การยอมรับวิธีปฏิบัติที่ได้รับการแนะนำในการปลูกข้าวพันธุ์สังข์หยดของเกษตรกร
Farmers' Adoption of Recommended Practices in the Production of Sungyod Variety of Rice

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บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษา (1) สถานภาพการผลิตข้าวและการยอมรับวิธีปฏิบัติที่ได้รับการแนะนำ (2) ลักษณะทางการตลาดของข้าว (3) พฤติกรรมการติดต่อสื่อสารของเกษตรกร (4) ความสัมพันธ์ของปัจจัยต่างๆที่มีผลต่อการยอมรับวิธีปฏิบัติที่ได้รับการแนะนำ ใช้การสุ่มตัวอย่างแบบธรรมดาเป็นวิธีการคัดเลือกตัวอย่าง เกษตรกรจำนวน 62 คน ได้รับการสัมภาษณ์

ผลการวิจัยพบว่าเกษตรกรทั้งหมดปลูกข้าวพันธ์สังข์หยดปีละ 1 ครั้ง ส่วนใหญ่ใช้รถแทรกเตอร์ในการไถดินและใช้การปักดำเป็นวิธีการปลูก ประมาณสองในสามมีการใช้ปุ๋ยเคมี และประมาณครึ่งหนึ่งมีการใช้ปุ๋ยอินทรีย์ การกำจัดวัชพืช และการกำจักศัตรูพืช ส่วนใหญ่จ้างคนภายนอกทำการเกี่ยวข้าวและขายข้าวให้กับวิสาหกิจชุมชนและเจ้าของโรงสีโดยไม่มีการต่อรองราคา ราคาข้าวมีความเหมาะสมและมีความเป็นธรรม เกษตรกรจึงไม่มีปัญหาเกี่ยวกับการตลาด ส่วนใหญ่ระบุว่าความรู้ในการปลูกข้าวเป็นผลมาจากบรรพบุรุษได้ถ่ายทอดมาให้และจะปลูกข้าวต่อไปในอนาคตหนึ่งในสามระบุว่าเกษตรอำเภอและผู้อำนวยการศูนย์วิจัยข้าวเป็นบุคคลสำคัญในการให้คำปรึกษาปัญหาข้าว การทดสอบสมมุติฐานพบว่าการศึกษาและขนาดเนื้อที่ปลูกข้าวมีความสัมพันธ์ทางบวกกับการยอมรับวิธีปฏิบัติต่างๆที่ได้รับการแนะนำ

ผลการวิจัยนี้สามารถประยุกต์ได้ว่าการเพิ่มพื้นที่ในการปลูกข้าวควรมีการกระทำ โดยเกษตรกรเนื่องจากความต้องการข้าว มีมากกว่าการผลิต นอกจากนี้ การปลูกข้าวนี้ไม่มีปัญหาเกี่ยวกับการตลาดเนื่องจากราคาข้าวสูง

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Abstract

The study aimed to investigate : (1) the status of rice production and the adoption of recommended practices (2) characteristics of marketing the rice. (3) communication behaviors of farmers and (4) associations between factors and the adoption of recommended practices. Simple random sampling was employed for sample selection. Sixty two farmers were interviewed.

The findings revealed that most famers grew one crop of rice per year. Most used tractors to plough the soil and used transplanted seedling rice as planting methods. About two-thirds used chemical fertilizer and one half applied organic fertilizer and used weed control, and pesticides. Most hired labor to harvest the rice and sold their rice to community business enterprises and rice mill owners at a fixed price, without negotiating a price. They indicated that the price was fair and just, and reported no problems with the marketing. They mentioned they received the knowledge for cultivation of rice from their ancestors, and would continue to grow rice in the future. About one – third perceived the district extension officer and the director of rice research center as the best persons to consult about rice cultivation problems. Education and size of area planted were found to be positively correlated with the adoption of recommended practices

The implication of the study is that an increase in size of rice area should be undertaken by farmers as the demand for rice was greater than the supply. In addition, there were no problems with the marketing as the price of rice is high.

