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Production of Compost Fertilizer for Soil Improvement in Upland Rice Fields in Ban Pala-u, Prachuap Khiri Khan Province

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Abstract

Ethnic farmers (Pa-gha-ker-yor People), at Pala-u, Tambon Huai Sat Yai, Hau Hin district, Prachuap Khiri Khan province, Thailand, have suffered a continuing problem of upland rice yield decrease which has been caused by several reasons. Planting only rice in the area may be the cause of soil infertility and decrease of yield. For this reason, the purpose of this study was to find suitable soil amendment methods and to improve the self-reliance for farmers. This study was conducted using the participatory research method with a group of farmers during 2014-2015. Although the results of the past (2012) showed that the soil amendment method in the upland rice fields with manure fertilizer led to better rice growth compared to the use of green manure by landfill mulch. However, from the evaluation with the farmers, both methods were problematic in terms of the cost of the raw materials, so it cannot be a self-reliant solution. Also, there were the lacks of laborers and water for planting legumes to use as fresh manure. For this reason, the production of compost fertilizer using raw materials in areas with low water and labor consumption was likely to be more appropriate. The results of the experiment in Year 2014-2015 showed that compost with rice straw and bamboo soil in 8:1 v/v ratio with less watering (watering every three days) was assessed as the suitable formula. Also, when this compost formula was produced and applied to the soil in the rice fields, the rice yield increased without affecting the upland rice stem lodging. According to the farmers' assessment, Pa-gha-ker-yor farmers were satisfied to participate in this study of soil maintenance methods in their own area. It is considered that the knowledge obtained during the research process can be applied effectively to increase the yield of upland rice fields in the area.

Keywords: Prachuap Khiri Khan province, Soil improvement technology for highland area, Upland rice planting, Ethnic minority farmers, Compost fertilizer



Napier Pakchong-1's Supply Chain Management in Northeast Thailand towards Policy Recommendations

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Abstract

Napier Pakchong-1 can be grown as an energy crop and a forage crop. It gives high crop yields, is high in protein and can be used to produce methane gas. The Thai government has policies for supporting the cultivation of crops for energy production and for animal food. This paper presents a study of the Napier Pakchong-1 supply chain in Thailand from farm to fork. The purposes of this research was to study the supply chain management of Napier Pakchong-1, and to discuss and analyze linkages among supply chain stages which will lead to agricultural policy recommendations. The sampling group from northeastern Thailand comprised of 20 farmers, 3 collectors, 3 cooperatives/animal farms and a biogas power plant. The Participatory Action Research (PAR) format was used for the research. Members in the supply chain were involved in sharing data, problems and ideas for improvement to meet the needs of the whole supply chain. The research discovered that the competitive capability of the supply chain can be improved by a large number of actions all targeted at building strong networks in any form of farmers union, cooperative or contract farming. These networks can be built through the implementation of planning and information sharing in every process in the supply chain, the application of information technology, the proactive integrated management between supply and demand sides and the participation of government agencies and local authorities in coordinating, educating and supervising supply chain members. These actions are driving forces for increasing the competitive capability of Napier Pakchong-1 production in Thailand.

Keywords: Napier Pakchong-1, Supply chain, Northeastern region, Agricultural policy



Economic Value of Social Enterprise in Energy: A Case Study of Hydrogen Sulfide Removal Equipment from Biogas for Small-Scale Farmer

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Abstract

The objectives of this research is to analyze the economic, social, health, and environmental benefits of the Hydrogen Sulfide removal equipment from Biogas and to suggest the way to develop the product for commercial use for Huay Bong Energy Community Enterprise. The research has collected information from 200 target groups that installed the Hydrogen Sulfide removal equipment from Biogas in Uttaradit, Kamphaeng Phet, Phetchaburi, Nakhon Si Thammarat, and Phangnga provinces. In this study, we use social return on investment analysis to evaluate the value. The results of the study showed that the total benefits are 1,287,913 baht. The highest return is on the public health (636,856 bahts), other returns are on the economy (586,895 bahts), on the society (57,521 bahts), and on the environment (6,641 bahts). Social return on investment in Year 1 is 1.19 and increases to 2.86 in Year 5. NPV is 837,912.48 bahts and IRR is 25 %. The ways to improve this equipment into commercial uses are to increase its manufacture to provide consultation on the planning for several organizations (for example, biogas producer groups from livestock farms, restaurants, and educational institutions), to provide marketing and management services in collaboration with the "Mana Energy Many Power Network" and with Pasao Municipality. In the research and development aspects, we are working with the researchers from Uttaradit Rajabhat University and Phranakhon Rajabhat University. In the policy-making aspect, we are included in the Renewable Energy Development Plan for communities.

