

# Rapid appraisal of good practice: managing pigs for better growth and results in Lao PDR

The Resilient Livelihoods for the Poor program, implemented with DFAT support, includes asset transfer and livelihoods support for pig production. The program conducted enterprise analysis, prepared posters describing the pig maintenance cycle and caring for pigs (what to do) and employs people to mentor families receiving and managing assets.

This rapid appraisal of good agricultural practices reviews more than 10 years of experience in Laos and Vietnam to identify good practice pig production for better growth and results. The information designed to complement *Pig Raising in Remote and Rural Laos* published by CARE International, and available in Laos.

## Challenges

Profitable smallholder pig rearing in Lao PDR is influenced by five key parameters: (1) the length of time it takes for sow to become pregnant; (2) the number of piglets in the litter; (3) of the piglets born, how many survive; (4) what percentage of all pigs born die from disease; and (5) rate of growth of the pigs and composition of that growth (the ratio of meat to fat).<sup>1</sup> In Lao PDR pigs generally perform poorly on all these parameters.

In recent years exotic/cross breeds have been introduced into the Mekong region to increase growth rates and achieve leaner composition of production.<sup>2</sup> However, these breeds have not proven to be as resilient to local constraints such as seasonal food shortages and exposure to disease. Local breeds (e.g. *Moo Lao-soung* used by Hmong producers or *Moolath* used by *Khmu* and most *Lao-loum* producers) are small, fat and slow growing but are well adapted to the scavenging system. For these reasons the CARE paper states that exotic breeds should only be used when producers have feed and disease management systems in place. This is logical but it may be that the faster growth rates of exotic breeds makes investing in improved feed and disease management both attractive and sustainable for farming families.

Improved growth rates at low cost in native breeds has been shown to be possible through improved feed, notably with the supplementation of diets of local pig breeds with forage legumes such as Stylo 184 as well as better housing and disease management.<sup>1</sup>

Different markets prefer meat from different breeds. In areas close to the Thai border and in the vicinity of large towns commercial pig breeding has commenced and this could lead to opportunities for smallholders in raising exotic breeds but then the large foreign companies that supply domestic and export markets may also be crowding-out smallholder producers.<sup>3</sup> Local markets tend to prefer local breeds which produce more fat than meat because pig fat is used as oil for cooking and thus is important for people living in remote areas.<sup>4</sup>

## Possible Solutions

In summary, research conducted in the Mekong Region suggests some solutions to the challenges for profitable pig production in Lao PDR:

- **Time to sow pregnancy** – sows become pregnant more quickly if they have frequent contact with boars. Research in eastern Indonesia showed that 90% of sows fell pregnant within 7 days after having continuous contact with a boar compared to 40% with infrequent boar contact.<sup>5</sup> In village contexts lack of contact with boars is often related to a shortage of boars. The ratio of boars to sows should be more than 22:1.<sup>4</sup>

<sup>1</sup> Phengsavanh *et al.* (2010) AH/2004/046 Forage legumes for supplementing village pigs in Lao PDR – Final Report, ACIAR, Canberra, Australia.

<sup>2</sup> Fisher, H. and Gordon, J. (2008) *Breeding and Feeding Pigs in Vietnam: Assessment of Capacity Building and an Update on Impacts*. ACIAR Impact Assessment Series Report No 52, 56 pp

<sup>3</sup> Cutter, R. (2006) *International pig production and implications for Lao PDR* in Conlan J. *et al.* (2006) Management of classical swine fever and foot-and-mouth disease in Lao PDR: Proceedings of an international workshop held in Lao PDR, 20-21 November 2006, ACIAR, Canberra Australia.

<sup>4</sup> Phengsavanh, P. *et al.*, (2010) 'Feeding and performance of pigs in smallholder production systems in Northern Lao PDR' in Tropical animal health production, DOI 10.1007/s11 250-010-9612-4.

<sup>5</sup> Cargill, C. (2009) Final report: Poverty alleviation and food security through improving the sweet-potato pig system in Papua, Indonesia, ACIAR, Canberra