Keywords : Sungyod variety of rice, production, farmer, recommended practices, adoption

Introduction

Rice is one of the most important economic crops of Thailand as well as being a staple food of Thai people. Rice is grown in each region of Thailand. Rice cultivation requires much water, and irrigation water was needed when the rainfall is insufficient. In southern Thailand, rice is grown in each province to a greater or lesser extent, depending on the availability of water. Both high-yield and native varieties of rice were grown. High-yield varieties of rice required more management than native varieties but gave higher yield. Native varieties of rice gave lower yield compared to high-yield varieties of rice but most farmers preferred to consume native varieties as, like their ancestors, they were accustomed to its taste. They grew the Sungyod variety of rice for consumption and the rest for sale

In Phatthalung province both high-yield and native varieties of rice were grown. One of the native varieties which is popular was Sungyod. It was found to be grown in three areas in Phattalung province during the period 1982 - 1986. As a result, it was found that there were three sub-varieties. The rice research center in Phatthalung province had selected the KGT82239 code to be registered under the 1975 Plant Variety Act on July 4 ,2005

(Saeton, 2007 : website). It was recommended that selection of native varieties be the pure line to result in high quality of rice. This was useful to farmers and consumers

The Sungyod variety of rice is rich in nutrients for health. It has fewer free radicals, beneficial to decrease the level of cancer. It also decreased the level of cholesterol. As a result, the Sungyod rice variety of rice was sought for consumption by most consumers in towns or cities. Rica (2011:3) proposed that the consumer paid much attention to health food, especially those who had medium and high levels of income. Sungyod variety of rice was popular and most consumers purchased the brown rice or coarse rice. The yield of Sungyod variety of rice was between 450-500 kilograms per rai depending on soil fertility and the use of fertilizer. The selling price was about 15,000 baht per ton. The wholesale price of rice was about 25-35 baht per kilogram while in the department stores the price increased to 40-50 baht. In market situations, the demand for this rice was greater than the supply therefore, there was a need to increase the rice production. However, the area of rice cultivation was decreasing (Booncharoen, 2010:4).

At present the production of the Sungyod variety of rice was much less than the market demand. As a result, the governor of Phatthalung province declared cultivation of Sungyod variety of rice to be the target for promotion of production. According to this, the strategic plan was developed and farmers were encouraged to grow by using good quality of rice seed and following the recommended practices Questions which this study addressed:

1. Did farmers use recommended practices (recommendations) for the rice production? If not, why not?

2. After the rice was harvested, where did farmers sell the rice? Did they negotiate the sale with local merchants? Were they satisfied with the selling price? Did they have any problems in the rice marketing? If they did, how did they solve the problems?

3. Did the district extension officer visit and advise farmers? What were the sources of farm information for the famers? Who was perceived as the best person to consult about rice cultivation and marketing?

4. Were there any associations between individual characteristics and the adoption of recommendations? If there were, what were the reasons ?

Objectives of the Study

The study aimed to investigate:

1. Status of rice production and the adoption of recommended practices.

2. Marketing characteristics of rice.

3. Communication behaviors of farmers.

4. Associations between factors and the adoption of recommended practices.

Literature Review

'Adoption' is defined as the process by which innovations diffuse (naturally or planned) through various sources to the community and are adopted by persons who agree with the innovations. Adoption consists of five stages:

awareness, interest, evaluation, trial, and adoption. When the innovation diffuses, whether through natural or planned means, to rural communities, it will often do so depending on certain known characteristics of innovators and early adopters. Rogers (1983 : 251-252) believed that personal characteristics of individuals have an effect on the adoption of innovations, for instance, those who have a higher socio-economic status through factors such as education, income, farm- size or prior knowledge of the innovation, would adopt the innovation faster than those of a lower socio-economic status. Rogers, Shoemaker (1971:138 -157) also proposed that the more the innovation is perceived in terms of (1) relative advantage, (2) compatibility (3) complexity (4) trial-ability, and (5) observable result, the more likely it will be adopted.

