

## Tropical Forages for More Intensive Livestock Production: An Introduction



Livestock are vitally important for many of Asia's poorest rural communities. Small- and medium-sized animals in particular provide significant sources of food and cash. Medium-sized and large animals also form a central part of the social safety net, since they can be sold to meet major household needs

or in case other components of the farming system fail.

As farmers expand livestock production, they quickly discover the limits of naturally occurring forages and recognize the need for better feed resources. As a first step toward meeting this need, CIAT staff evaluated a wide range of tropical grasses and legumes for diverse agroecosystems and uses. They selected about 40 broadly adapted forages from an original collection that included 400 accessions of numerous species.

Using participatory methods with farmer groups, CIAT scientists began identifying multiple uses for forages in upland farming systems and developing practices for improved forage management. Through strong partnerships with national institutions and ambitious training programs, national teams have been formed that are skilled in participatory methods and in exchanging information about their experiences in forage technology development.

Thousands of farm families in six countries have adopted new forages and management systems, and the number is increasing rapidly each year. According to a recent study, new forage technologies have significantly boosted livestock production and incomes, and reduced labor inputs, since farmers, especially women and children, spend less time tending to animals and collecting native vegetation for feed.

CIAT's collaborative work on tropical forages in Asia is funded by the Australian Agency for International Development ([AusAID](#)) and the Asian Development Bank ([ADB](#)), with supporting research funded by the Australian Centre for International Agricultural Research ([ACIAR](#)).



## Livelihood and Livestock Systems Project (LLSP)



Building on the results of the Forages for Smallholders Project (1995-2002) the LLSP has brought research of forage systems from the laboratory to the farmers' field. Farmers in Indonesia, southern China, Lao PDR, Malaysia, Philippines, Thailand and Vietnam have helped selecting improved forage species from more than 500

accessions; they are now cultivating more than 40 different improved legume and grass varieties in their farms. They are growing forages in many innovative ways including intensively managed cut and carry plots, contour barriers, pastures, and cover crops. Thanks to participatory research approach right from the start, farmers have been able to adapt forage systems according to their own needs, resulting in sustainable improvement of their farming system. Some methods that have proved useful are participatory diagnosis and planning, collegial

users are participatory diagnosis and planning, congenial testing of species, participatory monitoring and evaluation, and facilitated farmer cross visits. Each country has one or more focus sites.

### The Problem

Farmers in the upland systems of Southeast Asia are among the poorest of the population, and are often marginalised. Livestock is an important source of livelihood, but poor feed quality and dry



season feed shortages are a serious limitation for livestock production. Farmers have to spend many hours a day to collect fodder from natural vegetation.

### Some Research Highlights

- In East Kalimantan Province, Indonesia, farmers were able to double their income from Bali cattle grazing in coconut plantations, when they improved their pasture with *Brachiaria humidicola* cv. Yanero.
- Farmers in Vietnam save almost 3 hours per day on labour by cultivating forages such as *Panicum maximum* T58 and *Paspalum atratum* BRA 9610 for their fish which are grown in ponds.
- In Bukidnon, Philippines, farmers have embraced *Setaria sphacelata* var. *sphacelata* systems for growing in contour lines on steep slopes, which provide both high quality forage for their cattle and preserve precious top soil and applied fertiliser.
- Farmers feed *Stylosanthes guianensis* CIAT 184 either fresh, cooked, or as leaf meal to their pigs as protein and vitamin supplement.

LLSP is funded by the Asian Development Bank (ADB) from 2003-2005 and coordinated by CIAT. It is implemented through national partners in Cambodia, southern China, Indonesia, Philippines, Thailand and Vietnam.

The LLSP is also coordinating the Southeast Asia Feed Resources Research and Development Network (SEAFRAD), which facilitates exchange of information among people and institutions with a common interest: research and development related to animal feed resources in Southeast Asia. One of the products of the network is a biannual newsletter, first published in October 1995. Editorship of the newsletter rotates, adding a new local flavour each year. Issues so far have been edited and produced by the Philippines, Laos, Malaysia, Indonesia, Vietnam and Thailand.