- **Number of piglets in the litter** – the number of piglets in a litter depends on the age of the sow and her protein nutrition at and during pregnancy. Adult pigs should be fed 2-3.5 kilograms per day<sup>6</sup>. Water should be constantly accessible with water feeders designed to minimise contamination.
- **Piglet survival to market age** – research experience shows that penned pigs survive and grow better than scavenging pigs. However, this requires investment in a pig-pen and daily feeding of quality rations to the pigs as well as careful cleaning of the pen every day. In villages with existing pig populations, the resources for scavenging are often already used and so additional pigs must either be fed if they are to be productive or they are at risk of poor growth and disease in a crowded space. Smallholder farmers often sell piglets young (around 3 months of age) because of limited feed resources and fear of disease. The potential for economic gain would be increased if piglets were grown for longer and sold at greater weight.<sup>7</sup> Piglets/weaners and older pigs need to be fed separately so that smaller and younger pigs get a fair share of the food. In rural Laos settings where pigs are fed together the larger and dominant pigs take more food than smaller animals. As a result piglets/weaners grow faster if fed separately. Weaning piglets should be fed 200 grams of dry food four times a day.<sup>6</sup> Water should be constantly accessible with water feeders designed to minimise contamination.
- **Piglet disease and mortality** – disease is the main constraint to productivity. Free scavenging systems are associated with higher disease outbreaks and mortality of piglets compared to penned systems. Vaccination of piglets, as recommended by the RLP pig maintenance cycle, is a critical step in reducing piglet disease mortality. However, vaccination programs to date have not been very successful in rural Laos, especially for vaccines requiring a cold chain such as those for pig diseases. Strategies of containment, quarantining, controlling movement, pen hygiene and treatment of parasites can reduce mortality by up to 50%.<sup>8</sup>
- **Rate and composition of piglet growth** – growth rates, size of litters and survival of piglets are influenced by the availability of protein in the diet. Another factor is the amount of fibre in the diet as pigs cannot easily digest fibre and too much fibre reduces absorption of protein. High protein feed supplements and use of forage legumes to feed pigs increases protein in their diet and the rate of piglet growth. In Lao PDR the forage legume Stylo 184 (*Stylosanthes guianensis*) as a supplement in pig diets is demonstrated to be a low cost, low labour way to increase protein content.<sup>1</sup> Stylo needs to be cut young (2-3 weeks during the wet season) so that the fibre content is sufficiently low for pigs to digest. During the dry season Stylo is not available so silage or leaf meal can be made. Stylo is less suitable for piglets and weaners as they need a diet that is higher in protein and lower in fibre than adult pigs. Weaners, in particular, require a diet that is high in protein (ideally more than 15%) and essential amino acids (such as lysine) in order to grow well. High-protein sources such as soybean meal are required to achieve commercial growth rates.<sup>1</sup> Other easy to plant, fast growing, and easy to cut legumes shown to be attractive to farmers and palatable for pigs include: Cow Pea (*Vigna unguiculata*) and feed peanuts (*Arachis pinto* CIAT 18744).<sup>1</sup> In a rice bran based diet, using broken rice, maize or distillers waste in addition to rice bran provides more protein and more nutrition in general.<sup>1</sup> Rice bran available from village mills is often of poor quality due to high husk content, which makes it difficult for pigs to digest. Large mills with modern machinery usually have better quality rice bran with 12-13% crude protein compared to 8-10% from local mills.<sup>9</sup> Pigs can manage with lower protein diets if combined with low-fibre based energy feeds (e.g. boiled cassava roots, taro or sweet potato) as it enables them to use the protein more efficiently.<sup>10</sup>

## Socio economic factors

A number of agricultural research and development partners have found that although technologies (e.g. forage legumes) and management practices have been demonstrated to improve profitability of pig enterprises for low financial and labour cost, when exposed to these innovations farmers do not commit to them. One strategy that persuades farmers to adopt proven technologies is to use farmer exchange visits (peer-to-peer learning) to demonstrate examples of better quality livestock resulting from good agricultural practices. Women are usually responsible for pig rearing so programs of support should take care not to increase women's labour burden.<sup>8</sup>

<sup>6</sup> Laos Extension for Agriculture Project, "Pig raising" GoL Ministry of Labour and Solidarity Website [http://laboursalavane.blogspot.com/2014/08/blog-post\\_14.html](http://laboursalavane.blogspot.com/2014/08/blog-post_14.html)

<sup>7</sup> Conlan, J., et al. (2006) 'Pig production and health in Bolikhomxay Province, Lao PDR' in Conlan J. et. al (2006) Management of classical swine fever and foot-and-mouth disease in Lao PDR: Proceedings of an international workshop held in Lao PDR, 20-21 November 2006, ACIAR, Canberra

<sup>8</sup> Stur, W., Gray, D., and Bastin, G., (2002) Review of the livestock sector in the Lao PDR prepared for the ADB, ILRI, Metro Manila Philippines

<sup>9</sup> Phengsavanh, P. (2006) 'Smallholder pig systems in Luang Prabang and Xieng Khouang provinces: Current food situation and potential of forage legumes for improving pig productivity' in Conlan J. et. al (2006) Management of classical swine fever and foot-and-mouth disease in Lao PDR: Proceedings of an international workshop held in Lao PDR, 20-21 November 2006, ACIAR, Canberra

<sup>10</sup> Preston T.R. (2006), Foragers as protein sources for pigs in the tropics in CABI Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources ([www.cabi.org](http://www.cabi.org))

Because there is stratification of the pig industry in Lao PDR there is an opportunity for households choosing the pig enterprise to specialise in production systems where they have a comparative advantage. Most piglets are produced in extensive production systems with low capital and other inputs. These young pigs may then be fattened closer to market and where there is higher quality feed for finishing. Focusing on comparative advantage can reduce risks and improve cash flow (see chart).

