

Further analysis on Organic agriculture and organic farming in case of Thailand agriculture and enhancing farmer productivity

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Abstract— *The objective of this paper is to present Further analysis on Organic agriculture and organic farming in case of Thailand agriculture and enhancing farmer productivity. In view of the demand for organic fertilizers, efforts should also be made to enhance and to develop more effective of compost, bio-fertilizer, and bio-pesticides currently used by farmers. Likewise, emphasis should also be laid on the cultivation of legumes and other crops that can enhance the fertility of the soil, as practiced by farmers in many developing countries to fertilize their lands. On the other hand, most of the farmers who practice this farm system found that they are adopting a number of SLMs and interested in joining the meeting or training to gain more and more knowledge.*

Keywords— *Organic agriculture, organic farming , Farm management practices, SLM practices; Thailand*

I. INTRODUCTION

First, The United Nations defines sustainable land management (SLM) as “the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions” (FAO, 2018).

TerrAfrica (2005) defines SLM as “the adoption of land-use systems that through appropriate management practices enable land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources.”

“a knowledge-based procedure that helps integrate land, water, biodiversity, and environmental management to meet rising food and fiber requirements while sustaining ecosystem services and livelihoods” (World Bank, 2006) “the use of land resources, including soil, water, animals and plants for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and ensuring their environmental functions” (WOCAT 2018).

Hence we choose this topic:

“**Further analysis on Organic agriculture and organic farming in case of Thailand agriculture and enhancing farmer productivity**”.

II. PREVIOUS STUDIES

According to Limtong (2012), Thailand agricultural activities are varied in each region or locality, farm structure and farm management practices. Cultural and traditional of farming have been handed down through generations to generation. However, farming activities were affected by soil problem. Unsuitable of soil for farming activities can lead to physical and chemical properties of soil, and most of them occur naturally. About 194 million Rai (60%) of lands are classified as areas facing a severe problem with the low level of soil organic matter (SOM), low organic matter soil is widely spread across the country. About 16.03% of soil of the country is classified as suitable soil for farming while approximately 51.23% of soil of the country is classified as soil problem. Thus, farmers need to improve soil conditions before planting.

According to Sukvibool (2013), overexploitation and degradation of natural resources have a strong linkage with growth-oriented development and competition in trade and investment.

Natural resources such as forest, soil and water have deteriorated while the conflicts over land use continue. The resources have been compromised through inappropriate use and improper distribution. Land degradation is severe and critical level cover 11.2 % of the country. Natural disasters, such as flood and drought are more frequent and severe, and these threatened the well-being of the population of the country.

Last but not least, Arunrat et al (2023) stated that Rice straw and stubble burning is widely practiced to clear fields for new crops. However, questions remain about the effects of fire on soil bacterial communities and soil properties in paddy fields. Here, five adjacent farmed fields were investigated in central Thailand to assess changes in soil bacterial communities and soil properties after burning.

III. METHODOLOGY

Authors mainly use statistical analysis combined with qualitative analysis (synthesis and inductive methods).

IV. MAIN FINDINGS

The findings of Thapa and Rattanasuteerakul (2011), indicated that the extent of adoption of organic vegetable farming, in Mahasarakham province of Thailand, depends on several factors including women's leading role, motivation by GOs and NGOs, motivation by community members and farmers' groups, training participation, the

satisfaction of the price. Moreover, this study stressed that many farmers would surely be interested in practice only if the required amount of organic fertilizer is accessible and that the available bio-pesticides can effectively control pests. Many farmers were not able to grow organic vegetables due to the shortage of farmyard manure and compost, and the ineffectiveness of bio-pesticides in controlling pests.

The adoption of integrated pest management studied by Kabir& Rainis (2015), depends on the farmer field school training, land ownership status, perception toward practices, use of improved varieties and extension contact. In other words, farmers who had training facilities and frequent extension contact were more interested in adopting the practices. By contrast, the users of biological control and soil solarization were comparatively fewer, and vegetable cultivation area, age, household size, land ownership status and perception toward practices significantly influenced the adoption variation.

Then we analyze from below figure 1 that:

Beginning with farmer's features such as age, gender, education, etc. And farm characteristics such as size, owned land, crops, livestock, etc., with /by statistical analysis/interviews/explanatory model, Then when we implement 11 SLMs practices, we have to ensure that farmers have knowledge about SLMs, as well as their perceived constraints of implementation and their interests also.

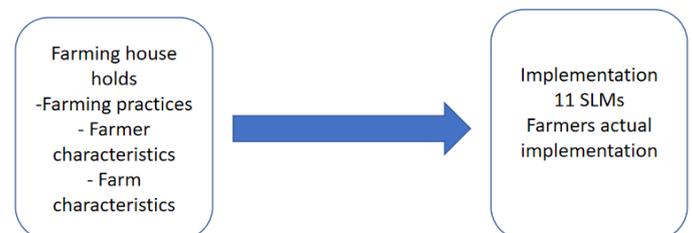


Fig.1- Conceptual Framework

(source: Phastraporn Salaisook , Thesis 2019)

Since the 8th National Economic and Social Development Plan period (1997–2001), Thailand has adopted an organic agriculture policy as a reason for this practice is given benefit for the environment and economic. “This policy gained prominence in 2005 when the government put forward a five-year (2005–2009) organic agriculture promotion program”. One of the important objectives of the policy was to achieve the target of 13.6 million hectares of organic areas by converting conventional farming areas. Due to this, several organic inputs including mainly biofertilizers and bio-pesticides have been promoted. Besides that, the “Department of Agriculture

(DOA) particularly offers certification services for organic products through its provincial line agencies.”

