Bern University of Applied Sciences
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HAFL Master's Thesis Abstract

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English Title: **Organic rice-based farming systems in Thailand: What drives adoption of recommended practices?**

English Summary: The sustainability and productivity of smallscale rice-based farming systems in the rural region of northeastern Thailand are threatened because of (1) changing climate with seasonal water shortages and floods, (2) increasing scarcity of resources, especially water, soil organic matter and labour, (3) low degree of mechanisation, (4) high costs associated with labour intensive production practices, and (5) rural-urban migration, especially of young household members. These challenges could be partly alleviated through sustainably increasing the productivity of smallscale farmers with alternative farming methods and mechanisation of agricultural operations. A market-driven agricultural development project for organic jasmin rice in Surin aimed at increasing profitability and environmental sustainability of the existing organic production system with new farming practices. The project promoted crop rotation and new crop establishment methods such as line sowing of paddy using seed drills. However, some of the recommended practices have only been taken up by a small proportion of farmers. Literature shows that adoption decisions are influenced by extrinsic factors such as the characteristics of the innovation, economic and structural characteristics of the decision maker and its environment as well as intrinsic factors such as attitudes. This study contributes to the advancement of knowledge regarding obstacles and drivers for the recommended practices in the case of Thai smallholders producing organic Jasmin rice, and thereby identifies opportunities for action to better support farmers to improve their farming systems. A mixed qualitative and quantitative research approach coupled with literature review was applied. Preliminary qualitative interviews and a survey with a structured face-to-face interview with 82 farmers were conducted. The results show that the influencing factors are manifold, differ among the adopter groups and strongly relate to the attributes of the practices. Perceived benefits of mechanical line sowing (mls) that foster adoption are a higher yield, higher resilience of the production system, saving of seeds, facilitated seed selection and control of varietal purity as well as facilitated weed management. The adoption of rotation crops was perceived to increase soil fertility, income and reduce weed pressure. With regards to the disadvantages, farmers highlighted the high upfront investments or high operational costs, limited availability of the equipment, increased weed manifestation and lower flexibility with regards to soil-water conditions as main problems of mls. For rotation crops freely roaming cattle, limited availability of labour and water as well as fragmented land parcels far away from the house ranked highest among the perceived obstacles. Not for all of the investigated extrinsic factors a statistically significant influence could be identified. Whereas for mls, farm size,

age and member-ship years to the cooperative have a significant effect on the adoption, the adoption intensity of rotation crops does not seem to depend on the economic and structural characteristics of the farm and the farmers' demographics analysed in this study. The practice of the neighbours however could be identified to be a statistically significant factor influencing the adoption process of both mls and rotation crops. With regards to the intrinsic factors, the study could reveal that farmers adopting mls rank their willingness to take risks to try new methods significantly higher compared to non-adopters. Furthermore, they consider investments significantly more important to being successful as a farmer while having significantly more confidence in their abilities and depending less on others leading by example. Farmers with a high share of rotation crops could not be identified to differ in their innovation attitude compared to their peers. The aspiration to try new ways to increase profit in farming, seems to influence both mls adoption and adoption intensity of rotation crops. Evaluating obstacles and drivers for the adoption of the practices by farmers indicates that some of the obstacles could be alleviated by advisory efforts. Advisory support should be directed towards (1) demonstrating the costs and benefits of mls by building a business case for the acquisition of a seed driller by farmer groups, (2) awareness raising and disseminating information regarding soil and nutrient management to protect the soil, enhance soil fertility and soil mechanics, and (3) developing improved weed management strategies allowing to exploit the full potential of mls.

Keywords: smallholder organic farming, Jasmin rice, adoption, line sowing, mechanisation, crop rotation

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