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## Factors affecting farmer' self-reliance in organic KDML105 rice Production, Thung Kula Rong Hai area

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Napharat Vetchasitniraphai and Wallatat Intarucporn (2013) Factors affecting farmer' self-reliance in organic KDML105 rice Production, Thung Kula Rong Hai area. International Journal of Agricultural Technology 9(5):1045-1053.

**Abstract** The research aimed to study the factor which affecting farmer's self-reliance in organic KDML105 rice production in Thung Kula Rong Hai area by using quantitative methodologies. For the quantitative research, the respondents consisted of 257 farmers who produce organic KDML105 rice in Thung Kula Rong Hai area. Instrument used in this research was questionnaires. The gained data were then analyzed by a computer program called Statistical Package for Social Science or SPSS/PC. The statistical techniques were used as descriptive statistics to explain personal characteristics, economic and social factors. The analysis was conducted by using frequency, percentage, minimum, maximum, means and standard deviation. The hypothesis was tested to find the relationship between independent variables and dependent variable by using multiple regression analysis and stepwise method. The result of analysis found that in overall it was significance at high level with mean at 3.73 and standard deviation at 0.74. The analysis of relationship between independent variables and dependent variable were found that sex and number of household member had negative relationship self-reliance of farmers producing organic KDML 105 rice. Which income, social network, communication and leadership had positive relationship self-reliance. According to the results of multiple regression analysis by testing all 9 independent variables which were calculated by stepwise method, it was found that independent variables and self-reliance of farmers producing organic KDML105 rice had multiple correlation at confidence level 0.01. When taking into consideration of multiple for decision making. It was found that  $R^2$  was equal to 0.660 meaning that all independent variables can explain the change of the dependent variable at 66.00%. Among which, there were 6 independent variables namely, learning, leadership, communication, education level and income, had positive relationship with dependent variable with statistical significance at 0.01.

**Keywords:** self-reliance, organic KDML 105 rice, farmers in Thung Kula Rong Hai area

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## **Introduction**

At present, the Thai KDLM 105 rice in Thung Kula Rong Hai is emphasized on the chemical single-crop production which leads to the problem of high production cost of the chemical KDLM 105 rice. Moreover, the fertility rate of the soil in Thung Kula Rong Hai area is medium to low then the farmers need to use more chemicals such as chemical fertilizers, chemical pesticides, chemical herbicides as well as the synthetic hormones. This high rate of chemical consumption leads to the unprofitable investment. Crop disease and the insect pest problems in some years also cause the unsuccessful KDLM 105 rice cultivation and lead the farmers to the increasing of debts from both formal and informal liabilities. Most of the farmers in the area of Tung Kula Rong Hai do not have enough rice barns to store their products then they likely to sell their rice at low price right after the harvest in the form of paddy grain. In addition, the farmers in the area have not formed a group of corporation to process their products for the value added and product variety. Farmers' short life span is another important problem caused by the severe use of chemical products. (Alkin, 1969; Bryant and White 1984; Chang, 1969).

Despite the problem of rice production, the domestic crisis in Thung Kula Rong Hai is also increasing. The strength of the family is loosening; work forces in the family leave for working to the big cities and the elderly person are left behind for taking care of the in children. The new farming style of the North Eastern farmers does not require the family work forces in the paddy field any longer. Duty of the new generation work force is to work in the city and send money back to the family in order to hire the outside labors working in the field for them. (DOA, 1999; Ministry of Agriculture and Cooperatives, 1926).

From the study of the data, documents and the related researches, the researcher found that the production of organic KDLM 105 rice is a good alternative to solve the problem mentioned previously, which is suitable for the society and cultural conditions of Thung Kula Rong Hai area. The policy of producing the organic agricultural products in Thung Kula Rong Hai area gets the strong impetus and support from various government agencies (Division of Foreign Trade, 2000).

The failure of the new scheme of agricultural development turns some of the farmers back to the traditional way of agricultural production and provides them an opportunity to learn and practice various techniques of the sustainable agriculture which are suitable for them. This phenomenon can be considered as a social movement which promotes the alternative economy that based on the local wisdom, real experience and focuses on the natural recourses development, better environment and ecological integrity.

There are many local scholars who turn back to the traditional farming and considered as the leaders i.e. Mr. Man Samsi, Mr. Nikhom Petchpha, the local scholars and the leaders of the Moral Rice farmer group from Yasothorn province. These men are able to produce sufficient high quality food products to meet the basic requirement while maintaining farmers' and consumers' quality life standard. They are economic self-reliance. They restore and maintain the balance of environment and ecological system. Their role model in the alternative economy might lead the other Northeastern farmers for this survival. What are the factors that enabling the farmers to produce the organic KDLM 105 rice simultaneously with self-reliance? What is the current situation of the Organic KDML 105 Rice Production in Thung Kula Rong Hai area? What are the obstacles and difficulties of the farmers in Thung Kula Rong Hai area (Na Thalang, 1998, 1999).

