Farmers' Attitudes towards Monsoon Groundnut Production in Pakokku District, Dry Zone Area, Myanmar

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The main purposes of this research were to determine the degree of farmers' attitudes towards monsoon groundnut production in dry zone area, and to analyze the relationships between selected independent variables and the farmers' attitudes. An interview schedule was employed to collect data from 133 farmers, selected by simple random sampling. Data were analyzed by descriptive and inferential statistics to test hypotheses at the .05 significance level. The results revealed that the overall degree of farmers' attitudes towards monsoon groundnut production was at mederate level. From correlation analysis, it was found that age was negatively related; but level of education, credit and production system were positively related to the farmers' attitudes. Total income of farm family, farm size, income from groundnut, off-farm employment and participation in extension activities were positively and significantly related to the farmers' attitudes towards monsoon groundnut production in dry zone area.

Key words: attitude, groundnut, dry zone area

บทคัดย่อ

การวิจัยในครั้งนี้มีจุดมุ่งหมายเพื่อศึกษาระดับทัศนคติของเกษตรกรต่อการผลิตถั่วลิสงฤดูมรสุมในเขตพื้นที่แล้ง และศึกษาความสัมพันธ์ระหว่างตัวแปรอิสระกับทัศนคติของเกษตรกร ซึ่งเป็นตัวแปรตามในการศึกษาครั้งนี้ โดยทำการศึกษาด้วยวิธีการสัมภาษณ์เกษตรกร 133 คน จากวิธีการสุ่มตัวอย่างแบบง่าย นำข้อมูลที่ได้มาวิเคราะห์ด้วยสถิติเชิงพรรณนาและสถิติเชิงอนุมาน ทดสอบสมมติฐานที่ระดับนัยสำคัญที่ .05 ผลการวิจัยพบว่า ทัศนคติของเกษตรกรต่อการผลิตถั่วลิสงฤดูมรสุมอยู่ในระดับปานกลาง อายุมีความสัมพันธ์ในเชิงลบกับทัศนคติของเกษตรกร ระดับการศึกษา ฟาร์มเครดิต กระบวนการผลิต มีความสัมพันธ์ในเชิงบวกกับทัศนคติของเกษตรกร โดยเฉพาะอย่างยิ่ง รายได้รวมจากการเพาะปลูกของครอบครัว ขนาดของพื้นที่เพาะปลูก รายได้จากถั่วลิสง การจ้างงานนอกภาคการเกษตรและการมีส่วนร่วมในกิจกรรมการส่งเสริมรูปแบบต่างๆ มีความสัมพันธ์ในเชิงบวกที่มีนัยสำคัญกับทัศนคติของเกษตรกรต่อการผลิตถั่วลิสงฤดูมรสุมในเขตพื้นที่แล้ง

คำสำคัญ: ทัศนคติ, ถั่วลิสง, เขตพื้นที่แล้ง

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INTRODUCTION

Groundnut, one of the major oil seed crops, is widely grown in Myanmar. Nowadays, groundnut is not only used as a source of edible oil but it is also consumed directly and forms an important base to the diet. In addition, it is popular as a huge range of snacks and confectionery. According to the nature of Myanmar's high consumption of cooking oil, the oil seed crops also play a vital role. As an inadequate amount of edible oil is being produced for local consumption, several tons of palm oil are being imported annually to fulfil the local requirement (Ministry of Agriculture and Irrigation, 2007). Therefore, it is necessary to increase the oil seed crops production in Myanmar.

Among the oil seed crops, the groundnut is the highest oil yielding crop per unit area, with the kernels having an oil content of about 40-45 percent and protein of 25-30 percent (Weiss, 2000). At present, groundnut is being substituted for sesame growing in the early monsoon season in order to increase the edible oil production per unit area. The major growing area of oil seed crops is in dry zone. Therefore, this project has been carried out in dry zone area.

According to the nature of dry zone area, the average annual rainfall is less than 1000 mm (1997-2006) (Department of Agricultural Planning, 2007) and unstable during the early monsoon season. The soil fertility is very low as an upland area for monsoon crops. The cost of cultivation for groundnut is significant due to high investment for seed. Under these circumstances, there was a slight improvement in the area extension of monsoon groundnut in dry zone area (Ministry of National Planning and Economic Development, 2006). Therefore, it is necessary to find out the local farmers' attitudes towards monsoon groundnut production and the factors related to their attitudes. The outcome could be applied by the agro-related institutions to improve the implementation of oil crops development projects.