Adoption can be regarded either as unidimensional (Rogers,1983) or multidimensional (Crouch,1972 : 431) .In this study it is regarded as multidimensional, reflecting the different modes of adoption of innovations by the individual; that is, of various practices recommended, each would show a different adoption pattern.

Pattamarakha (1986 : 145) found significant differences in some characteristics between adopters and non-adopters of high-yield varieties of rice. Adopters had a more positive attitude towards the agricultural extension officer at the sub-district level, were exposed more to mass media, and were more aware of innovations than were the non-adopters. They were more often visited by, and paid more frequent visits to, the sub-district extension officer, and were more willing to participate in a demonstration farm than were non-adopters. However, there were no significant differences in cultivation practices, suggesting that adopters adopted only new varieties but not new cultivation practices. The main sources of information for farmers were relatives, friends, village and sub-district headmen, and the sub-district extension officer. Adopters placed greater emphasis on the sub-district extension officer, ranking him first of four preferred personal information channels, compared with the non-adopters, who placed him fourth.

Booncharoen (2010 : 20-26) found that more than one-half of farmers had an area of rice field between 1-10 rai (1Ha=6.25 rai). Rainfall was the main source of water supply and about one-fourth had access to irrigation. About three quarters applied chemical fertilizers while about one-fourth applied the organic fertilizer. Most (more than 85.6%) did not get rid of weeds. During the rice harvests, more than 90% hired labor to use tractor to harvest the crop, while about 5% harvested the rice themselves by using sickle.

Rica (2011 : 6) found that farmers sowed Sungyod variety of rice by broadcasting method with the support of 2-3 laborers.. The soil was ploughed by tractor. Farmers applied both chemical and organic fertilizer to increase the rice yield but weed control was ignored. For the rice harvest, they hired laborers to use tractors to collect the rice grain. They sold it to rice mill and the Housewife Association.

There are many factors affecting farmers' adoption of recommended rice-growing practices. Based on the theoretical framework and empirical research reviewed, a conceptual

model was developed.The first block (individual characteristics) would affect the second block (farmers' adoption of recommended rice cultivation practices). After rice harvest, it would link with the third block (marketing characteristics) which are associated with selling product, price bargaining and price fairness (Figure 1).

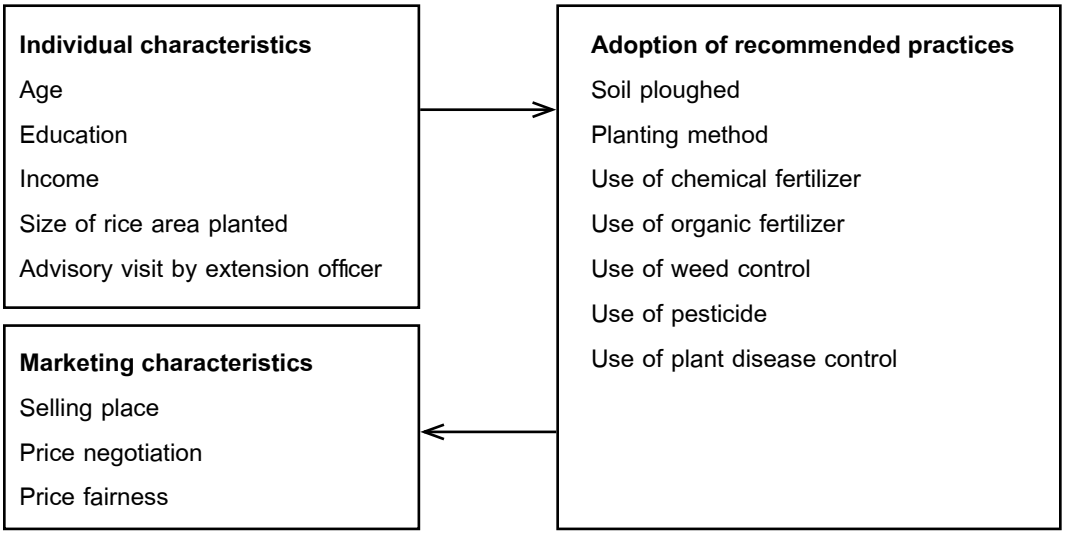

Figure 1. Conceptual model of factors affecting adoption of recommended practices.

