

ความต้องการของเกษตรกรผู้ปลูกข้าวในการทำประกันภัยพืชผลในตำบลนาข้าวเสีย จังหวัดตรัง ประเทศไทย

Rice Farmers' Need for Crop Insurance in Nakaosia Subdistrict in Southern Thailand's Trang Province

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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษา (1) ความต้องการในการทำประกันภัยนาข้าว และ (2) ความสัมพันธ์ของข้อมูลเกษตรกรกับความต้องการในการทำประกันภัยนาข้าว ในตำบลนาข้าวเสียซึ่งเป็นแหล่งปลูกข้าวที่สำคัญในจังหวัดตรังที่ตั้งอยู่ทางตอนใต้ของประเทศไทย โดยเครื่องมือที่ใช้ในการวิจัยเป็นแบบสอบถามความต้องการในการทำประกันภัยนาข้าว กลุ่มตัวอย่างเป็นเกษตรกรตำบลนาข้าวเสียจำนวน 210 คนที่ขึ้นทะเบียนเกษตรกร สถิติเชิงพรรณนาและเชิงอนุมานได้นำมาใช้ในการศึกษา ผลการวิจัยหลักพบว่า เกษตรกรส่วนใหญ่เป็นเพศหญิงที่มีอายุ 51 ปี ขึ้นไป ส่วนใหญ่ปลูกข้าวพันธุ์เล็บนกเพื่อบริโภคในครัวเรือน มีเพียงบางส่วนที่ปลูกไว้เพื่อจำหน่าย โดยภาพรวมเกษตรกรเข้าร่วมโครงการกับกรมส่งเสริมการเกษตร นอกจากนี้พบว่าศัตรูพืชรวมถึงภัยน้ำท่วมเป็นปัญหาหลักที่พบเจอ เกษตรกรมีความสนใจในการทำประกันภัยนาข้าวโดยมีอัตราค่าเบี้ยประกันภัยที่คาดหวัง คือ 20-50 บาทต่อไร่ เนื่องด้วยตระหนักถึงการแบ่งเบาภาระค่าใช้จ่ายเมื่อเกิดภัย ต้องการได้รับความคุ้มครองความเสียหายจากภัยที่เกิดขึ้น และการไม่สามารถจัดการปัญหาที่เกิดจากธรรมชาติที่อาจเกิดขึ้นในอนาคต รวมถึงการบริการที่รวดเร็วจากหน่วยงานที่เกี่ยวข้อง จากการวิเคราะห์ความสัมพันธ์ พบว่าข้อมูลทั่วไปของเกษตรกรมีความสัมพันธ์กับความต้องการในการทำประกันภัยนาข้าว ดังนั้นหน่วยงานทั้งภาครัฐบาลและเอกชนสามารถนำผลการศึกษาที่ได้ไปประกอบการพิจารณาการประกันภัยนาข้าวที่เหมาะสมต่อไป

คำสำคัญ: เกษตรกร, ข้าว, การประกันภัยพืชผล, จังหวัดตรัง, ประเทศไทย

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Abstract

This research studied (1) the need for rice crop insurance and (2) the independence of farmers' general information and the need for rice crop insurance in Nakaosia Subdistrict, the primary rice cultivation hub in Trang Province in Southern Thailand. It used a survey questionnaire on the need for rice crop insurance and involved a sample group of 210 farmers growing rice in Nakaosia Subdistrict and holding a farmer's registration certificate. The crucial results of this study, which applies descriptive and inferential statistics, show that most farmers were women and aged 51+. They mostly cultivated the rice variety 'Leb Nok', and their main purpose in growing rice was for it to be consumed by their family, while also selling some, and they had joined government support programmes. Weeds and floods were the main problems they faced. Farmers needed a rice insurance policy with preferably a premium of 20-50 baht per rai because in this way they could share costs of losses, benefit from policy coverage and be protected from unexpected natural events. Moreover, they required a quick service from the relevant organisations. Furthermore, given the relationships between factors, it appears that the general information on farmers could serve as a significant indicator of the need for a rice insurance policy. In summary, the results act as a pointer to how such a policy-backed by both the public authorities and the private sector-could be optimised in future.

