation, which emphasized on maintenance of the cultivation by using fertilizers.

Results

The establish for the Quality control circle group (QCC), after the training for the farmers of the Tharntip group and the established a one pilot group, the member on group 9 persons, include the farmers growing the Jasmine rice 105, from the member of the Tharntip group to the Quality control circle (QCC) 9 persons. The Student (research assistant) 2 persons, the served as an assistant group and secretary group, for the research person that the serves as a counsel of group, should have the average age of 50 years old, the average age 43.14 years of the rice farming, the education level since the grade alumni until the bachelor degree level.

The information analyzer for find the root cause of the problem with the Quality control circle group (QCC), by making a select QC 3 tools, include: 1) Check sheet, 2) Pareto Diagram and 3) Cause and effect diagram (fish bonediagram), the details are as follows:

The check sheet: ware listing the data cost of production the Jasmine rice 105, the start was preparing the seed unit the harvest, the post-harvest practices were the data analyzed, by find the percentage of each topic on during the grow, the show table 1.

Table 1. The costs of the Jasmine rice 105, the farmer of Tharntip group.

The Transplant procedure	Cost(Bath/Rai)	Percentage
The seed preparation	425	16.57
The soil preparation	480	18.71
The grow method	360	14.04
The maintenance (fertilizer).	510	19.88
The Insect disease control and the animal rice pests	230	8.97
The harvest	400	15.59
The post-harvest practices	160	6.24
Total	2,565	100.00

Source: The Tharntip group, 2012

The Pareto diagram: the data of cost the rice in each issue that arose that the comparison of cause each set is very important to lower as well as guidelines in determining and select a major cause analysis and seek a solution before and after, which it considers in the process of growing the rice step 4, would costing the rice up to 19.88percentage, the show a figure 1.

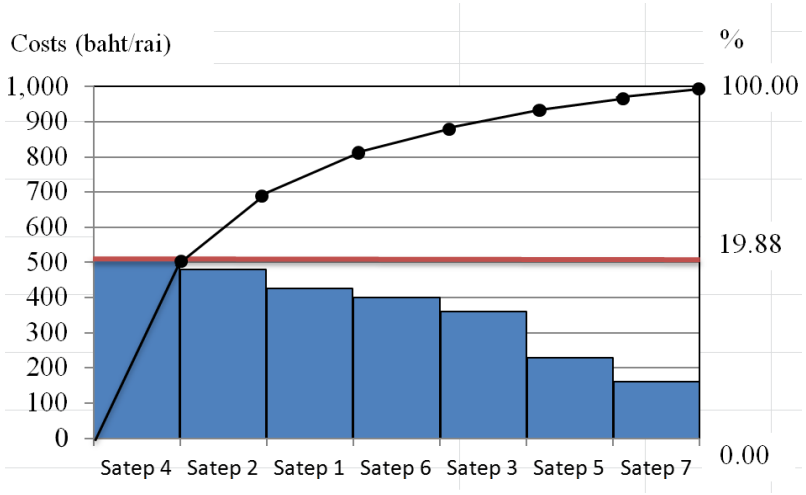

Figure 1. Pareto diagrams for compare importance of the cause for problem that more or less.

The cause and effect diagram The brainstorming can be chic in the group for analyze the causes of various factors that caused effect on the process of growing the Jasmine rice 105, the great cause and the cause sub, affecting the cost of such growing, farmers, seed, organic fertilizer, pesticides and insects, the machine include tractors, harvesters, fertilizer and machine and the methods rice, the result is that causing the farmers (Man) and causing the way of fertilizers (Method), the maximum score of 64 points as well which is causing to be revised first, the show a figure 2.

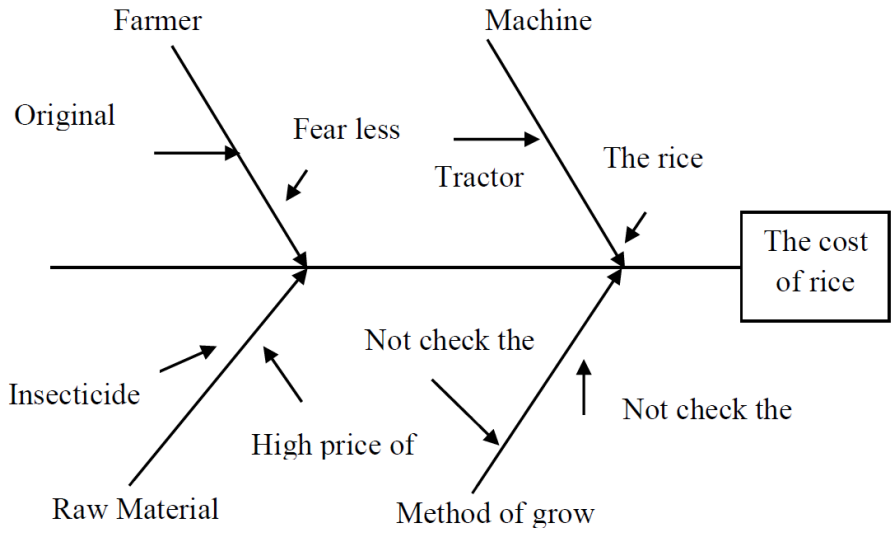

Figure 2.The cause and effect diagram.