The basic proposition of the study was that the adoption of recommended rice cultivation practices is a function which varies according to personal characteristics. Thus, from the proposition, the following hypotheses were developed.

Hypothesis 1 – Age will be negatively correlated with the adoption of recommended rice growing practices.

Hypothesis 2 – Education will be positively correlated with the adoption of recommended rice production practices.

Hypothesis 3 – Income will be positively correlated with the adoption of recommended rice production practices.

Hypothesis 4 – Size of rice area planted will be positively correlated with the adoption of recommended rice cultivation practices.

Hypothesis 5 – Personal contact with district extension officer will be positively correlated with the adoption of recommended rice growing practices.

Methodology

Selection of Study Area

In the study the Bangkeaw district, Phatthalung province was selected as the study area as it was the place where the Sungyod variety of rice originated. The Bangkeaw district consists of three sub-districts known as Tha Madue, Na Pa Kho and Kok Suk. Tha Madue and Na Pa Kho were selected as the study area as many farmers are located in this area.

Background of the Study Area

The district of Bangkeaw consists of three sub districts, with an area of 113.45 square kilometers. At the time of this study It had a total population of 26,002 (13,023 male and 12,979 female). Most have occupations in rubber plantation, fishery, and animal-raising. Rice production can be regarded as their minor occupation

Population and Sampling Procedure

The total number of populations was 74. According to Yamane (1967:886), the number of samples was calculated as 62. A simple random sampling was employed for sample selection.

Research Tool

The structured questionnaire was designed in accordance with the concept of rice production and empirical research, and was comprised of three parts: part A was related to general information of farmers while part B was related to the rice cultivation. Part C linked with the marketing characteristics of farmers. For validity, the context was focused as related to the adoption theory and empirical research. For reliability, the questionnaires were developed and tested with 10 members in November 2013. A deficit in some aspects was found and improvements made to achieve a precise and accurate collection tool. In the study, the dependent variable was the adoption of recommended practices. The index consisted of (1) soil ploughed (2) planting method (3) use of chemical fertilizer (4) use of organic fertilizer (5) use of weed control and (6) use of pesticides. A score 1-3 was given to each practice. The total score of the adoption varied from 6-18.

Data Collection and Analysis

Personal interviews were assigned as the method of data collection. The interviews started in January, 2014. 62 farmers were interviewed. After completing the field survey, the questionnaires were checked and found to be completed correctly. Coding and a code book were then prepared. The analysis of data was undertaken at the Computer Center at Prince of Songkla University. The Statistical Package for the Social Sciences (SPSS) was employed as the tool for data analysis. The Chi-square test of independence was used as a means for hypotheses test.

Results and Discussion

Characteristics of the Respondents

Most respondents (66.1%) were female and the remaining, male. Ages ranged from 37-81 years, with the average being 59.5 years. Most (58.1%) had attained formal education to Grade 4, while about one-fourth had attained secondary education. The majority (91.9%) were married, with a few still single. Number of children averaged 2.84.

Rubber plantation work was mentioned by most famers to be minor occupation. About one half (56.6%) received income from rice, of between 10000-30000 baht. About two-thirds (64.6%) received additional income, raising their income to more than 40,000 baht per annum.

