



FORMULA FOR SUCCESS: SWEETPOTATO-BASED FEED IN VIETNAM

Ta Van Hien was skeptical at first. The idea of mixing chicken manure and sweetpotato roots with fishmeal and soybeans — and then allowing the concoction to ferment — was a radical departure from the chopped and boiled sweetpotato recipe he and his family had been using to feed their pigs for generations.

Six months later, Hien is a convert to the process. “I thought it was strange at first, but now I have no doubts,” he says. “The pigs are growing faster, their skins are shinier and best of all, it takes a lot less time to prepare feed for them.”

Since CIP began trials on five farms in Pho Yen Province in 1999, sweetpotato fermentation has fueled a mini-revolution among the farmers of the Dong Tien commune and throughout Vietnam.

Fermentation is particularly good news for women farmers, as it liberates them from the drudgery of preparing — three times a day — the boiled feed alternative. This not only improves the quality of these women’s lives, and those of their families; the resulting boost in women’s production

capacity is expected to bring numerous benefits to households and communities throughout the country.

In Pho Yen, in the Red River Delta 70 km north of Hanoi, locals estimate that as many as 30 percent of the province’s farms are now using some form of fermentation, not only with sweetpotatoes but also with cassava roots. And word of the Pho Yen

villagers’ success has spread to other parts of Vietnam. After commune leaders from neighboring Bac Giang Province visited the trial sites, for example, they invited Hien to Bac Giang to demonstrate the technique to 70 local farmers.

In Thanh Hoa Province, leaders of the Hai Linh commune, one of the biggest sweetpotato and pig-raising communities in Vietnam, organized a meeting to inform farmers about the technology. Now, every farmstead there has begun to ferment sweetpotato. And Vietnamese state television, reacting to the successes, is now planning to highlight the process on its science and technology channel.

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MORE FOR LESS

“Using fermentation can help farmers in Asia and Africa — and in just about any place where sweetpotato is used as pig feed,” said Dai Peters, the CIP scientist who, with Nguyen Thi Tinh from Vietnam’s National Institute of Animal Husbandry, created the formula and designed the trials. “It allows farmers to raise healthier, larger animals in less time.”

The method is very popular both because it is easy to prepare and because it fattens animals quickly. Better yet, farmers say, it uses locally available raw materials and requires little capital investment or equipment.

“It has gone so well that we tried feeding the mix to our ducks and hens,” said Truong Thi Thoan, a neighboring farmer who was taught the formula by Hien. “Now they’re getting fatter too.”

Until now, raising pigs has been something of a money-losing proposition, making large-scale breeding an option open only to wealthy farmers. Traditionally, farmers in most of northern and cen-

tral Vietnam boil sweetpotato roots and vines to make the feed they use to raise their pigs. Boiling is essential because it breaks down trypsin inhibitors, which otherwise would prevent the animal from assimilating nutrients.

The problem with the boiled method is that it is onerously time consuming. The farmers, usually

women, must spend several hours every day chopping the ingredients, gathering fuel and doing the cooking.

In addition, large amounts of sweetpotatoes need to be stored for use in the off-season. This presents a host of additional problems, as the stored roots

often come under attack from weevils, rats and rot, and farmers may lose as much as half their stored feed.

The fermented mix introduced by CIP helps farmers make the most of their work and investment. Like boiling, fermentation breaks down trypsin inhibitors. But because the fermented mix can be prepared in one large lot and stored for months,



farmers using this method achieve considerable savings in labor, fuel, water and cooking time. In addition, these farmers can process their sweet-potatoes immediately after the harvest, when labor is more abundant, and save the mixture for use when other feed is limited and more expensive.

SMALL CHANGE, BIG RETURNS

This small change in the way farmers in northern and central Vietnam prepare pig feed represents a large technological and commercial leap forward. The ramifications, in terms of pig-raising potential, have not been lost on the Pho Yen farmers.

"I'm planning to take this to an industrial level," said woman farmer Nguyen Thi Ty. "It's so much easier now." Ty's growing pig business is proof. After participating in one of the CIP trials, she added two sows to her stock of six. Today Ty has 11 piglets that she intends to fatten and sell. To feed them she has mixed up one tonne of fermented mix — a two-and-a-half-day job — that should provide her with feed until the pigs are grown and ready for market. Now that her main labor and time constraints have been removed, Ty sees almost boundless potential.

Neighbor Truong Duc Cai has similar plans. A year ago, Cai had six pigs. Today, he has 11, and after this lot goes to market he plans to expand to 20, even 25.

"Eleven pigs each weighing 100 kg at 10,000 dong (US\$0.69) a kilogram, that's a million dong (US\$69)," Cai says, eagerly putting the numbers together. "At this rate, it's probably more beneficial to plant sweetpotato than rice. It doesn't require a lot of investment and there's no great risk."