The processed to improve the construction of activities group and the Quality control circle group (QCC), the conducting training and sampling for order to analyze the soil before the rice and the farmer is a member of QCC and interested the farmers, the authors as speakers one day course on March 17, 2012 . The soil samples were analyzed three times the amount of conversion and offered to bury the frog on the cob without burning the rice, conduct training of bio-composting and anti- insect before planting rice, the local research served as a lecturer, the course takes two days on March 22-24, 2012. The show table 2.

Table 2 . Improvement

The Transplant procedure	Improvement
The seed preparation	Selected the best quality seeds. Prior to soak in water with the QCC.
The soil preparation	Do not burn the rice stubble, Analysis of soil And improve the soil to use small tractors available. Termination of employment by large tractors. Reduce costs
The grow method	No improvement grows method.
The maintenance (fertilizer)	Use organic fertilizer with bio group QCC made to reduce the cost of fertilizer as well.
The Insect disease control and the animal rice pests	Eliminate of chemical insecticides. And use insect repellant liquid QCC group itself.
The harvest	No improvement harvest
The post-harvest practices	Termination of employment for large trucks. And use a small car and transported. Can reduce the cost of transporting grain storage warehouse

Discussion

The result of your training group created the Quality control circle (QCC), the conclusion have developed the skills to become a lecturer for students to become more efficient, the farmers training and established groups found that farmers have attended QCC to apply knowledge to benefit themselves, the work as a team to get the opinions of others even more and make use of quality tools to analyze the cause of the problem correctly and the described in the detailed description training test scores, the show table 3.

Table 3. The test scores of raining

Indicators	Before the training	After the training
Percentage	25.83	90.67
X	10.33	36.67
S.D.	283	2.45

The effect of adopting and procedures of the group you created the Quality control circle group (QCC) used and amended, the republic the soil samples were analyzed soil before planting and bio- composting, and water insects, the farmers can reduce the cost of the heavenly jasmine rice 105. Throughout the process rice from 2,565 baht / rai to 1,200 baht / rai and 46.78 percent, and the process of the jasmine rice 105 of the member's Tharntip with annual average production of 650 kg per rai, the show table 4.

Table 4. The costs of the Jasmine rice 105, before and after

The Transplant procedure	Before		After	
	The cost (Bath/Rai)	The percentage	The cost (Bath/Rai)	The percentage
The seed preparation	425	16.57	225	18.75
The soil preparation	480	18.71	62	5.17
The grow method	360	14.04	360	30
The maintenance (fertilizer).	510	19.88	53	4.42
The Insect disease control and the animal rice pests	230	8.97	0	0
The harvest management	400	15.59	400	33.33
The post-harvest practices	160	6.24	100	8.33
Total	2,565	100.00	1,200	100.00

Conclusion

The results of research study with the data collection process the jasmine rice 105 were analyzed the production cost and guidelines for reduce the cost of production; the details can be discussed as follows:

This study results analyzed, the cost of planting the jasmine rice in Tharntip group, the detailed analysis of production costs the jasmine rice 105 that throughout the process of planting the rice costs 2,565 baht /rai after leading the QCC group can reduce the cost of growing the rice, only 1,200 baht /rai, 46.78 percent with the findings of Mr. Prawach (2011), the study ways to reduce the cost of growing the jasmine rice 105. I found that the cost of planting the jasmine rice 105 of farmers, Bang circles the production costs to 4,403.39 baht per rai and the procedures that cause maximum cost and the process of loving care (fertilizer), amount 1,400.32 baht per rai and 31.80 percent of the process jasmine rice 105 after the lead group, the QCC cost reduced to 468 baht /rai and 67.50 percent.

The result of cost reduction activities the Quality Control Circle group (QCC), training the farmers and the established groups. The results of the application of the system to reduce costs and create the Quality Control Circle group (QCC) (the farmer groups) after training, the farmers have attended QCC to apply knowledge to benefit themselves that known teamwork listen to the content of each comment don't know a to and minimize the costs under various operations, the consistent with Mr. Thamrong Sangsuriyajan (2010). The study of the changing lifestyle of the farmers after training, the conducting economic life sufficient capital Asoke community, Warin Chomrap, Ubonratthani province. Group no 1, the found through a forest farmer training program in the year 2008, not knowledge activities after training with behavior change for the better in some indicators of each side and Group no 2, the agricultural training program in the year 2001 to 2006.

References

Proypanitjalend, K. (2008). The principles of Quality Control (2nd edition) Bangkok: Institute of Technology. (Thailand - Japan).

The Trantip group (2012). The cost data of planning the jasmine rice 105 of group. PhanomSarakhamMuang, Chachoengsao province.

Sangsuriyajan, T. (2010).The Study of the changing lifestyle of farmers. After the training Lifestyle sufficiency. Journal of University.KhonKaen.

Chourwong, P. (2011). The Approach to reduce the cost of jasmine rice production with quality building. The funded by the Bureau of the Executive Committee of the Higher Education Research and Development research university national.Bureau of the Higher Education Commission. Bangkok

Bureau of Agricultural Economics, (2012).Information on rice exporter Thailand. Phaholyothin Road, Chatuchak, Bangkok.