

SHIFTING THE GOALS

By BRAD COLLIS

In the villages of the Lao People's Democratic Republic (Laos) cattle, buffaloes and pigs have always been central to farming life; as a source of meat, income in times of crisis when crops fail, and as tractor power for ploughs. However, livestock production has rarely extended beyond one or two large animals – a cow, buffalo or pig – for a typical village household because of disease and limited feed.

As lush and green as the uplands might look, there is little that is nutritious, or even edible, for large herbivores, and the forest has traditionally been the animals' sole source of feed.

Unfortunately for farmers, the free-ranging animals themselves often become feed – for tigers, leopards and other farmers. As many as half of them eventually disappear.

The practice of letting livestock graze in the forests has, however, been a comfortable fit with shifting cultivation. This is the traditional method of cropping; to clear a patch of forest, cultivate it with maize or rice for two or three years until the soil nutrients have been exhausted, and then move on. The cultivated area is then allowed to revegetate in what is often a long period of fallow – usually a decade or more.

Shifting cultivation, however, is slowly being phased out as more and more villages adopt a research and extension program aimed at increasing livestock production and livelihood security through the dedicated cultivation of fodder crops.

These crops – tropical grasses and legumes – provide a daily source of feed that allows more intensive and secure livestock raising, which is showing signs of breaking the poverty cycle and laying the foundations for sustainable village economies.

The Forages and Livestock Systems Project (FLSP) is allowing households to run more livestock that can also be housed close to or in the village where their security, conditioning and health can be better managed.

Further, the manure from housed or tethered livestock is a readily available fertiliser supply, allowing food crops to be stabilised on land closer to the village. A side benefit from the cessation of shifting cultivation is a more permanent recovery for forest ecosystems.

The FLSP is being run by the International Center for Tropical Agriculture (CIAT) with research support from ACIAR, and funded by AusAID and the Asian Development Bank.

Project director Dr Peter Horne says livestock were identified as the ideal livelihood activity for Lao farmers because the market is stable, they provide manure for crops, and they are a means of capital accumulation.

The flipside to this opportunity and reliance is the need to keep animals healthy. They represent a large capital investment and keeping them alive under traditional management systems has been a constant struggle.

In a survey in 2000, almost three-quarters ► PAGE 22

‘BUYING SKINNY, SELLING FAT’

Farmer Mr Va Yer Lao from the small upland village of Xang in Laos is becoming somewhat of an entrepreneur since he and his neighbours started setting aside land for planting forage crops.

The ready access to feed, and to an animal that is no longer let loose to feed itself in the surrounding forest, is allowing him to “buy skinny and sell fat” and for a handsome profit.

Mr Va Yer Lao has established a significant new income stream for his household by buying under-nourished buffaloes from the market, bringing them home to fatten, putting them to work when it is time to plough, and then selling the improved animals for substantially more than he paid for them.

He says that on average he can buy a buffalo in poor condition for about \$US250, and sell it some months later after improving its condition with fresh forage for about \$US320.

In Laos the initial outlay to buy a buffalo is a large and risky investment – more than many people would earn in a year – but a \$US70 profit makes the risk worth taking. This sort of income turns subsistence farmers into farmers with the resources to dramatically lift a village’s agricultural prospects and living standards.

Mr Va Yer Lao says that planting a fodder crop means the animals can be kept closer to the village, or even in the village, making their investment more secure on several fronts. It not only allows the farmers to feed them well – up to three times a day with freshly cut grass – but to keep a closer watch on their health.

The income being generated by the resale of improved livestock also allows farmers to switch some rice land over to forage crops because they are now able to buy rice.

Mr Va Yer Lao says he and his neighbours are keen to expand their livestock production and are now determining how much land is needed year-round for them to each feed two or three cattle or buffaloes.

How much extra land they need to find will be influenced by the results of trials with improved fodder varieties, and from innovations such as mixing grasses (mostly of the grass genus *Brachiaria*) with small amounts of legumes like stylosanthes.





Changing attitudes: project director Dr Peter Horne.

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of villagers attributed livestock disease as the cause of their poverty. In 12 upland villages, farmers revealed that more than 80 percent of chickens, 50 percent of pigs and 30 to 40 percent of buffalo calves died every year from disease.

The answer, to researchers, was fairly obvious – keep the animals in the village where they can be housed, fed and managed with sound animal husbandry.

However, this is requiring a major research and extension effort, covering agronomy and sociology, because a long established way of life has to be changed. Farmers have to be convinced the change is low-risk (that the forage crops will grow), and can be achieved at low to no cost.

Peter Horne – who speaks fluent Lao – says that once farmers start growing forage and can see the benefit, it becomes possible to start gradually changing their attitudes towards livestock away from livelihood security to income generation.

He cites the example of one farmer, Mr Sing Chittapay, an ‘early adopter’ in Houay Hia village (Ban Houay Hia) near Luang Prabang: A 10-month-old calf sold for more than his neighbour’s 12-month-old calf. His wife started feeding the legume ‘Stylo’ to her pigs and was able to reduce the fattening time from five to three months.

With one hectare of mixed forages, Mr Sing now runs 14 cattle, nine goats and seven pigs.

He has been able to halve the area of the family’s shifting cultivation and intends soon to stop altogether.

Following Mr Sing’s lead, 17 of the village’s 23 households are now developing market-orientated livestock systems. The forage area has expanded to more than five hectares and the shifting cultivation area has fallen from 40 to 18 hectares because of more productive paddy land that is utilising collected manure.

Peter Horne says this level of impact is significant because it is not isolated to one farmer or village, nor is it the output of model farmers who receive unsustainable levels of outside support.

