Organic livestock-crop farming systems in Thailand

Organic animal production in Asian countries is promoted by the private sector with support from NGOs. It is now also receiving attention from government agencies. An integrated organic livestock-crop system was initiated by the Department of Livestock Development (DLD) in Thailand to assist smallholder farmers to become more self-sufficient and less dependent on organic fertilizers, use animal resources more efficiently, and diversify food production. The project presented in this case study strives to assist farmers in the production of high quality, healthy food proteins and increase the marketing opportunities that are available.

Apart from food production, farmers support ecosystems and have an ability to increase resilience of rural communities to external changes. Local farmers were offered to participate in the learning process and act as facilitators in the organic movement in selected villages. Later, best practices were selected to share experiences among farmers. Site specific organic agricultural training was provided to help manage local natural resources. The extension services that were delivered were adapted to local conditions and animal breeds.

More than 8,000 smallholder farmers participated in this project, mostly organic crop producers. Technical staff aimed to modify attitudes and practices in this programme through extension activities including training, conducting field day trips, exhibitions, distribution of literature and setting up extension services for focus groups. Harmonising the relationship between crops and animals was an important management practices that was identified. Knowledge management techniques were used to link indigenous and scientific knowledge, particularly in the use of alternative natural products for animal husbandry and health care such as locally produced feed, herbs and effective microorganisms instead of agro-chemicals.

Livestock are an integral part of agroecological organic systems. One way to increase the uptake of organic agriculture was to encourage a shift to integrated livestock-crop production systems. This transition required changes in farmers’ attitudes and trust in organic management systems; better understanding of animal husbandry by naturally occurring processes and adopting traditional knowledge; and organization or institutional support to create new marketing opportunities.
The adoption of the system included three key steps which took a long initial time period to develop. The first step involved promoting organic livestock techniques, which changed the way farmers use their indigenous knowledge, encouraging them to use locally produced feedstuffs from their own by-products or from neighbours and to be in harmony with nature. The second was to develop participatory internal control systems by building capacity amongst farmer organizations, allowing for organic certification. The third was to develop marketing channels by encouraging producers’ organizations to open up alternative markets, especially for local consumption.

This study shows how organically fed livestock can be integrated with crop production so that the crop residues are best used. Homemade concentrates are encouraged to ensure sustainability of the animal diet and of the whole farming system.

Feeding strategies

**Integrating crop and livestock organic production in Tupthai village**

Organic livestock production is in its initial stages in many Asian countries. This case study focuses on Tupthai village, which is known for planting Hommali (jasmine) rice. The village is located in a remote area of Surin province, in the north-east of Thailand. Organic production of fragrant rice is the major livelihood activity and means to develop the local community.

The organic growers group has gradually developed exports of organic rice to the EU and USA since 2000. The farmers received support from the private sector and NGOs and have been certified by a foreign certification body. Villagers are committed to employing organic farming practices and sell their products at a local green market organised by an established provincial organic movement. Other activities in the village include producing and developing organic vegetables, native fruits and animal products for weekly farmers’ markets in downtown Surin.

**Organic feed as a result of integrating livestock and crop production**

Many farmers in the village also keep small livestock. Smallholder farmers keep 3-5 finishing pigs and 20-50 chickens depending on the optimum ratio of inputs, including a villager’s own labour and feedstuffs.

The animal husbandry system for swine provides a deep-bedding with 90 cm of organic rice hulls, cow manure and rice bran, composted with an effective microorganism fermented juice to absorb faeces and moisture before slowly composting. The confined pen has adequate space of not less than 1.5 m² per animal. Pigs attain a finishing weight of 80-100 kg at 5-6 months by consuming by-products such as rice bran, broken rice and coarse rice hulls from each farmer’s own production. They also produce a bedding of compost that can be directly applied to paddy fields. Chicken are allowed to walk freely and have adequate space and shade. The farmers appreciate that the integrated livestock-crop system of production provides an increase in food sources for household consumption compared to conventional paddy fields, while also providing opportunities for cost reduction, improving animal diets and enhancing sustainability.

Raising organic livestock in the village also means adopting a holistic approach for positive animal health. Well adapted pig and poultry diets have positive effects on animal health and welfare. The feeding recipes consisted of organic rice bran, broken rice, banana stems, fermented snails/fish juice and some fresh vegetables mixed together daily, while fermented herbs (*Andrographis paniculata,*)
Curcuma longa, Zingiber cassumunar, Tinospora crispa, etc.) are added to drinking water. These herbs have synergistic effects for livestock health, antimicrobial efficacy against poultry and swine pathogens, enhanced feed utilization and immunological benefits.

Other features of the system: local food sales and self-sufficiency of the system

The villagers participating in the project organized themselves to market organic foods at four weekly farmers’ markets in their own village, district, local hospital and city called ‘Green Market’. In addition to marketing certified organic products, farmers also sold directly to consumers at the farm gate.

For the organic guarantee system, the growers group received guidance in organic rice certification from a foreign certification body. A Participatory Guarantee System (PGS) was established, with a community focus involving local stakeholders, under the supervision of the Thai Organic Agriculture Foundation (TOAF). However, these systems of quality assurance are still at early stage of development.

The animal products that are sold to local consumers are worth 4.47 million baht (137,873 USD) per year. The average household income from animal produce and products sold at farmers’ markets was 4,000-6,000 baht (130‐200 USD) per month. By generating additional income, creating job opportunities and diversifying food consumption and nutrition, new opportunities have been created for self-sufficiency amongst farming households and for the development of local communities.

Increasing self-sufficiency of smallholder farming families

By improving feeding strategies, the sustainability of organic animal husbandry and crop production is enhanced. Organic animal husbandry is based on farmers’ own resources. The stocking density and herd size are selected to fit the available feedstuff and labour resources of each family. A holistic approach for positive animal health and welfare means that animal management is based on balanced diets, supplemented daily with vegetables or access to roughage, stress free living conditions, and the selection of resistant breeds that are suitable for the local management system. In this way the farming system depends solely on its own inputs. It can be self-sufficient, generating positive outcomes and earning income from selling produce.

Lessons learnt

This case study has demonstrated the benefits of an integrated organic livestock production system for different stakeholders. The organic system can be an effective risk management tool that reduces input costs, diversifies production and improves local food security for small and poor farmers. Rural communities can achieve greater incomes, practice better resource management and create new labour opportunities. In terms of agricultural competitiveness, this system meets the increasing demands for improving food safety methods and traceability. Organic production can reduce the possibility of environmental contamination, eliminate the use of chemical inputs and
minimize the public health costs of pesticide poisoning and animal drug residues in food. Some important implications and the actions needed to further promote these farming strategies include:

- Government policy to support organic agriculture along the supply chain and not overlook the ability of small farmers to produce quality foods;
- Leadership is an important key to success in order to build strategies and trusting relationships within communities and enhance the strength of farmers’ organizations;
- Institutional support from all stakeholders (e.g., extension agencies and other organizations) is important to promote the adoption of organic agriculture by small-scale farmers;
- Market access is a key factor to provide greater incentives to farmers and motivate them to adopt organic production systems;
- Innovation and participatory research with well-defined research questions for various sustainable production systems are necessary. It is difficult to establish a one-size-fits-all approach since conditions will vary in different zones.