

Further Discussion on SML and LD (Land Development) in Thailand and Vietnam Agriculture with Productivity Recommendations

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ABSTRACT

Recently, Interest and intention for farming of farmers are the key factors of adoption SLM practices. On the other hand, economic, environmental and social factors have been changed farmers' livelihood and the way they farm by generating 3 main characteristics of farm structure and farm management practices as mentioned above. These findings lead to a number of policy recommendations for increasing SLMs adoption rate of the region and/or the country. We highlight the essence of the effectiveness of agricultural extension system as a fundamental base of SLMs implementation. And LDD is the principal key agency to conserve and rehabilitate land resource. Besides that, the agricultural sector needs restructuring, in response to the changing in farm structure and management practices.

This needs policies to increase the agricultural labor force and increasing efficiency of SLMs practices, and developing standard SLM practices model of consult and farmer's model is required for being a model of learning for many farmers.

Keywords: Land Development; Farm Management Practices; SLM Practices; Thailand; Vietnam.

1. Introduction

FAO (2018) states that "SLM encompasses established approaches such as soil and water conservation, natural resource management and integrated landscape management (ILM). It involves a holistic approach to achieving productive and healthy ecosystems by integrating social, economic, physical and biological needs and values, and it contributes to sustainable and rural development. SLM is based on four principles: (1) targeted policy and institutional support, including the development of incentive mechanisms for SLM adoption and income generation at the local level; (2) land-user-driven and participatory approaches; (3) the integrated use of natural resources on farms and at the ecosystem scale; and (4) multilevel, multi-stakeholder involvement and partnerships at all levels – land users, technical experts and policy-makers"

Hence we choose this topic:

"Further Discussion on SML and LD (Land development) in Thailand and Vietnam agriculture with productivity recommendations".

2. Previous Studies

We look at below analysis:

Technology transfer alone does not directly lead to the productivity of process while improvements of the process depend on the changing relationships among actors (Spielman et al., 2009; Kraemer-Mbula and Wamae 2010; OECD, 2013; Yang et al., 2014). AIS highlights not only the significant role of various actors possessing through different pieces of knowledge' type, but also the effective interactions for innovation. Generally, the interaction

process needs to be facilitated to break barriers. “Innovation arises in a particular socio-economic context and is shaped by the presence or absence of favorable conditions in which it can thrive; therefore, understanding this context is important to facilitate innovation” (GFRAS, 2018).

Sayamol C et al. (2018) mentioned Collecting and analyzing the viewpoints of local actors (e.g., farmers, staff from extension offices) regarding adoption decisions can help understand farmers’ reasons for adoption.

Since 1961, Thailand has provided a framework for sustainable development of the country’s five-year national economic and social development plans. To support sustainable land management, the National Action Program for Combating Desertification (NAPCD) is constituted as a strategic plan of MOAC. A number of special projects have been initiated under NAPCD strategic and plan of MOAC. For instant, soil and water conservation measure, suitable soils for cropping zonation, establishing demonstration plots and one Agriculture Learning Center (ALC) in every district, soil test and soil information systems services, biotechnology research for crop yield improvement etc., all projects aim to land rehabilitation and development by serving farmers the knowledge and understanding of the important of land quality improvement (Sukvibool, 2013).

Since 1963, for supporting SLM and food security of the country, LDD is the principal key agency to conserve and rehabilitate land resource. This organization is responsible for carrying various aspects of land development and management in order to assist farmers in soil and water conservation practices by technology and knowledge transfer from researcher to farmers or implementers. The duties and responsibilities of LDD stand in an “Act of Land Legislation” including:

(1) to conduct soil survey and produce soil resource maps, including survey to obtain census of the land data concerning land economics; (2) to conduct land use planning for the sustainable of land resources; (3) to conduct research and experiments in relation to soil, land improvement, soil and water conservation, watershed conservation, and other relevant issues pertaining to land development and farmers' requirements; and (4) to disseminate land development technologies to relevant government personnel, farmers, and farmers' requirements (LDD, 2019).

Moreover, the application of information technology (IT) and communication network to increase the efficiency of the performance of the LDD supports the main processes of the Department to attain good value, to become modern, continuous and up-to-date and the IT can be used for its maximum benefit. This will enable the organization to decide on the data to solve the occurring problems accurately, quickly and timely, up to different situations. At present, there are many channels of providing services in the information service system.