He also emphasises the importance to the FLSP project of enthusiastic teams of field staff who are, for the first time, seeing that through their work they can change people’s lives for the better.

“All we (CIAT) do is catalyse this process with ideas, raw technologies, mentoring and encouragement. It’s a bit of a journey because you can never know where the development process is leading,” he says.

“This is why small, long-term, committed, flexible projects on-the-ground are the most successful. They are nimble enough to follow the leads that development shows them and committed enough to provide the long-term mentoring that is required.”

PATHWAYS OUT OF POVERTY

By **BRAD COLLIS**

In the gloom of a long wooden hut with a hard clay floor and hand-hewn benches, the farmers of Ban Ta take turns to offer suggestions about the coming year’s priorities for themselves and for researchers.

As a community they are committed to progress. The status quo was obliterated a long time ago. These farmers are survivors of the time when B52s were dropping bombs at a rate equivalent to one payload every eight minutes for nine years.

It has made them focused on the future and on the tangible opportunities that are accruing through being innovative. They also relish being in the driver’s seat. The international scientist and local extension officers in the hut are there to listen as much as to provide guidance.

If it were not for the absence of an electric light, or the posters depicting the UXOs (unexploded ordnance) still strewn across their farms and forests, it could be a farmer meeting anywhere in this era of fast-changing agriculture. The aspirations and most of the underlying issues are universal – soil, water, nutrition, disease, risk, and the perpetual pursuit of quality, price and lower costs. To this the Lao farmer grimly adds endemic poverty and the daily risk of a plough or hoe detonating a high-explosive bomb.

However, the farmers of Ban Ta, in the uplands near Xieng Khouang – home to the fabled Plain of Jars – doggedly take each day as it comes, striving little by little to advance their farms and improve their livelihoods.

In less than a single generation they have started to change a way of life that persisted for centuries. They have progressed from subsistence to sustenance to glimpses of enterprise; a steady pathway out of poverty, and importantly the changes are their own. All the technologists have done is introduce strategic alternatives to traditional practices – such as forage for improved livestock production – and let the farmers drive the future from there.

At this meeting are two government-employed district extension officers, Khampai Phommavong and Sin Phuttapanya, and Dr Peter Horne an Australian research scientist with CIAT.

The farmers tell the visitors they are making good margins from the sale of animals that are being hand-fed two to three times a day from freshly cut fodder. They also report pleasing results from incorporating sweet potatoes and legumes into animal diets. Their pigs in particular are thriving. They express an interest in learning about any new or improved forage varieties that might be in the offing.

One villager tells the extension officers that it is time the farmers learned some marketing techniques. He ►



Emerging from the gloom: farmer Pa Heu is proud of her achievements.

- is sure they could negotiate better prices from the traders who pass through the village if they had some marketing strategies.

A woman farmer, Pa Heu, says she is growing mulato (a *Brachiaria* hybrid) around her fish pond. The high soil moisture is providing a vigorous year-round forage crop. Later she proudly shows the visitors her new sweet potato plot and the buffalo that is responding so well to her hand-feeding that it is bound to boost the family's income when it is sold (and replaced by a cheaper, malnourished beast which will be similarly improved).

When asked why they decided to adopt the CIAT/AusAID project, the farmers say it is because the project is long-term; it began from a low base and offers a rational progression.

Ban Ta is just one of many villages that are participating in the Forages and Livestock Systems Project. As an example of the influence of early adopters on the wider community, Peter Horne says that since the project started in 1998 the number of farmers in Ban Ta who have changed to forage-based livestock production has increased from eight to 24, out of a total of 36 households.

The obstacle for households that have not joined the project is they simply do not own any livestock and their crops do not earn enough money to buy a buffalo or a pig.

It is a reminder of the enormous risks that the early adopters took. If they had lost their only cattle or buffalo it could have set them back for years, if not for life.

PROJECTS:

The FLSP project provides a bridge between ACIAR research projects ('Proof of Concept' projects) and larger development projects whose role is to take the kinds of impacts demonstrated by FLSP and expand them on a large scale. There are three ACIAR projects that work closely with FLSP:

AS1/2003/001 "Improved Diagnostic and Control Methodologies for Major Livestock Diseases in Lao PDR". This project does all of its field work with the network of district staff and farmers that constitute the FLSP.

ASEM/2001/107 "Accelerating the impacts of participatory research and extension on shifting cultivation farming systems in Laos". This project

does all of its field work with the network of district staff and farmers that constitute the FLSP.

AS1/1998/026 "Lucerne adapted to adverse environments in China and Australia" (they have expanded to include Laos). Within Laos, this project does all of its field work with the network of district staff and farmers that constitute the FLSP.

ACIAR has also funded the publication of three books in eight languages about the forage technologies and participatory research methodologies that are being used by the FLSP.

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See also: www.ciat.cgiar.org/asia/forages.htm

The forage crops being offered to Lao farmers are the result of an intensive plant breeding program that began in 1995.

From 600 accessions selected from the germplasm collection at CIAT and pre-tested to screen out deficiencies, about 150 accessions were tested at five nursery sites throughout Laos. The most promising accessions were then moved into regional nursery evaluations.

The result of this work was a small group of broadly adapted and robust forage varieties suited to the environmental conditions of the uplands in Lao PDR.

The best varieties at this stage are *Brachiaria brizantha* "Marandu", *Brachiaria* hybrid "Mulato", *Panicum maximum* "Simuang" and *Stylosanthes guianensis* "Stylo 184".

Other productive varieties but with particular uses or adaptation are the grasses *Andropogon gayanus* "Gamba", *Paspalum atratum* "Terenos" and *Setaria sphacelata* "Solander" and the legumes *Calliandra calothyrsus* "Besakih" and *Gliricidia sepium* "Retalhuleu".