The research objectives were to 1) identify the demographic, socio-economic and technological factors of farmers participating in the extension of monsoon groundnut in dry zone area, 2) determine the farmers' attitudes towards monsoon groundnut production in dry zone area, 3) determine the relationships between demographic, socio-economic and technological factors of farmers and their attitudes, and 4) explore the problems faced by farmers and to obtain their suggestions for the improvement of monsoon-groundnut production.

METHODOLOGY

Research design

This study used a survey research design that involved interviews with 133 groundnut farmers participating in the extension of monsoon groundnut. The survey was conducted in Pakokku district in the dry zone area where annual average rainfall is between 500 mm and 1000 mm (1997-2006) (Department of Agricultural Planning, 2007). The annual average rainfall in Pakokku district is 686 mm (1997-2006) (Office of Pakokku district, 2007), and it is one of the intensive groundnut growing areas in Myanmar. It is therefore representative of the dry zone area.

Population and sample

The population of this research was 200 farmers who participated in the area extension of monsoon groundnut in Pakokku district during 2007 crop year (Oil Crops Development Project, 2006). This research used a simple random sampling method. The sample size, consisting of 133 farmers, was calculated by using Yamane formula which determined the error at the .05 significance level.

Data collection and data analysis

Data were collected by direct interviewing the 133 farmers. The interview schedule consisted of open-ended and closed questions divided into four parts as follows: demographic and socio-economic factors, technological factors, farmers' attitudes

towards monsoon groundnut production and the problems and suggestions of the farmers. The questionnaires were pre-tested with ten groundnut farmers in Pakokku township. The Cronbach-alpha reliability coefficient was computed for 24 attitude statements and it was found to be .81, indicating a good degree of reliability.

The data collection was conducted in April, 2008. Descriptive statistics were used to describe farmers' demographic, socio-economic and technological factors and the degree of their attitudes. For inferential statistics, Chi-square, Pearson correlation and Spearman's rho statistics were employed to determine the relationships between independent and dependent variables. The statistical level of significance was determined at the .05.

Farmers' attitudes were measured by asking 24 questions about groundnut production.

The interpretations of mean scores for all statements using Likert scale were as follows:

Mean scores	Interpretation
4.21 - 5.00	very high level of farmers' attitudes
3.41 - 4.20	high level of farmers' attitudes
2.61 - 3.40	moderate level of farmers' attitudes
1.81 - 2.60	low level of farmers' attitudes
1.00 - 1.80	very low level of farmers' attitudes

RESULTS AND DISCUSSION

Demographic and socio-economic factors

The majority of farmers (85%) were over 40 years old. Most farmers (54.1%) were educated only at primary level. The majority (85%) had more than 5 years' experience in groundnut cultivation, with the mean of 20 years. The largest group of farmers (42.1%) belonged to the total income range of over 500 - 1000 thousand kyats per year, with the mean of 913,722.74 kyats. The majority (76.7%) belonged to the groundnut income range of 30 thousand kyats per acre or less, with the mean of 29,932.33 kyats. The majority (52.6%) had farm size of more than 1 to 3 acres with the mean of 3.02. All of the respondent farmers were land owners. Most farmers (74.4%) had more than 1 supporter of family labourer, with the mean of 3 supporters. The majority (77.4%) obtained credit for groundnut cultivation. Most farmers (65.4%) had off-farm employment and 55.6 percent obtained their information from media, other farmers and agro-chemical companies, while the rest obtained their information from extension workers.

Technological factors

The majority (88.0%) used the inter-cropping system in groundnut cultivation and 76.7 percent were at a high level of knowledge in groundnut cultivation. Most (61.7%) obtained the medium level of technological assistance from extension workers and 57.9 percent were at medium level of participation in extension activities.

Farmers' attitudes towards monsoon groundnut production

The overall degree of farmers' attitudes towards monsoon groundnut production was at moderate level. There were three main points wherein the farmers' attitudes were considerably higher. It was found that the first point was "Groundnut cultivation in early monsoon season was a low risk if the cost of cultivation was low." Secondly, "Monsoon groundnut cultivation was more economical than sesame cultivation in early monsoon season." This seems to conflict with the previous statement. In the light of their past experiences, the farmers believed that there might be more profit from groundnut than sesame cultivation in early monsoon season. Thirdly, "When the investment for seed was low, a farmer would be well disposed to substitute groundnut for sesame area in early monsoon season." In the study area, the investment for groundnut seed was very high. Therefore, it could be assumed that the majority of

the farmers in the study area believed that monsoon groundnut cultivation was more economical than sesame, but they were reluctant to expand the groundnut area due to high cost of cultivation and unfavorable weather conditions in early monsoon season. Thus, they did not dare to take risks since they were small-scale farmers.