Status of Rice Production

It was found that about one half (43.6%) had a rice-growing area of more than

6 rai and about one fourth had an area of 3-4 rai. Most famers (72.6%) grew one crop of rice per year and the remaining cropped twice a year. For the first round (on season), Farmers usually grew the Sungyod variety of rice and for the second round (off season) they grew the high-yield variety of rice. For land preparation, most (87.1%) used tractors and they ploughed the soil three times. For planting methods, about three-quarters (75.8%) used transplanted seedling rice, and about 10% used sowed seed , and sowed the water bottom. Most (72.6%) used both rainfall and irrigation water, with about 10% having access to rainfall only. Most (91.9%) responded that the water was enough. For use of chemical fertilizer, about one-third did not use chemical fertilizer in order to reduce the cost of the production and 50% applied once for the production. With regard to organic fertilizer, about one-third did not use organic fertilizer, as they perceived that it was not necessary while about one half applied organic fertilizer once. About one half (54.8%) did not use weed control, as they indicated that there was not much weed while some 40.3% used once. About one half (40.3%) did not use pesticides as they claimed that there were not many pests while one half (43.5%) applied once. For rice harvest, most (74.2%) hired labor and paid 300 bath per day. The quantity of rice yield varied between 300-500 kilograms and the average yield was 468.5 kilograms per rai. Most used rice for domestic consumption, collection as seed for the next season, and sale. Most (79.03%) experienced no problems, but a few problems were mentioned related to the demand for rice being greater than the available supply. In addition, some farmers found a few local merchants to be 'light' in weight, a lack of rice seed and price intervention by the government were other problems experienced (Table1).

Table 1. Status of rice production and the adoption of recommended practices.

Attribute	Number (n=62)	Percentage
Area of rice planted		
1-2 rai	8	12.9
3-4 rai	15	24.2
5-6 rai	12	19.3
More than 6 rai	32	43.6
Number of crops harvested per year.		
Once a year	45	72.6
Twice a year	17	27.4
Tools used for land preparation		
Tiller	8	12.9
Tractor	54	87.1

Table 1. (Con't.)

Attribute	Number (n=62)	Percentage
Frequency of plough		
Once	62	100
Twice	61	98.4
Three times**	51	82.3
Planting methods		
Broadcasted seed	7	11.3
Sow the water bottom	8	12.9
Transplanted seedling rice in rows**	47	75.8
Sources of water for growth		
Only rainfall	6	9.7
Both rainfall and irrigation water	45	72.6
Both rainfall and underground water	11	17.7
Adequacy of water		
Enough	57	91.9
Not enough	5	8.1
Use of chemical fertilizer		
No use	22	37.5
Once	31	50
Twice**	9	14.5
Use of organic fertilizer		
No use	24	38.7
Once	29	46.8
Twice**	9	14.5
Use of weed control		
No use	34	54.8
Once	25	40.4
Twice**	3	4.8
Use of pesticides		
No use	25	40.3
Once	27	43.5
Twice**	10	16.2

Table 1. (Con't.)

Attribute	Number (n=62)	Percentage
Rice harvesting		
Self	16	25.8
Hired labor	46	74.2
Use of rice*		
Domestic consumption	52	83.9
Collection as seed for the next season Sale	44	71.0
Quantity of rice yield per rai		
300-400 kilograms	27	43.6
401-500 kilograms	26	42.0
501-600 kilograms	4	6.4
More than 600 kilograms	5	8.0
Use of rice*		
Domestic consumption	52	83.9
Collection as seed for the next season	44	71.0
Sale	46	74.2
Associated problems		
No problems	49	79.0
Demand was greater than supply	7	11.4
A few local merchants	2	3.2
Light in rice weight	2	3.2
A lack of rice seed	1	1.6
Price intervention by the government	1	1.6

*Quoted from more than one source.

**Recommended practices.

Marketing Characteristics of Rice

About one half (43.4%) sold their rice to community business enterprise and about one-third (30.4%) to rice mill owners. Most (89.1%) indicated that they made no bargain while a few reported they had negotiated the selling price. Most (95.6%) reported that the price was fair, as selling price was between 15,000-20,000 baht per ton. Most (79.0%) had no problems while some 16.1% indicated that the rice yield was insufficient to meet demand (Table2).

Table 2. Marketing characteristics of rice.