## **Materials and methods**

In this study, the research methodology was namely quantitative research. The area of Thung Kula Rong Hai covered five provinces in the Northeastern region of Thailand viz., Roi Et, Sirsakot, Yasothon Mahasarakham and Surin. Number of 257 samples were deaw from 719 populations by using Yamane' formula. Statically application such as the average, percentage, frequency and standard deviation were computed. The stepwise method multiple regression were also employed to test the hypothesis.

## **Results**

### ***Part I: Agriculturists' personal backgrounds, and their economic and social factors***

In terms of their personal backgrounds, it was stated that female agriculturists (62.30 %), and male agriculturists (37.70%) aged between 41 – 50 years (47.40%), earned a primary diploma (75.10%), and believed in Buddhism. In addition, 4.81, and 3.05 people with 23.41 years were respectively averaged in terms of the number of family members, labor forces, and experiences in rice plantation. Also, the agriculturists' land property ownership with its percent of 94.60, their non-land property ownership with its percent of 4.20, and 1.20 % of their non-land property ownership with some proportions of land properties were respectively seen in terms of their possession of land properties. In terms of their averaged incomes benefited from the areas of rice plantation, it was stated that agriculturists earned their annual incomes of 165,813.20 baht, being taken from different farming incomes of 156,186.80 baht, and other incomes of

9,470.81 baht. Their financial supports, it was stated that their investment budgets with its percent of 89.50 sponsored by other loan funds, their no loan supports with its percent of 10.50, financial supports by Bank for Agriculture and Co-operatives with its percent of 59.50, community funds with its percent of 42.00, and water management project by 2.70 %, loans with percent of 0.80 supported by other cooperatives, as well as other loan supports by 0.08 % were respectively seen; otherwise, their debts with approximately average of 98,665.37 baht.

***Part 2: Factors affecting agriculturists' self-reliance in 105-jasmine organic rice plantation in Thung Kula Rong Hai areas***

Factors affecting the agriculturists' self-reliance in their 105-jasmine organic rice plantation in Thung Kula Rong Hai areas, with its level of necessity of 3.79, and its standard deviation of 0.72, were as follows:-in terms of their leadership with its mean of 3.94, and its standard deviation of 0.88, it was stated that the community leaders' abilities of their negotiation with government and non-government organizations, followed by the community leaders' capability of organic rice plantation, their effective problem-solving management, their counseling services given for community residents' organic rice plantation, their well-organized negotiation, their creativity and wide vision-planning, their moral awareness and academic services served for community residents' organic rice plantation, as well as their democracy-based organizational administration and panel discussions were all rated at a higher level. Their social networks its mean of 3.84, and its standard deviation of 0.73, it was stated that the agriculturists' establishment for similar rice plantation management, the provision of social networks served for idea-sharing, the members' awareness of their self-responsibilities in organic rice plantation, the agriculturists' autonomous and fair organizational management on their organic rice plantation, the additional numbers of information service-based networking systems, the agriculturists' implications of transferring their effective organic rice plantation given to other involved participants, the agriculturists' product-bargaining collaborations with rice buyers, as well as the agriculturists' continuations of their self-development were all rated at a higher level.

In terms of their learning and knowledge management with its mean of 3.77, and its standard deviation of 0.61, it was stated that their follow-ups on new agricultural advancements broadcasted through various media, the continuation of additional trainings on effective organic rice plantation, failed experiences in organic rice plantation, the continuation of digesting academic knowledge on organic rice plantation obtained from communities', government organizations', and networks' indigenous learning sites, additional on-site

educational fieldtrips, idea-sharing and panel discussions on organic rice plantation and management in collaboration with other involved participants, as well as the involved organizations' academic services on organic rice plantation given to agriculturist's deeper understandings of effective organic rice management were all rated at a higher level. The communication with its mean of 3.72, and its standard deviation of 0.69, it was stated that in-group and between-group panel discussions on their plantation of organic rice, the involved organizations' dissemination for technological advancements, agricultural communication with other agriculturists, the agriculturists' idea-sharing on the deeper understandings of their agriculture, the involved organizations' academic services on effective organic rice plantation and management given to other agriculturists, the communication of agricultural advancements informed through other printed media, as well as the significant applications of mobile phones to their negotiation were all rated at a higher level.

