“To beans or not to beans” - How to increase legume crops cultivation in Laos?

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INTRODUCTION

Legume crops are well known for their potential contribution to sustainable agriculture e.g.:

1. **Food security and nutrition:** legumes provide a good source of protein (19 to 24%), fiber, vitamins and minerals; in addition pulses (dry edible legume grains) have a low fat content, no cholesterol, as well as a low glycemic index (GI)

2. **Income diversification:** important market demand in Asia for pulses (e.g. mung bean, soybean, peas) and niche market opportunities for legumes by-products (e.g. fiber extracted from Sunn hemp bark, stick lac production on pigeon pea stem)

3. **Soil fertility maintenance:** legumes help to maintain N in soils through their ability to develop symbiosis with soil microbes that “fix” N in nodules located on the roots of the legume crops; symbiotic N fixation can reach up to 200 kg of N /ha/year; legumes also play a role in freeing soil-bound P (solubilization of soil phosphates through root exudates), thus making it available for the companion or subsequent crops

4. **Climate change adaptation and mitigation:** legumes contribute to soil organic matter build-up (buffer capacity); they withstand drought (low water requirements), and have low dependence on external inputs (like fertilizers) hence contribute to reduce the amount of greenhouse gases released in the atmosphere; they also contribute to protect soil against erosion

However, **the use of legumes is still marginal in smallholders farming systems in Lao Uplands**.

Based on the EFICAS (Eco-Friendly Intensification and Climate resilient Agricultural Systems) Project experience, this poster proposes some practical interventions towards increased legumes cultivation in Lao Uplands

1. Investing in sensitization and capacity building

- There is still a limited use of cultivated legume crops in traditional diet.
- The sensitization of women regarding the nutritive value of legume crops helps increasing the cultivation and consumption of legume crops. Sensitization using “funny” media e.g. cooking classes, legume-based dish contest that involves local women union is more effective than posters or village meeting to foster changes in diets and cooking habits.
- Farmers lack of technics and facilities to protect legume seeds from pest (e.g. weevils) and humidity (lower germination rate capacity). Training on simple tools to better preserve legume seeds (e.g. adequate drying, use of Neem leaves and ashes) help improving seeds conservation.

2. Identify best opportunity windows for legume promotion

There are 3 major opportunity windows to promote legume cultivation in Lao northern Uplands:

- Within nutrition-sensitive initiatives
- Close to dairy farms (e.g. Kobe farm, Xieng Khouang, dairy farms around Vientiane, potential for forage legume cultivation as protein-rich fodder) or to animal feed processing companies (e.g. Agro-Processing Development and XP trading companies interested in purchasing soybean in Xieng Khouang, Luang Prabang and Vientiane)
- In areas where farmers are facing land degradation issues and are engaged in distress diversification

3. Engage village communities into participatory landscape management

Communal grazing after crops harvest is a widespread traditional territory management rule in Lao Uplands. Animal free roaming is a major constraint to the adoption of legume-based diversified cropping systems, since farmers need to protect relay crops and crop residues from roaming animals. Participatory land use planning can help negotiating new rules related to animal roaming and limit legume crop damages by roaming animals.

4. Support farmers own “legume-based systems” experiments

Farmers often fear crop competition and yield losses when legumes are cultivated in association with their main crop. The support to legume-based on-farm experiments that includes risk failure guarantee helps build local capacity regarding diversified cropping system management.

5. Invest in convergent planning

Benefits from legume cultivation are plural. Various stakeholders from agricultural, education and health sectors should be associated into legume cultivation promotion

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