Attribute	Number (n=62)	Percentage
Marketing channels (n=46)		
Community business enterprise	20	43.4
Rice mill owner	14	30.4
Independent sale	6	13.1
Local merchant	6	13.1
Price bargaining		
No	41	89.1
Yes	5	10.9
Price justice		
Fair	44	95.6
Not fair	2	4.4
Associated problems		
No problems	49	79.0
Not enough yield	10	16.2
No access to local merchants	2	3.2
Intervention by local politician	1	1.6

Communication Characteristics of Farmers

Most (88.7%) mentioned they received the rice cultivation information from their ancestors while a few mentioned the extension officer and neighbor as sources of information. Most (88.7%) would continue to grow rice in the future. About two – thirds (62.9%) received an advisory visit from the extension officer. Some 30.6% mentioned the district extension officer and the ditertor of rice research center as best persons for rice consultancy. About one half indicated they had communicated advice about rice production to other persons (Table 3).

Table3. Communication characteristics of farmers.

Attribute	Number (n=62)	Percentage
Sources of knowledge of rice information		
Their ancestors	55	88.7
Extension officer	4	6.5
Neighbor	3	4.8
Continuation of rice cultivation in future		
Continue	55	88.7
Uncertain	4	6.5
Not continue	3	4.8
Visit paid by the district extension officer		
Sometimes	39	62.9
Never	23	37.1
Best consultancy persons about the production		
No	43	69.4
Yes	19	30.6
Advice about rice production given to other persons		
Never	33	53.2
Sometimes	29	46.8

Associations between Factors and the Adoption of Recommended Practices

It was found that both education, and area-size of rice planted were associated with the adoption of recommended practices. This supported hypothesis 2 and 4 and rejected hypotheses 1, 3 and 5. Age was not found to be associated with the readiness to adopt practices. Whereas reluctance to adopt Recommended practices might be due to older age, this was not the case, as the older age group were still aware of the innovations, and were highly motivated to adopt the recommended practices in the same way as the younger age group. In the case of income, most received little or no revenue from rice but received more from other occupations. However they spent less money in rice production and more for the rubber plantation. Those with high incomes did not adopt the recommended practices any more frequently than the low revenue farmers-there was no significant difference in rates of adoption between the two groups.

When the extension officer visited the farmers, it was found that visits were made to those farmers with whom the officer was already familiar, rather than selecting to visit those who were high in the adoption of recommended practice. (Table4).

Table 4. Associations between factors, and the adoption of recommended practices.

Factor	Chi-square value
Age	0.000
Education	4.509*
Revenue	2.325
Size of area planted in rice	4.133*
Visit made by the district extension officer	0.069

*Significant at 0.05% level.

Conclusion and Recommendations

The findings revealed that most famers grew one crop of rice per year. For land preparation, most used tractors and ploughed the soil three times. For planting methods, about three-quarters used transplanted seedling rice. Most had access to rainfall and irrigation. When considering the use of fertilizer, about two-thirds used chemical fertilizer and 50% applied organic fertilizer. About one half used weed control and about one half used insecticides. For the rice harvest, most hired labor. The average yield was 468.5 kilograms per rai. Most farmers had no problems. Most sold their rice to community business enterprises and rice mill owners, without negotiating a price. Most reported that the price was fair and just. Most had no problems with the marketing. They mentioned they received the rice-growing information from their ancestors and would continue to grow rice in the future. About two–thirds received a visit from the extension officer. About one–third received advice about their rice production from the district extension officer and rice research center. These were found to be the best persons to consult about problems. 30.6% mentioned the district extension officer and the chairpersons of the community business enterprise. Education and size of area planted were found to be positively correlated with the adoption of recommended practices.

Based on the research findings, the following recommendations are proposed :

1. The extension officers should have more contact with farmers as they are perceived by farmers to be key persons to consult about rice problems.

2. Public relations should promote the different rice varieties to expose farmers to more options which can be developed for commercial purposes. Farmers would get the new information and develop the strategies to benefit from the adoption of recommended practices.

3. As most farmers had no problems with the production and the marketing, they should be encouraged to increase the size of the cultivated area of rice and to co-operate as a group for the marketing of the product. They would gain more benefits from this approach.

4. In the future, a comparative study between the Sungyod and Lebnok varieties of

rice should be intensively studied, as the Lebnok variety of rice was grown by more farmers in more areas, compared with the Songyod varieties of rice.

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