That is because it is an excellent time to come into the market. Demand for meat in Vietnam is on the upswing, expected to grow from 33,000 tonnes in 1999 to 87,000 tonnes by 2005 and 119,600 tonnes by 2010. Greater output from the hilly farms around Pho Yen will help meet the demand while increasing villagers' economic strength and giving them more control over prices. At present, they are at the mercy of the middlemen who buy their stock at the farmgate.

SOMETHING FOR EVERYONE

Only about 20 percent of Vietnam's farmers, however, can afford the fishmeal, chicken manure and soybean additives included in the feed formula. For the other 80 percent, whom the Vietnamese government classifies as 'disadvantaged', the cost of the additives is a major stumbling block. In fact, in order to ensure that the trials responded to actual opportunities and conditions, CIP chose for these only farmers who had enough resources to afford the basic investment.



BANKING ON EFFICIENCY

Pigs. In some cultures they are disparaged. But Vietnamese farmers, they say, follow in their footsteps. That is because in this rural society, where many eke out only a meager existence, pigs are a flesh and blood promise of a better future.

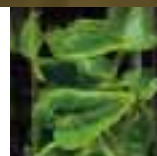
“They are literally piggy banks,” says post-harvest specialist Dai Peters. “Pigs provide farmers with just about their only source of cash. And their manure fertilizes the fields and helps maintain the integrity of the soil.”

What’s more, there are signs that Vietnam’s farmers are beginning to see, and bank on, the profound influence of the ‘livestock revolution’ that has been sweeping the developing world for the last two decades. By 2020, the global demand for meat and dairy products will more than double, with developing countries accounting for the bulk of the increase in consumption.

This boost is expected to bring manifold benefits, most importantly reduced hunger and malnutrition, and sweetpotatoes are a vital part of this equation. In Vietnam, as in many Asian countries, sweetpotatoes are the most important source of pig feed.

Yet, greater meat production has its drawbacks. Already, industrial livestock production systems have developed in response to the rising meat consumption trend, often with negative consequences for the environment and for the livelihoods of poor, small-scale producers.

Simple, efficient technologies like the ones tested by CIP and its collaborators in Pho Yen can help them to make the most of the livestock revolution while protecting precious natural resources.



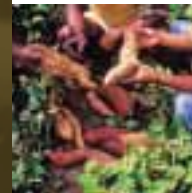
FROM THEORY TO PRACTICE

Farmer field school (FFS) development is an important component of CIP's sweetpotato integrated pest and crop management research in Asia. It contributes to the creation of solid mechanisms for carrying research output to national programs for dissemination.

Field schools were originally designed to help Asian farmers enhance their knowledge and skills in rice pest management. CIP and its partners, recognizing the effectiveness of these schools and knowing that many countries in the region have strong national cadres of FFS facilitators, seized a golden opportunity to adapt the field school model for sweetpotato crop management. Initial experiences in Indonesia met with great success: participants in pilot schools averaged a 24 percent increase in their net sweetpotato income.

Researchers, farmers and field school facilitators in Vietnam decided to adapt the technical crop management guidelines and FFS learning activities developed in Indonesia to local needs and circumstances. This meant looking at prevailing sweetpotato production and utilization patterns, which are very different from those in Indonesia. Both vines and storage roots are used, particularly for animal feed, and the pest complex is somewhat different, as are harvesting and marketing practices.

CIP and its partners organized participatory studies and pilot field schools in eight locations throughout Vietnam and produced a manual in Vietnamese. The country's Ministry of Agriculture and Rural Development (MARD) intends to use the manual to scale up field school activity across Vietnam. The project for feed development described in the main story is also working to incorporate its findings into the field school curriculum.



Nonetheless, financial limitations have not kept resource-poor farmers from taking advantage of the fermentation idea. A case in point is Truong Cong Phan, who began experimenting with fermentation techniques after he witnessed a neighbor's pigs growing fat on the CIP feed mix. Instead of chicken manure, Phan used rice bran as the fermentation agent and his two pigs went without the soybean and fishmeal supplements.

Phan considers his experiment a success. The 53-year-old — who like his parents has been raising pigs all his life — says he doesn't expect his pigs to grow as big as his neighbor's, but he is very pleased with the CIP-introduced technique. Labor savings are still enormous, and the longevity of the feed means he can make more of his sweetpotato crop. Peters feels that this adaptability is one of the primary advan-

tages of the process. "The benefits of fermented sweetpotato are independent of the balanced diet additives," she says, "even though using the two in combination gives the best results."

Since completing the first round of trials, Peters and her collaborators have been holding extension meetings to get the word out on the fermentation technique. The response, she says, has been enthusiastic and Peters is confident the process is ready for wider implementation throughout Vietnam.

Standing in the small concrete-floored room he uses for storage, Hien has no doubt Peters is right. Dipping his arms into a polyurethane bag he pulls out a double handful of the powerful-smelling yellow mash and eagerly offers it to visitors to sniff. To Hien, it is the smell of success.

— reported by Chris Bursle