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**Forages and Livestock Systems Project (FLSP)****Livestock Production in Northern Laos**

Shifting cultivation is the dominant agricultural system of northern Laos. In recent times it has become a risky and time-consuming activity, prompting farmers to opt for diversifying rather than intensifying their livelihood systems. Increasingly they are relying on livestock (poultry, pigs, goats, cattle and buffalo) to ensure their livelihood security. Livestock (i) provide a high return per unit of labour input (ii) can be sold at any time when farmers need cash in a market with reliable demand and prices

(iii) provide manure to sustain yields of rice paddies and homegardens (iv) provide draft power and (vi) are often the only opportunity for smallholder farmers to accumulate capital.

Farmers usually identify livestock ownership as the primary indicator of wealth and factors that effect livestock production as primary causes of poverty. In a recent evaluation in eighteen upland communities, most farmers rated disease and feed shortages as the major constraints in their livestock systems.

**The Project's Goals**

The FLSP was designed to improve livelihoods in the northern uplands of Laos by:

- Improving productivity of small and large animal systems.
- Increasing labour efficiency and reducing workloads in livestock production.
- Enhancing sustainable cropping systems through improvements in soil fertility management and reductions in soil erosion.

By 2005, the project was working with over 1300 farmers in more than 100 villages in each of four northern districts.

**Some Project Highlights**

When the project was completed in June 2005, 900 farmers (65% of the farmers working with the project) were benefiting from significant impacts and 790 said they were achieving at least one significant livelihood impact. More than 150 farmers reported they had been able to reduce or stop shifting cultivation as a direct result of intensifying their livestock production. More than 200 farmers reported that intensifying their livestock production systems has



their livestock production systems has allowed their children to attend school. More than 670 farmers said that labour savings have allowed them to start other livelihood activities



The FLSP was seen as a "proof of delivery" project that could take promising research results and demonstrate the delivery of significant livelihood impacts on a moderately large scale. The next challenges are (i) to use these successes to support geographic expansion of the impacts and (ii) to foster the emergence of smallholder livestock enterprises.

For farmers in northern Laos to develop these kinds of impacts required significant systems change. To bring about these systems changes is not a trivial matter and required the development of extension approaches that would help farmers make these systems changes of their own accord, driven by the demonstrated potential for significant livelihood impacts.

The project has had a significant impact on the goals and plans of the Lao government. It has demonstrated that market oriented livestock production can be a practical alternative to shifting cultivation and provide a means for farmers to work their way out of poverty. This work is continuing beyond the completion of the FLSP as the Lao government, with support from ADB, is planning to invest US\$10 million in a new project to "improve the income and livelihood of about 20,000 farming families by introducing animal health and productivity enhancement technologies, improving marketing opportunities and the regulatory environment, and encouraging the development of private livestock service providers". CIAT and the International Livestock Research Institute (ILRI) jointly managed the design of this project. It will build strongly on the experiences, technologies, methodologies and lessons learned in the FLSP.

Key lessons from the FLSP are:

- Market-oriented livestock production systems are a proven option for poverty alleviation and reduction of shifting cultivation in the uplands of the Lao PDR
- Technology 'entry points', providing quick solutions to simple immediate problems, are a powerful (often essential) tool in extension, especially in complex upland systems. They build confidence among farmers and encourage them into further innovation.
- The impact-yielding livestock systems developed by farmers usually resulted not from resolving immediate problems but from changing their livestock management to take advantage of new opportunities.
- Few of the impact-yielding systems can be 'photocopied' from one place to another. New farmers will always need to adapt the systems to their own realities
- A managed feed resource is the key mechanism enabling livestock systems change in the uplands. Relatively small areas of forages can give relatively large impacts
- There is little likelihood of "magic bullet" solutions to the problems of animal disease in smallholder livestock systems in the uplands of the Lao PDR. Integrated solutions involving better feeding and management combined with strategic use of veterinary medicines are likely to be far more effective, achievable and sustainable
- There are simple ways of helping district staff develop a vision for how extension processes can work and then acquire the technical skills and extension tools that allow them to put this vision

into practice within the context of smallholder livestock systems.

The project completion report is available from CIAT on request.

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