Keywords: Social enterprise, Social Return on Investment, Hydrogen Sulfide, Biogas



Database System to Support the Water Management by Community in Tub Nam Community, Phra Nakhon Sri Ayutthaya Province

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Abstract

This research aims to: 1) study water storage area and amount of water for cultivation in Tub Nam sub-district, 2) develop a database system to support decision-making process for water management for agriculture with participation of the community, 3) assess the database system by experts. The results of study demonstrate as follows: First, Tub Nam sub-district has 2,939 Rai of rice fields and 1,200 Rai of sweet potato plantations. There are five weirs in Tub Nam River, which cover the agricultural area of the community. There are 495,000 cubic meters of water which can be fully stored in the weirs. The farmers in the Tub Nam sub-district used water in average for 3,291,680 cubic meters for rice and 374,400 cubic meters for sweet potatoes per Rai per crop. Second, the database system was developed according to Community-Based System Development Life Cycle (C-BS DLC) and designed as Relational Database. The web application was designed using PHP, CSS, Java Script. In addition, there were Artificial Neural Networks to predict the amount of water in Chao Phraya River for 60 days in advance by calculating the root of the mean square error which was 0.170. Third, the efficiency assessment of the database system had appropriated level of 4.08 (mean), data accuracy level of 4.16 (mean), user friendly level of 4.00 (mean), and system security level of 4.00 (mean) which resulted in overall efficiency level of 4.06 (mean). These can be concluded that the database system had a good level of performance, certified by the experts.

Keywords: Phra Nakhon Sri Ayutthaya province, Tub Nam community, Agricultural water management, Database management system, Community-based system development life cycle



Potential of Community Capital for Being Tourism Special Economic Zone of Wiang Chiang Saen Municipality, Chiang Rai Province

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Abstract

This research aimed to survey, collect, and analyze the community capital to determine its value and potential to support Chiang Saen Municipality, Chiang Saen district, Chiang Rai province, to be the tourism special economic zone. In-depth interviews and group discussions about community capital were held with 40 respondents including formal and non-formal communities' leaders, who were known for their local knowledge, from 6 communities and representatives of government and non-government organizations to obtain relevant information. The information was analyzed by its content. The results were found that the community capital of Chiang Saen Municipality consisted of many aspects for examples the 34 archaeological sites in Chiang Saen Ancient Town. In addition, the natural resources were remarkable, such as the 200 years old teak forest and Mekong River with its beautiful scenery. Traditional cultural capital was found through various rituals and beliefs. The human capital resided with the local philosophers who were knowledgeable in various fields including language, history, culture, traditions, organic farming, handicrafts, paintings, sculpture, music, dancing, food, and traditional medicine. Once the communities' capital was analyzed for its potential contributions to Chiang Saen Municipality as a special area of tourism using the communities' local wisdom, it was prioritized to be utilized for economic value by integrating activities from five community capitals as follows: History, Food, Culture and Traditions, Handicrafts, and Music and Dancing. Recommendations were made to relevant organizations for raising awareness of people within the communities to build recognition of their value and providing the opportunities for the communities to be entirely involved in locally based tourism activities.

Keywords: Chiang Rai province, Chiang Saen municipality, Community capital, Potential of community capital, Tourism special economic zone



The Development of Community Food Product from Local Wisdom of Ya-nang Leaves

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Abstract

This study is a further development of local wisdom on food processing of Ya-nang Leaves into local food product. The study which is qualitative in nature aimed 1) to study knowledge and local wisdom concerning the usefulness of Ya-nang in terms of food and medicine, 2) to study guidelines on food processing to process Ya-nang into local food product and, 3) to process Ya-nang into local food product. The study was divided into 4 phrases as follows. Phrase 1 concerned the interviews of key informants and group discussions with experienced users of Ya-nang. Phrase 2 referred to the workshop with community enterprise groups searching for practical guidelines to process Ya-nang into local food product. Phrase 3 concerned tasting of different portions of powdered Ya-nang used as one of the ingredients in a variety of food. Phrase 4 covered the analysis of phenolic compound of powdered Ya-nang in laboratory. The study found that Ya-nang has long been used within communities both in the forms of food and medicine; for example in bamboo curry, cassia curry, and mushroom curry, Ya-nang helps reduce spiciness and intoxication. For medical benefit, Ya-nang can be used to treat fever, urticarial, poison-related symptom, drunkenness, dizziness, pressure, burnt wound, and scald, and to cure dog poisoning. One of the Ya-nang products processed in accordance with the local wisdom of the villagers is, for example, powdered Ya-nang which can be easily produced to extend the shelf life and which is convenient to use for consumers nowadays. Such plant can be further developed into a number of food products as well as health products. On parts of phenolic compound analysis through HPLC method, the study revealed that the powdered Ya-nang comprised gallic acid and ferulic acid with average content of 2.37 ± 0.10 mg/g and 1.76 ± 0.02 mg/g respectively.

Keywords: Ya-nang, Local food, Local food product