***Part 3: Agriculturists' self-reliance in their plantation of 105-jasmine organic rice in Thung Kula Rong Hai areas***

The agriculturists' self-reliance in their 105-jasmine organic rice plantation in Thung Kula Rong Hai areas, with its mean of 3.73, and its standard deviation of 0.74, were as follows:-

In terms of their social factors with its mean of 3.80, and its standard deviation of 0.63, it was stated that the agriculturists' shares for the utilization of plant seeds and organic fertilizers with their neighboring agricultures, the members' unity in their communities, the agriculturists' preparations for their rice fields, well-digging, rice-seeding, rice-planting, and harvesting, the members' cooperation in their stricter regulations, the members' social assistances in their communities, the agriculturists' meetings and participation in their community activities served for their problem-solving and community development, the agriculturists' goods-sharing, as well as the members' readiness on their public activity management were all rated at a higher level. Their mental factors with its mean of 3.80, and its standard deviation of 0.63, it was respectively stated that the agriculturists' patience facing with their terrible situations, the family members' idea-sharing and family acceptance, the family members' generosity, self-reliance overcoming with their family obstacles, self-battlement in their life, the agriculturists' impromptu problem-solving, self-management on their career barriers, religious faithfulness and decreases of temptation, the communities' participation in managing their cultural fairs, as well as the agriculturist' daily merit-making at temples or on religious holidays were all rated at a higher level. Their natural resources management with its

mean of 3.74, and its standard deviation of 0.83, it was respectively stated that the agriculturists' counseling services on natural resources conservation given to their members and outsiders, the agriculturists' deforestation, penalty regulations for wood smugglers, and deforesters, the agriculturists' investigation on the problems of natural resources, the utilization of fertilizers served for abundant natural surroundings, their no chemical exploitation, the family members' natural resources conservation, as well as the family members' participation in effectively managing their natural resources such as their no paddy stubble-burning were all rated at a higher level.

Their economic factors with its mean of 3.67, and its standard deviation of 0.75, it was respectively stated that the inadequate numbers of rice planters' incomes, the agriculturists' membership for their money-saving and decreases of extravagant life-earning expenditures, the agriculturists' annual incomes benefited for their rice plantation, the agriculturists' purchases of their rice-planting tools and life-living facilities taken from their rice plantation, the agriculturists' no economic impacts of their organic rice plantation, the availability of money served for their necessary expenses, the sufficient numbers of incomes served for their expenditures, as well as the agriculturists' decrease of family expenses resulted from their self-production were all rated at a higher level.

Their technological availability with its mean of 3.66, and its standard deviation of 0.77, it was respectively stated that the agriculturists' deeper understandings of their organic agricultural management, the agriculturists' technological transferring of knowledge and local wisdom managements at both family and local levels, the agriculturists' additional trainings, self-studies, and educational fieldtrips on the proper applications of rice-planted tools served for their effective organic rice plantation and management with its new technological advancements, the agriculturists' competencies of implementing their organic rice plantation, as well as the additional numbers of rice-planted tools served for their farming works were all rated at a higher level.

#### ***Part IV: Correlations between independent and dependent variables***

According to the analysis of correlations between independent and dependent variables, it was stated that the negative correlations of agriculturists' self-reliance in their organic rice plantation, as compared to their gender and numbers of family, were significantly different at 0.05; otherwise, the positive correlations of agriculturists' self-reliance in their organic rice plantation, as compared to their incomes, social networks and learning managements, networking negotiation, and leadership, were significantly different at 0.01.

In analyzing its regression carried out with all the 9 independent variables selected by the stepwise method, it was obvious that independent variables with its frequency distribution of 84.082, and its no significant difference compared with the agriculturists' self-reliances in their organic rice plantation in Thung Kula Rong Hai were rated at the reliability of 0.01. In terms of the multiple coefficient of determinant compared with its  $R^2$  of 0.660 found in all the independent variables, on the other hands, it was finally apparent that 6 out of the 10 dependent variables related to the agriculturists' self-reliances, with its significant difference of 0.01, compared with their pedagogical accessibility, leadership, communication, educational backgrounds, and incomes were rated at 66.00 %.

## **Discussion**

According to the study of the agriculturists' self-reliances in their organic rice plantation in Thung Kula Rong Hai areas in relations to Prawet Wasee's concepts on five elements of attribute of corporeal being (1987), "mind" is defined as one's morals, diligence, no poverty-stricken worries, no greediness, hermitage, no extravagance directly lead to his/her integrated economic planning management, which encourages their consumptional, environmental, mental, and economic purposes. As agriculturists' economic self-reliances have been stimulated for their consumption purposes, agriculturists' no shortage of life-earning supplies, larger amounts of debts., no times, and deforestation are all caused by extravagant habits in relations to the balances of natural resources. However, agriculturists' relationship between their well-planned life management systems and environmental surroundings are not only resulted in the sufficient numbers of food supplies, participation in managing community activities, stable family institution-strengthening, respects of elderly residents and economic balances, but other involved institutions such as temples, social welfare institutions, as well as educational, health, and cultural centers were also served for their mental development taken places in their communities.