Keywords: Farmers, Rice, Crop Insurance, Trang, Thailand

Introduction

Rice is one of Thailand's key agricultural products, covering vast areas of the country, in particular in its Northeastern region. In addition, rice plantations are central to Thai national identity. Thus, maintaining this rice-growing tradition for future generations is of major importance for Thai society. As indicated by Yasothornsrikul and Leruksa (2017), for Thai farmers, especially those from the Northeast, rice is more than just a daily staple or a crop grown for economic purposes and is instead viewed as fundamental to their way of life, sayings, traditions and culture and therefore to their sense of 'Thainess', with this

being reflected in the 12 ceremonies surrounding rice held each calendar year, one taking place each calendar month.

Recently, there has been mounting interest among farmers in organic farming. Fakket, Morachat and Unphim (2016) studied a strategy to generate food security for organic farmers in the lower northeast of Thailand in terms of consumption, production and supply. In this connection, they mentioned that in establishing a foothold for organic farming, there was a need for knowledge, technology and support from groups, communities and networks in various areas to derive safe and nutritious outputs from a wide range of food

products. To date, rice consumption appears to have been increasing, especially among consumers of packed rice (Chueasuwan, 2018), and a number of rice-related products have been created in industries such as food and cosmetics. One example of this was described by Sapantupong (2019), who examined the development of bread with Riceberry rice bran, with the results revealing that bread with 10% or 30% added Riceberry rice both received the highest likeability scores in terms of appearance, colour, taste and odour. Chysirichote and Mekrawee (2017) proposed that the more Sinin rice flour that was substituted for wheat flour, the darker the purple of the crust of Kha-Nom Pia Kularb. They indicated that when a proportion of 20% Sinin rice flour was added, this was seemingly most favoured in terms of taste.

However, the production of rice depends principally on factors such as meteorological changes. Bryan, Deressa, Gbetibouo and Ringler (2009) as cited in Song, Liu, Oxley and Ma (2019) expected climate change to cause Chinese wheat, corn and paddy rice production to potentially decline by 37% by the second half of the 21st century. Sinnarong, Thaeye, Phuntulee and Susawaengsup (2020) showed that increased rainfall and temperature levels adversely affected mean rice production, and the results of a projection of climate change suggested a 0.70-10.70% fall in such production between 2030 and 2090 in the south of Thailand. Ara, Lewis and Ostendorf (2017) reported that in

Bangladesh the rice yield for ecotypes was more sensitive to changes in temperature than rainfall effects and that modelling a 1 °C temperature rise revealed considerable regional differences in rice yield for such ecotypes. Furthermore, in the event of unforeseen circumstances, this might lead to losses for farmers and entities intervening when such situations occur, resulting in some farmers not receiving sufficient support to pursue their cultivation activities. Additionally, rice insect pests can destroy rice, affecting yields. Ruay-aree (2020) indicated that the green leafhopper was the most abundant of these; in addition, the rice stemborer was most found in dry conditions, whereas the leafhopper and the planthopper were observed in dry to wet conditions.

Insurance is known to be a means of mitigating risk (Rejda, 2011). Rice crop insurance not only provides coverage in case of losses, but also supports and safeguards rice farming for society and for community-based tourism in various areas. Thailand's initial experience with crop insurance came in 1978 when an indemnity insurance policy covering all natural risks (floods and drought, for example) for cotton was launched in Nakorn Ratchasima Province's Pak Chong District (Lorchirachoonkul and Chaisilaparungruang, 2002), with a similar programme also running from 1982 to 1984. While a crop insurance programme for rice was set up in 2010 after many years spent investigating the possibility of implementing such an initiative, there was

still a need for the sustainability and other aspects of this type of insurance to be examined.