3. Methodology

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

4. Main Findings

4.1. SML and LDD practices with a case in Thailand

There are limit studies on the efficiency of AIS for SLM and rates of adoption of SLM in Thailand.

Land Development Department (LDD): Missions, Policies and Activities

The “People-Centered” and “Farmers’ Participatory” are now the main concepts of LDD extension systems. For achieving the goals of the organization, LDD has directed soil conservation program and worked closely with farmers or land users from the initial stage.

“Soil Doctors” also known as “Soil Doctor Volunteers” (SDV) in each Land Development Village (LDV) across the country is the essential element of LDD for knowledge and technology transferring in specific area implementation. The information flow in one direction from researcher to extensionist to farmers and farmers to farmers nowadays.

The Main Objectives of LDD

- (1) Production of land use plans for planning the development cover on any area.
- (2) To advise farmers to produce agricultural products according to the soil suitability.
- (3) The agricultural areas are protection from soils erosion.
- (4) The agricultural areas are rehabilitated for soil improvement and fertility enhancement.
- (5) To develop the research and innovations for land development.
- (6) Farmers can use land development technology.
- (7) To create and develop further the land development network parties to be strong and sustainable.

Government agencies/ Related organizations	Role in corroboration actions	Important rules Requirements for collaborating	Communication Guidelines and Methods
1. International Organization : FAO,ADB, IRD, IAEA and the country in ASEAN	1. Agricultural Research and Development Standard of Organic agriculture and the Participatory Guarantee System (PGS) 2. Standard of soil analysis and soil analysis quality assurance 3. Provide speaker support and learning center for land development 4. International Organization Budget support for research and development of land improvement and human resources development	1. Academic knowledge supporting 2. collaborative work 3. Standardization methods of analysis and Test of Expertise For quality assurance Analysis results 4. Supporting Organizations	1. Official letter 2. Meeting 3. MOU 4. Training Project
2. Institute of Education - Kasetsart University - Khon Kaen University - Mahidol University - Sukhothai - Chiang Mai University Etc	1. Knowledge exchange 2. Research, development, and transfer agricultural knowledge and technology 3. Research collaboration 4. Technology transfer 5. Development of soil survey technology.	1. Land development Cooperation Academic knowledge and Follow up 2. product is co-Copyrighted	1. official letter 2. Meeting/conference 3. Research and development Projects 4. Learning center for knowledge transfer to the students. 5. curriculum
3. Other Government agency (Department of Rice, Department of Agriculture, Department of Agriculture extension, etc.)	1. Promote soil improvement to grow rice and vegetable 2. Organic agriculture standards of rice and vegetables	1. Follow the guidelines of Organic Agriculture standard according to the requirements of Department of Rice /Department of Agriculture	1. official letter 2. Conference/meeting
4. The Research grants agency - The Thailand Research Fund (TRF) - National Research Council of Thailand	1. Agricultural research and development	1. Research fund supporting 2. Do the Research and technology development according to agency provided research fund support 3. academic partnership	1. Official letter 2. Conference/Meeting 3. Research Project
5. Local Government/ Organization	1. taking care and maintaining water resources, water delivery/irrigation system, soil and water conservation system	1. Working according to agreement with LDD	1. Official Letter 2. Conference/ Meeting

Sources: LDD 2016

Figure 1. Roles of related organizations in LDD

Next, Land Development Extension

According to LDD (2018), “technologies and services and soil and water conservation practices have been transferred to their customers, farmers including:

- (1) Land use planning, soil analysis, soil improvement and conservation, land use management and socioeconomic survey;
- (2) Analysis of soils, water, and plant at laboratories and mobile scale, including soil improvement materials;
- (3) Construction of farm ponds for soil and water conservation (in term of cost sharing);
- (4) Supporting LDD products for soil improvement and soil and water conservation such as vetiver grass, microbial activators, green manure seeds and so on; and
- (5) Establishment of soil doctors volunteers in all villages throughout of the country to assist LDD staffs.

We look at below fig:



Figure 2. Thailand agriculture

5. Conclusion

Our Recommendations as below:

Moreover, promoting land tenure security is theoretically contributed to improved land productivity and soil conservation. Likewise, increasing water accessibility, encouraging cattle and pig raising, and improving the education of farmers are also beneficial to agricultural innovation adoption. Understanding, knowledge and capacity building of farmers about the short-term and long term benefit of SLM practices is needed. Also, policy supporting the young generation to adopt farming as a life project is needed.