The growing season in almost every region in the dry zone area is determined by the onset and termination of rainfall. According to the current rainfall pattern, the probabilities of consecutive wet decades are relatively higher and extend for a longer period during mid- monsoon season. This suggests that the success of early rainy season crops is unpredictable as compared to that of mid- monsoon crops. Sesame and mung bean thus should be sown with the onset of rain because of their low cost production inputs and groundnut with larger investment on seed should be planted during mid-monsoon (Hein, 1998).

Table 1 Degree of farmers' attitudes towards monsoon groundnut production in dry zone

(n = 133)

Statements	$\bar{x}$	S.D.	Attitude level
1. Monsoon groundnut cultivation was more economical than sesame cultivation in early monsoon season.	4.11	0.76	high
2. It would be more convenient to substitute groundnut for sesame area in early monsoon season if the economic situation of most farmers allowed them to do so.	2.72	1.47	medium
3. The farmers involved in the area extension of monsoon groundnut should organize their colleagues to participate in this program.	2.39	1.09	low
4. Oil seed crop project should do more to help groundnut farmers to expand groundnut areas in early monsoon season.	3.12	1.34	medium
5. As a farm producer, the farmer was satisfied with the profit of groundnut production in early monsoon season.	2.08	1.08	low
6. Monsoon groundnut should be substituted for sesame area in early monsoon season due to high income.	2.02	0.93	low
7. The farmer was satisfied with the marketing facilities available for groundnut production.	2.60	1.08	low
8. When the investment for seed was low, a farmer would be well disposed to substitute groundnut for sesame area in early monsoon season.	3.97	1.12	high
9. Monsoon groundnut cultivation in early monsoon season with project support was greatly advantageous to farmers.	2.46	1.26	low
10. Groundnut cultivation in early monsoon season was a low risk if the cost of cultivation was low.	4.45	0.58	very high
11. If a neighboring farmer who was a sesame grower in early monsoon season sought the others' opinions on increasing his farm income, the other farmer would advise him to substitute groundnut for sesame area.	2.45	1.06	low

Table 1 (continued)

(n = 133)

Statements	$\bar{x}$	S.D.	Attitude level
12. A farmer would be well disposed to grow the groundnut in early monsoon season if there were favorable weather conditions in dry zone area.	3.11	1.54	medium
13. The substitution of monsoon groundnut for sesame growing area was a good practice for self-sufficiency of edible oil.	2.48	1.10	low
14. The monsoon groundnut area expansion during early monsoon season could improve the socio-economic conditions of the farmers in dry zone area.	2.37	1.10	low
15. A farmer would expand groundnut cultivation in early monsoon season if the project provided more inputs than usual.	2.70	1.72	medium
16. It was easy for farmers who had enough investments for seeds to substitute groundnut for sesame area.	3.75	1.03	high
17. A farmer might think of increasing the investments on groundnut cultivation in early monsoon season.	2.74	1.18	medium
18. Groundnut growing area should be promoted as an early monsoon crop being substituted for sesame growing area in dry zone.	2.31	1.26	low
19. A farmer who substituted groundnut for sesame area could get maximum profit if there were favorable weather conditions in early monsoon season.	2.32	1.00	low
20. The self-sufficiency of edible oil could be boosted by expanding groundnut growing area during early monsoon season.	2.15	1.12	low
21. Monsoon groundnut cultivation in early monsoon season normally gets high yield.	2.11	1.08	low
22. A farmer who substituted groundnut for sesame area in early monsoon season with project support would effectively apply both his time and money.	2.44	1.10	low
23. Groundnut farmers should attend the training/field day sessions to be more effective on groundnut production.	2.91	1.64	medium
24. The care and management for groundnut cultivation was easier than sesame cultivation.	2.44	1.33	medium
Overall	**2.76**	**0.68**	**medium**

Relationships between farmers' attitude and independent variables

Concerning demographic factors, age was negatively related to the attitudes of farmers (Table 2). This finding implied that the young farmers were deemed to be more willing to take risks and were therefore more open to substitute groundnut even though it was not sure whether the substitution of groundnut for sesame growing area would be of great benefit to them or not. The level of education was related to the attitudes of farmers (Table 2). This finding pointed to the fact that those who were able to read instructions about new technologies tended to apply it in order to determine its utility in his own situation more easily than those who were unable to read. There was no relationship between experience and farmers' attitudes (Table 2).