As cited above, in order to promote their moral awareness and proper ways of life, as well as to effectively manage the agriculturists' community development with their effective agricultural, pedagogical, and information-retrieving managements, therefore, the integration of their community's Buddhism-based agricultural administration with emphasis on its technological, ecological, economic, social, and cultural implications of the agriculturists' organic rice plantation, and well-preparation for their paddy-selecting, seeding, soil-scarifying, as well as the utilization of pumpkin, wax gourd, lemongrass, and Siamese neem leaves-made fertilizers also plays very important roles in shifting their mental empowerment for planting purposes.

Additionally, the agriculturists' deeper understandings of organic rice plantation were not only acknowledged by their families and community leaders, but some agriculturists' local wisdoms were also inherited from their grand parents. As a result, Muhovich (1990) explained that agriculturists' no self-potentialities of applying agricultural technologies caused their larger numbers of debts, health deterioration, and environmental imbalances. It was also suggested that the agriculturists' integrated applications of original and modern technologies to planting organic rice could be supported for their detailed life expenditures, and global marketing competition.

According to Thai National Institute for Technological and Sciences Research cited in 1995, it was conformed that agriculturists' technological self-reliances in rice-planting and herbal treatment inherited from their ancestors' local wisdoms were both saved for their daily expenses and environmental damages. Sunyawiwat (2003) explained that self-reliance refers to one's abilities of maintaining his/her ways of life at individual and local levels, agriculturists' community and family strengthening, other agricultural networks' no success in their organic rice plantation e.g. Mr. Choui Sasuk's agricultural membership in Surin province, etc., their no distribution channels at marketplaces worked with the numbers of staff of five, their no idea-sharing on rice-planting and labor forces, as well as their no additional trainings on their self-reliances in collaboration with other involved agricultural organizations were not induced by the agriculturists' self-reliances in their organic rice plantation in Thung Kula Rong Hai areas.

From interviews conducted with this study, the better quality of soil surfaces was resulted in not only the agriculturists' utilization of bean-made organic fertilizers as soil moisturizers with the lengths of soil treatment of less than 7 years, but also the applications of various techniques in the production of biotechnological and organic fertilizers taken from animal drops plants, and vegetables, as well as the agriculturists' implications of insects e.g. rove beetles, and whiteflies, etc.

The agriculturists' mental and socio-cultural self-reliances, it was stated that all agriculturists' inspiration for their organic rice plantation was resulted from healthcare requirements in their families and communities, as well as medical treatment e.g. cancers, on chemical uses, etc. Natsupha (2000) stated that agriculturists' self-reliances in their community mainly focused on their moral awareness, and consciousness, as well as their cooperatives' community-based effective agricultural management. Respectively, the community dwellers' potentialities of their mental, socio-cultural, natural resources, economic, and technological self-reliances were mostly implemented. As consequence, those self-reliances mentioned above directly affected the

agriculturists' sustainable self-development worked with their organic rice plantation.

## References

- Alkin, M.C. (1969). Evaluation theory development. Los Angeles: [n.p.].
- Bryant, C. and White, L.G. (1984). Managing development in the third world. Boulder, Colorado: Westview Press.
- Chang, Chi-Wen. (1969). Rural Asia Marches Forward: Focus on Agricultural & Rural Development. Philippines: University of Philippines.
- Department of Agriculture (1999). Research and Development of Organic Rice .Bangkok: Community Cooperatives of Thailand. p .22-11
- Division of Foreign Trade (2000). Standard of Thai rice and Thai Jasmine rice .Bangkok: Ministry of Commerce.
- Division of Foreign Trade (2006). Thai Rice Exporting Situation .Bangkok : Ministry of Commerce.
- Forslund, A.S. (1995). From nobody to somebody: Women's struggle to achieve dignity and self-reliance Ministry of Agriculture and Cooperatives (1926). Tung Kula Rong Hai Development Master Plan. Bangkok: Department of Land Development, Planning Division. 2004 .Seminar in World Jasmine Rice Day under the project of exporting standard jasmine rice production in Thung Kula Rong Hai area. Roi Et: Office of agricultural Economics.
- Muhovich, N.J. (1999). International development innovation: Process and product (Community development, non governmental organizations, Uganda). Ph.D. Thesis in Social Development University of Minnesota U.S.A.
- Na Thalang Ekawit (1998). Folk Wisdom: Thai The Way of Life and Learning-ProblemSolving Process. Bangkok: Phume Punya Foundation.
- Na Thalang Ekawit (1999). Research and Technology Development od Organic Rice Production. Bangkok. Thailand Agricultural Cooperative Community Publishing House.
- Natsupha Chatthip (2000). History of Thai Economic. Bangkok: Office of Chulalongkorn University.
- Sunyawiwat Sunya (2003). Theory and Strategies of Social Development. Bangkok. Chulalongkorn University Publishing House.

(Received 28 August 2013; accepted 31 August 2013)