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. Moreover, since the efficiency of AIS is the major factor that leads to SLM implementation, improving SLM practices/technologies which meet the need of farmers in term of saving cost, time and labors but efficiency to bring famers' benefit of solving farm problem. The initial of SLMs

implementation may require some initial support and subsidies. Above all, the financial return that the farmers can attain from their investment plays a vital role in the extent of adoption of SLM practices.

Above all, since the key problem is “Poo Jad Kan”, the government should support the development of farm structures in which farmers may sufficient income so that it makes sense for them to farm as their main or their unique activity. For instance, the government could help the installation of young people on the farm of a certain size plus a certain type of crops that enables them to achieve an income that makes sense to them.

For further study, there should be more interesting in the economic evaluation of each SLM practice by farmers. For better data and information and understanding on the effectiveness of technologies and practices for address land issue, there is a need to conduct the research on the valuation of benefits achieved by sustainable land management measures. Besides, this study should be increased the number of interviewed farmers including both farmers who adopt and non-adopt SLM practice in different level of the region and country level.

Declarations

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Competing Interests Statement

The authors have declared no competing interests.

Consent for Publication

The authors declare that they consented to the publication of this research work.

Author's Contribution

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References

Asian Institute of Technology (2013). Report of an expert consultation workshop on Sustainable Land Management (SLM) regional action programme formulation to respond to climate change in Synergy with the Three Rio Conventions. Thailand.

Asia-Pacific Economic Cooperation (2011). Scientific workshop on Sustainable Land Management (SLM) to enhance food production of APEC members.

Asrat, P., & Simane, B. (2017). Household-and plot-level impacts of sustainable land management practices in the face of climate variability and change: empirical evidence from Dabus Sub-basin, Blue Nile River, Ethiopia. *Agriculture & food security*, 6(1): 61.

BT Suu, DTN Huy & NT Hoa (2021). Sustainable value chain issues, insect traps and solutions for coffee berry borer in the north of Vietnam. *Plant Cell Biotechnology and Molecular Biology*, 22(55&56): 74–83.

BT Suu, VQ Giang, VP Lien, DTN Huy & HT Lan (2021). The auto-infection trap with the native entomopathogenic fungus, *Beauveria Bassiana* for management of coffee berry borer (*Stephanoderes Hampei* Ferrari) in the northwest region. *Alinteri Journal of Agriculture Science*, 36(1): 191–198.

Breu, T.M., Hurni, H., Portner, B., Schwilch, G., Wolfgramm, B., Messerli, P., & Herweg, K.G. (2011). Sustainable land management and global development: Factors affecting land users' efforts to adopt and sustain the productive use of natural resources.

Budhaka, B., & Srikajorn, M. (2001). Investment in land development in Thailand. "Investment in Land and Water". Proceedings of the Regional Consultation at Bangkok, Thailand, during, 3–5 Oct 2001. Food and Agriculture Organization of the United Nations Bangkok, March 2002, Bangkok.

Budhaka, B., & Manu, S. (2018). Investment in land development in Thailand. Retrieved July 21, 2018, from <http://www.fao.org/docrep/005/ac623e/ac623e0l.htm#bm21>.

Bangkok Post (2018). Survey finds 40% of farmers live under poverty line. Retrieved August 3, 2018, from <https://www.bangkokpost.com/news/general/1475901/survey-finds-40-of-farmers-live-under-poverty>.

Dat, P.M., Mau, N.D., Loan, B.T.T., & Huy, D.T.N. (2020). Comparative China Corporate Governance Standards after Financial Crisis, Corporate Scandals and Manipulation. *Journal of security & sustainability issues*, 9(3).

Deng et al. (2014). Effects of simulated puddling intensity and pre-drying on shrinkage capacity of a paddy soil under long-term organic and inorganic fertilization. *Soil Till. Res.*, 140: 135–143.

DT Ngoc-Huy, NT Hang & P Van Hong (2021). Food and drink processing from lychee products in the northern provinces of Vietnam-and roles of agriculture project financing. *Revista de Investigaciones Universidad del Quindío*, 33(1): 187–195.

DT Tinh, NT Thuy & DT Ngoc Huy (2021). Doing Business Research and Teaching Methodology for Undergraduate, Postgraduate and Doctoral Students-Case in Various Markets Including Vietnam. *Elementary Education Online*, 20(1).