Regarding socio-economic factors, total income of farm family was significantly related to the farmers' attitudes (Table 2). This finding implied that the farmers who obtained high income were more likely to substitute groundnut for sesame area, regardless of the high investment, than those who obtained low income. This might be due to the reason that groundnut cultivation in early monsoon season was a relatively high risk.

The income from groundnut was also significantly related to the attitudes of farmers (Table 2). It meant that the farmers who earned high income from groundnut cultivation tended to have a high level of attitude towards monsoon groundnut production and vice versa. This finding was in line with the findings of Ahmadvand (2008) who found that little financial return to farmers was one of the barriers to adoption of sustainable agricultural practices in Hamedan province, Iran.

The farm size was significantly related to the attitudes of farmers (Table 2). It meant that the farmers with larger farm size tended to have better attitudes than the farmers with smaller farm size.

Table 2 Relationship between demographic, socio-economic and technological factors of farmers and their attitudes towards monsoon groundnut production

(n = 133)

Variables	Attitudes			
	Pearson Correlation (*r*)	Spearman's rho (r_s)	Chi- square χ^2	*p*
Age	- 0.18*	-	-	0.039
Level of education	-	0.20*	-	0.024
Experience	- 0.03	-	-	0.762
Total income	0.41**	-	-	0.000
Groundnut income	0.33**	-	-	0.000
Farm size	0.41**	-	-	0.000
Family labor	0.06	-	-	0.508
Credit	-	-	6.07*	0.014
Off-farm employment	-	-	12.73**	0.000
Source of information	-	-	3.34	0.068
Production system	-	-	4.21*	0.040
Knowledge of farmers	0.10	-	-	0.270
Technological assistance	0.09	-	-	0.286
Participation in extension	0.28**	-	-	0.001

* Significant at the .05 level, ** Significant at the .01 level

This finding was in line with the findings of Noruzi (2006) who found that there was a significant difference between adoptions of sprinkler irrigation and the size of wheat cultivation land holding of the farmers in Nahavand township, Iran.

There was a relationship between credit and attitudes of farmers (Table 2). This finding points to the fact that those who obtained credit were more likely to accept groundnut cultivation than those who did not obtain credit. This might be due to the reason that the governments' credit schemes were a useful supplement to the production cost to some extent for small-scale farmers. This finding was supported by the findings of Mendis (2005) which showed that the credit for cultivation was one of the most important factors of farmers' adoption concerning recommended crop management practice in paddy cultivation in Kalutara district, Srilanka.

Off-farm employment was significantly related to the attitudes of farmers (Table 2). However, there were no relationships between family labor or source of information and farmers' attitudes towards monsoon groundnut production (Table 2).

Concerning technological factors, production system was related to the farmers' attitudes (Table 2). From this finding it could be inferred that those who intercropped the groundnut with other crops such as pigeon pea or sunflower might have additional income from inter cropping. This might be due to the reason that additional income from inter-crop was a supplement to the production cost, and thus those farmers were more likely to grow the groundnut in early monsoon season regardless of high investment than those who grew the groundnut as a sole crop.

Participation in extension activities was significantly related to the farmers' attitudes (Table 2). This finding was supported by the findings of Bagheri *et al.* (2008) which indicated that extension participation and perception of paddy farmers towards sustainable agricultural technologies were positively correlated in Mazandaran province of Iran.

There was no relationship between knowledge of farmers and their attitudes towards monsoon groundnut production in dry zone area. The farmers in the study area make production decisions for dry land crops in uncertain circumstances. Most of the problems with groundnut production are mostly related to unfavorable weather conditions and their economic situations even though they follow the recommended improved cultural practice. Under these circumstances, increasing farmers' knowledge of groundnut production technology would not improve their attitudes in this regard. This might be the reason that knowledge of farmers was not related to their attitudes towards monsoon groundnut production in the study area.