Duangmanee and Van Wouwe (2016) focused on area-yield index crop insurance as a tool that could be applied in the Thai context, identifying a method for premium calculation that was robust in dealing with outliers. However, recently the Thai government approved a rice insurance scheme, operated by the Bank for Agriculture and Agricultural Cooperatives (BAAC), for the 2019 season, covering six natural-disaster types; namely flooding, drought, storms, hail, cold weather and fires (Theparat, 2019).

Trang, a province in the south of Thailand has a number of rice farms, especially in its Muang and Nayong districts (Rice Department, 2019). This investigation aims to explore the need for rice crop insurance among farmers, focusing on Nakaosia Subdistrict, a part of Nayong District that has a long history of rice cultivation. In needs-based studies, a human motivation theory that is often brought to bear is a 20th-century framework devised by Abraham Maslow and known as Maslow's hierarchy of motives (i.e. needs). His work as cited in Schacter, Gilbert and Wegner (2009) strove to meaningfully organise the range of human needs. In this approach, these constituted a hierarchy, with lower-order needs at its base and self-actualisation needs at its pinnacle. From the lowest level to the highest, there were (1) physiological needs; (2) safety

and security needs; (3) needs relating to belongingness and love; (4) esteem-related needs; and (5) self-actualisation needs. In addition, Maslow proposed that higher needs were not felt until needs lower down were satisfied. Uysal, Aydemir and Genç (2017) claimed that one facet of safety needs was fulfilled economically, with this underpinning the concept of insurance arising from the pension system and preoccupations including flooding, fire and theft. To sum up, the study could be used in future to establish an appropriate policy for rice growers.

Objectives

1. To study the need for rice crop insurance
2. To study the independence of farmers' general information on the one hand and the need for rice crop insurance on the other

Methodology

The population for this investigation consisted of the 412 farmers in Nakaosia Subdistrict-the centre of rice cultivation in its province-who were registered with the Trang Provincial Agricultural Extension Office. Data collection involved an appropriately designed questionnaire and convenience sampling. A total of 210 questionnaires were distributed to farmers and retrieved following completion by the respondents. The questionnaire covered the following key topics:

1. General information about the farmer:

1.1 Gender

1.2 Age

1.3 Monthly income

2. Information regarding rice growing:

2.1 Household members

2.2 Heirs with rice-growing knowledge

2.3 Rice variety

2.4 Age of the rice

2.5 Cultivation area

2.6 Average income from rice harvesting

2.7 Growing experience

2.8 Registration with one or more government support programmes

2.9 Problems facing growers

2.10 Preferred insurance premium

3. The need for rice crop insurance:

3.1 Policy purchases

3.1.1 Sharing of the cost for each household

3.1.2 Transfer of risk to an insurance provider

3.1.3 Avoidance of the inability to cope with future issues

3.1.4 Lack of confidence in government-related assistance

3.2 Coverage

3.2.1 Damage from unexpected natural events

3.2.2 Weeds

3.3 Service

3.3.1 Convenience of service

3.3.2 Promptness of indemnities

3.3.3 Speed of response to enquiries concerning rice crop insurance

3.3.4 Dissemination of rice crop insurance-related information

Based on the statistical program used in this investigation, the data analysis drew on descriptive statistics (percentages for sections 1 and 2 of the questionnaire, and mean values along with standard deviation for section 3) and reference statistics (in the guise of the chi-square test) (Keller, 2009; Lind, Marchal and Wathen, 2006), and a 0.05 significance level ($\alpha = 0.05$) was defined. Meanwhile, section 3 of the questionnaire applied the Likert scale, so for each of the questions in that part there was a range of options, from 5 for 'Strongly agree' to 1 for 'Strongly disagree', for farmers to choose from.

Results

(1) General information about farmers

Most of the rice farmers who responded to the questionnaire were female, representing 65.71% of the sample, while individuals aged over 50 predominated, accounting for 74.76%. There was a preponderance of respondents (82.38%) with a monthly income below 10,000 baht.