Organic agriculture can provide better income than conventional agriculture if farmers have organic certificated which is required in the specific market as the products quality guarantee and to be sold at a reasonable price.

The Policy on Promoting the Use of Organic Substances to Reduce using Farm Chemicals/Organic Agriculture of LDD (source LDD, 2018)

LDD is an organization having a mission on the development and management of the soil resources to be suitable for sustainable agricultural production. The Department therefore gives importance to the mobilization of the promotion of organic material utilization to reduce the use of agricultural chemicals, i.e. organic agriculture, to comply with the state’s organic agriculture policy, whereas the Department has been continually preparing the operational plan and budget for activities to promote organic material utilization to reduce the use of agricultural chemicals and has received the budget from the Budget Bureau from 2006 up to present.

1. To campaign and promote integrated usage of both organic fertilizers and chemical

fertilizers, but concentrate more on organic fertilizers, through the network of farmers groups that prefer using organic materials to farm chemicals that has already been established all over the country, including the network of volunteer soil doctors, and network of agricultural volunteers, so that farmers can have access to the knowledge and the state’s service on production and use of organic fertilizers, bio-fertilizer, herbal pesticides to reduce the use of chemical fertilizers and agricultural chemicals imported from abroad. It will thus comply with the production according to the sufficiency economy, e.g., focusing on using local materials to produce organic fertilizers to use within the community and to empower the farmer's groups continuously.

2. To enable farmers to have correct knowledge and understanding in using organic fertilizers according to the kinds of plants including green manures that are suitable for growing rice and field crops such as sugar cane, tapioca, while the compost is suitable for fruit trees and vegetables.

3. Avoid burning rice stubbles as it kills microorganisms in the soil and releases carbon dioxide and smog to cause global warming. The correct method is to submerge the rice fields with water, plus the application of bio-fertilizer to accelerate the fermentation of rice stubbles;

then plow all plant residues under to enrich the soil with organic matter.

4. To transfer the technology how to efficiently apply chemical fertilizers to farmers so they will have knowledge and understanding of how to use chemical fertilizers appropriately in growing crops, to reduce the production cost in the situation when the chemical fertilizers are expensive, whereas the Land Development Department has prepared the database of the Thai soil program and plant nutrient elements, with recommendations on soil management and fertilizer use to match each plot of land according to the soil analytical data.

5. To promote the use of green manure in soil improvement, growing cover crops, growing vetiver grass to conserve soil and water and to reduce the erosion that washes away the valued topsoil.

6. To promote the production of compost from crop residues, which is an efficient way to reduce the need for chemical fertilizers.

7. To promote and accelerate the efficient increase of the production of organic fertilizer and bio-fertilizer to suit the kinds of plants, with a standard that complies with the minimum criteria of the Fertilizer Act (2nd Issuance) B.E. 2550 (2007).

8. To rehabilitate and develop community factories for producing organic and bio-fertilizer under the Provincial CEO Budget’s support that has already been established according to the state sector’s policy to be able to drive on the continued productivity operation with accepted standards.

9. To promote and transfer knowledge body, mobilize the Land Development

Department’s farmers groups already established by selecting the groups that are ready, strong and with volunteer spirit to develop into the organic agriculture production system of the following levels: (1) Local level such as Surin Organic Agriculture Standard (SOAS), Northern Region Organic Agriculture Standard (NROS); (2) National level that includes the organic agriculture standard of the National Bureau of Agricultural Commodity and Food Standards;

and (3) International level that includes the organic agriculture standard of the Office of Organic Agriculture Standards (OOAS), etc. Whereof the LDD has integrated the implementation jointly with the relevant organizations, e.g. Department of Agriculture, Rice Department, National Bureau of Agricultural Commodity and Food Standards, Office of Organic Agriculture Standards, in order to mobilize and develop the farmer's groups that are ready

towards the organic agricultural production according to the various standard levels.

10. To support and promote volunteer soil doctors and farmers to be 'Smart Farmers' in the production of safe agricultural goods, being friendly to the environment and the products are of the quality that passes the standard criteria, whereas the personnel of the LDD gives advice and technical assistance as the 'Smart Officer' on how to develop the land to suit the sustainable agricultural production, and to assist farmers in various ways.

V. CONCLUSION

A. Conclusion

Organic agriculture can provide better income than conventional agriculture if farmers have organic certificated which is required in the specific market as the products quality guarantee and to be sold at a reasonable price. Hence, we need to train farmers to have correct knowledge and understanding in using organic fertilizers according to the kinds of plants including green manures that are suitable for growing rice and field crops such as sugar cane, tapioca, while the compost is suitable for fruit trees and vegetables.



Fig.2 - Thailand soil for agriculture

(source: Phastraporn Salaisook, Thesis 2019)

B. Recommendations

According to farmers practicing this farm system requires much more knowledge and understanding of practiser. Since they have to use organic fertilizer and build the standard infrastructure in their farm for investing, for organic fertilizer such as green manuring, organic bio-fertilizer, compost, etc., it requires specialized knowledge to produce. Thus most of the farmers who practice this farm system found that they are adopting a number of SLMs and interested in joining the meeting or training to gain more and more knowledge. Also we need to adopt to sustainable agri value chain (DT Ngoc-Huy, NT Hang, P Van Hong, 2021; BT Suu, DTN Huy, NT Hoa; 2021; BT Suu, VQ Giang, VP Lien, DTN Huy, HT Lan, 2021).

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