Hanh, P.T.M., Hang, N.T., & Huy, D.T.N. (2021). Enhancing Roles of Banks and the Comparison of Market Risk and Risk Policy Implications in Group of Listed Vietnam Banks During 2 Stages: Pre and Post-Low Inflation Period. *Revista geintec-gestao Inovacao e Tecnologias*, 11(2): 1723–1735.

Thi Hoa, N., Hang, N.T., Giang, N.T., & Huy, D.T.N. (2021). Human resource for schools of politics and for international relation during globalization and EVFTA. *Elementary Education Online*, 20(4): 2448–2452.

Hoa, N.T., Huy, D.T.N., & Van Trung, T. (2021). Implementation of Students's Scientific Research Policy at Universal Education Institutions in Vietnam in Today Situation and Solutions. *Review of International Geographical Education Online*, 11(10).

Krasachat, W., & Yaisawarng, S. (2021). Directional distance function technical efficiency of chili production in Thailand. *Sustainability*, 13: 741.

Krause, H., Lippe, R.S., & Grote, U. (2016). Adoption and income effects of public GAP standards: Evidence from the horticultural sector in Thailand. *Horticulturae*, 2: 18.

- Le, T.H., Huy, D.T.N., Le Thi Thanh Huong, N.T., & Hang, S.G. (2021). Recognition of user activity with a combined image and accelerometer wearable sensor. *Design Engineering*, Pages 6407–6421.
- Limtong, P. (2012). Status and priorities of soil management in Thailand. Presented in Workshop on Managing Living Soil, 5–8 December 2012, FAO, Rome, Italy.
- Longpichai, O. (2013). Determinants of adoption of crop diversification by smallholder rubber producers in Southern Thailand: Implications on natural resource conservation. *Kasetsart Jour of Social Science*, 382: 370–382.
- Lorsirirat, K., & Maita, H. (2006). Soil erosion problems in northeast Thailand: A case study from the view of agricultural development in a rural community near Khon Kaen. Disaster mitigation of debris flows, slope failures and landslides, Pages 675–686.
- Land Development Department. (2018). Main projects of land development department.
- LT Hue, NT Thuy, DTN Huy, NV Binh, DTT Huyen & NTM Thao (2020). Factors affecting the access to bank credit of smes in northeastern region, Vietnam. *International Journal of Entrepreneurship*, 24: 1–12.
- Nam, V.Q., Tinh, D.T., Huy, D.T.N., Le, T.H., & Huong, L.T.T. (2021). Internet of Things (IoT), Artificial Intelligence (AI) Applications for Various Sectors in Emerging Markets-and Risk Management Information System (RMIS) Issues. *Design Engineering*, Pages 609–618.
- NT Hang et al. (2021). Educating and training labor force under Covid 19: Impacts to meet market demand in Vietnam during globalization and integration era, *JETT*, 12(1): 179–184.
- NT Diep, TD Trang, LT Hue & DTN Huy (2022). Analysis of Marketing Strategy of Food and Milk Products for Children in Vietnam Market-And Legal Matters of Protecting Rights of Consumers Who Are Children in the Economy. *International Journal of Early Childhood Special Education*, 14(3).
- PT Anh, NTN Lan, NTM Hanh, DTN Huy & BTT Loan. (2020). Sustainable consumption behaviors of young people in the field of food and drinks: a case study, *Journal of Security & Sustainability Issues*, 9.
- Ponnamperuma, F.N. (1984). Straw as a source of nutrients for wet land rice, 117-136. *Organic Matter and Rice*, International Rice Research Institute, Los Banos, Philippines.
- Saonthongoi, V. et al. (2014). Effect of Rice Straw Incorporation on Soil Properties and Rice Yield. *Thai Journal of Agricultural Science*, 47(1): 7–12.
- TTH Ha et al. (2019). Modern corporate governance standards and role of auditing-cases in some Western european countries after financial crisis, corporate scandals and manipulation. *International Journal of Entrepreneurship*, 24(1S).
- VQ Nam & DT Ngoc Huy (2021). Solutions to Promote Startup for the Youth in Minority and Mountainous Region of Thai Nguyen Province-Vietnam. *Jour of Contemporary Issues in Business and Government*, 27(3): 2113–2118.
- Binh, V.T., & Huy, D.T.N. (2021). Further Analysis on Solution Treatment for Diabetes of Patients at Hospitals in Vietnam. *NeuroQuantology*, 19(8): 88–93.
- Yao, S., et al. (2015). Effects of rice straw incorporation and tillage depth on soil puddlability and mechanical properties during rice growth period. *Soil and Tillage Research*, 146(B).