(2) Information regarding rice growing

Most farms (53.81%) had between 4 and 6 household members, and in the majority of cases (58.10%) some of these had rice-growing knowledge. They were most likely to cultivate a variety of rice called 'Leb Nok' (with 50% of them growing this) and in virtually all instances (96.67%) their crop had a growth cycle of four to seven months. The cultivation area most commonly ranged from 1 to 5 rai (76.19%), and the average income from harvesting rice was generally below 5,000 baht (87.14%). In terms of number of years' experience of their work, farmers' most prevalent response (given by 47.14% of them) was 21-40 years, and they had almost all had joined one or more government support programmes (96.19%). The principal problems facing them were weeds and floods, standing at 50.59% and 38.53%, respectively. Farmers' preferred rice crop insurance policy would have a premium of 20-50 baht per rai (44.29% of them chose this option).

(3) The need for rice crop insurance

Table 1 details the findings relating to the need for rice crop insurance in three domains; specifically policy purchases, coverage and service. From the results it emerges that there was indeed a need among farmers for this type of insurance in the second and third of these areas, while for policy purchases the overall outcome was neutral, with the sharing of the cost for each household being the principal need in that regard (mean value of 3.62 and standard deviation (SD) of 0.77). In terms of coverage, farmers' number-one requirement was damage from unexpected natural events, with a mean value of 3.92 and standard deviation of 0.60. For service, the mean value of the principal need appeared to be convenience of service (with a value of 4.05 (standard deviation of 0.56)).

Table 1 The need for rice crop insurance

Item	Mean	S.D.	Interpretation
3.1 Policy purchases			
3.1.1 Sharing of the cost for each household	3.62	0.77	Agree
3.1.2 Transfer of risk to an insurance provider	3.37	0.73	Agree
3.1.3 Avoidance of the inability to cope with future challenges	3.57	0.72	Neutral
3.1.4 Lack of confidence in government-related assistance	2.50	0.75	Disagree
Average	3.27	0.74	Neutral
3.2 Coverage			
3.2.1 Damage from unexpected natural events	3.92	0.60	Agree

Table 1 The need for rice crop insurance (cont.)

Item	Mean	S.D.	Interpretation
3.2.2 Weeds	3.81	0.64	Agree
Average	3.87	0.62	Agree
3.3 Service			
3.3.1 Convenience of service	4.05	0.56	Agree
3.3.2 Promptness of indemnities	4.01	0.60	Agree
3.3.3 Speed of response to enquiries concerning rice crop insurance	4.00	0.57	Agree
3.3.4 Dissemination of rice crop insurance-related information	4.00	0.68	Agree
Average	4.02	0.60	Agree

(4) The independence of farmers' general information and the need for rice crop insurance

This part presents the results of the application of a chi-square test for independence. This involved the comparison of two variables to verify whether they are actually related. Table 2 sets out only the various significant relationships between general information about farmers and the need for rice crop insurance. This shows that there was a significant relationship between farmers' gender and the speed of response to enquiries concerning rice crop insurance, having a chi-square value of 9.706 (sig. = 0.021). Moreover, their age was significantly related

to a number of factors; namely a lack of confidence in government-related assistance (chi-square value of 64.112 (sig. = 0.000)), damage from unexpected natural events (chi-square value of 20.040 (sig. = 0.018)), the need for promptness of indemnities (chi-square value of 37.926 (sig. = 0.000)) and the need for speed of response to enquiries concerning rice crop insurance (chi-square value of 33.564 (sig. = 0.000)). Monthly income had a significant correlation with avoidance of the inability to cope with future issues, with a chi-square value of 27.968 (sig. = 0.006), and the need for coverage against weeds, having a chi-square value of 17.031 (sig. = 0.048).