There was no relationship between technological assistance from extension workers and attitudes of farmers towards monsoon groundnut production in dry zone area (Table 2).

Problems and suggestions of the farmers

According to the collected data of interviews with respondent farmers, there were five main problems in groundnut cultivation substituted for sesame growing area (Table 3).

CONCLUSION AND RECOMMENDATIONS

Conclusion

This research revealed that the overall degree of farmers' attitudes towards monsoon groundnut production was at moderate level. Based on the findings of this study, the farmers in the study area clearly accepted that groundnut cultivation in early monsoon season was a low risk if the cost of cultivation was low. In the study area, the investment for groundnut seed was very high, thus it can be concluded that the farmers assumed that the groundnut cultivation in early monsoon season was a high risk due to high cost of cultivation. Therefore, they were reluctant to substitute groundnut in sesame areas even though they fully accepted it was more

Table 3 Problems and suggestions of the farmers in Pakokku district

(n = 133)

Problems	Suggestions of the farmers	Number of farmer respondents	%
1. Lack of timely cultivation with the onset of monsoon rain due to insufficient soil moisture and thus harvest problem with rain.	1. Sowing time should be mid - monsoon season to avoid high risk.	104	78
2. Lack of investment for production inputs.	2.1 The government should increase the amount of credits for groundnut farmers. 2.2 The oil seed crops project should do more to help groundnut farmers for seeds, fertilizers, and agro-chemicals.	97	73
3. Shortage of good quality seeds and drought tolerant variety to fit local conditions.	3. The relevant department should provide a drought tolerant variety and good quality seeds.	96	72
4. Lack of timely inter-cultivation weeding due to shortage of labor in growing season.	-	54	41
5. Shortage of organic manure such as cow-dung, poultry manure	-	27	20

economical than sesame cultivation. Moreover, they were not satisfied with the profit of groundnut production in early monsoon season, thus they did not dare to take risks since they were small-scale farmers.

There were nine factors related to the attitudes of farmers towards monsoon groundnut production. Among them, total income of farm family, groundnut income, farm size, off-farm employment and participation in extension activities were significantly related to the attitudes of farmers towards monsoon groundnut production. In addition, the level of education, credit for cultivation and production system were also positively related while age was negatively related to the attitudes of farmers towards monsoon groundnut production.

Recommendations

1. According to the findings, it is essential to find out the suitable sowing time for monsoon groundnut in the study areas based on the farmers' access to resources, soil types, and current rainfall pattern. Therefore, the local extension office should practise the demonstration-cum-trials for different sowing times of monsoon groundnut on contact farmers' fields in cooperation with researchers. Furthermore, monitoring and evaluation of the activities should be regularly conducted for further improvement.

2. Myanmar Agricultural Development Bank should increase the amount of credit for groundnut farmers so as to cover the production costs.

3. The distribution of drought tolerant

varieties and good quality seeds should be strengthened by both involving departments and agro-chemical companies. Moreover, the farmers also should be encouraged to produce groundnut seeds for their own use. However, for this to happen successfully, they should be given training in seed production, processing and good storage methods for groundnut seeds.

4. The local extension offices should train the farmers in suitable systematic herbicide application if labor and time are limited. Furthermore, the farmers also should be encouraged to carry out summer ploughing (ploughing one month in advance) to reduce weed problems.

5. The shortage of organic manure could be addressed through more emphasis on demonstrations regarding organic fertilizers, group discussions and field day sessions.

6. According to the results of this study, the degree of farmers' attitudes towards the training/ field day sessions was at moderate level. The local extension offices therefore need to organize farmers to participate more in extension activities through providing effective and efficient training/field day sessions in order to improve the attitude in the future.

7. Because of the positive relationship between participation in extension activities and farmers' attitudes, the local extension office should expand its coverage to reach more farmers by means of relevant extension methods in different areas. It was noted that age was negatively and educational level was positively related to the attitudes of farmers. Therefore, more aged and low-educated farmers who are the majority of farmers in study areas should especially be organized to improve their attitudes.

8. The degree of farmers' attitudes towards the marketing facilities available was at low level. An appropriate system for the dissemination of marketing information to farmers should hence be improved by means of distribution of current price information and demand forecasts of the different market outlets in the local areas. Furthermore, the local authorities should strive to improve infrastructure that can improve marketing facilities such as rural roads, water, electricity, and telephone connections.

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