Table 2 The chi-square test

Farmer-related factor	Need-related factor	Chi-square	Sig.
1. Gender	1. Speed of response to enquiries concerning rice crop insurance	9.706	0.021
2. Age	1. Lack of confidence in government-related assistance	64.112	0.000
	2. Damage from unexpected natural events	20.040	0.018
	3. Promptness of indemnities	37.926	0.000
	4. Speed of response to enquiries concerning rice crop insurance	33.564	0.000
3. Monthly income	1. Avoidance of the inability to cope with future issues	27.968	0.006
	2. Weeds	17.031	0.048

Discussion

This investigation-which set out to study the need for rice crop insurance as a means of risk management for farmers in Thailand's Trang Province and whose focus was on Nakaosia Subdistrict, given its long history of rice cultivation-shows that the farmers in the sample were mostly women, owing to most steps in the rice cultivation process being undertaken in daylight hours (the most convenient time for them to perform their work). They were most commonly over 50 years of age, making them skilled harvesters as in many cases they will have started their business in this domain when they were young. However, their monthly income was generally below 10,000 baht. Moreover, the results indicate that growers often had a big family and had rice-growing knowledge, because most cultivation processes need a number of people to complete the work in a limited period. They were most likely to

cultivate a variety of rice called 'Leb Nok' and to use a growth cycle of 4 to 7 months. Most of the farmers owned their farms, which mainly had a cultivation area ranging from 1 to 5 rai, and the average income from harvesting rice was generally below 5,000 baht, which, combined with other sources of income, produced the monthly income indicated earlier. Farmers usually had experience stretching back more than 20 years, consistent with the results regarding farmers' age referred to previously. Nearly all of them had joined one or more government support programmes. Weeds were the principal problem facing rice growers in this area. Furthermore, given that it is clear that there is a high level of rainfall in Southern Thailand, the second biggest problem facing farmers in this region was flooding, rather than drought. This stands in stark contrast to farmers in the Northeast, who encountered a high-temperature risk and tended to increase their adaptation to this, as set out in Saengavut, Jirasatthumb,

Bumrunkit and Krueawamgmol (2019). If an insurance policy were established, most farmers' preference would be for a premium of less than 50 baht.

Farmers were interested in taking out a rice crop insurance policy due to the need to share the cost for each household and to enjoy both coverage for damage from unexpected natural events and convenience of service. In this way, farmers realised the impact of climate change (supporting the findings of Song, Liu, Oxley and Ma (2019), who studied how farmers in China perceived this in terms of temperature and precipitation). This realisation led them to see a need for crop insurance to provide such coverage.

The relevant organisations are likely to benefit from making use of the appropriate factors to design insurance policies or assistance for rice farmers, in particular the speed of response to enquiries, lack of confidence in government-related assistance, damage from unexpected natural events, promptness of indemnities, avoidance of the inability to cope with future issues, and coverage for damage from weeds. In future, this study can be deployed to devise a suitable premium, which is likely to be less than 100 baht, and an optimal policy targeting rice growers.

Conclusions

This study, which aimed to investigate the need for rice crop insurance among

farmers as a risk-management tool in Trang Province in the south of Thailand and which focused on Nakaosia Subdistrict because of its long tradition of cultivating rice, reveals the characteristics of rice farmers and the cultivation of their crop. It makes clear that their interest in taking out a rice crop insurance policy originated from their need to share the cost per household and to enjoy both convenience of service and coverage for damage caused by unforeseen natural disasters. Therefore, leveraging the appropriate factors to design insurance policies or support for rice farmers is likely to be beneficial for relevant organisations. Lastly, to be successful, those designing any policy should bear in mind that both farmers' and rice-growing characteristics play a part in the need for rice crop insurance.

This research that examined the need for rice crop insurance as a risk-management strategy for farmers was conducted in Trang Province's Nakaosia Subdistrict, but a subsequent study could be extended to other provinces in Southern Thailand and even nationwide. In addition, it could be expanded to farmers who are not registered with the Agricultural Extension Office in each province, and a comparison could be made between the need for government-registered farmers on the one hand and private farmers on the other to hold such an insurance policy.

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