

Introduction

Cassava (*Manihot esculenta* Crantz) known as 'Man Ton' in Lao, is an important crop for smallholder upland farmers, and it can be used for food, feed and other uses, such as production of starch and ethanol. Due to lack of improved varieties and appropriate agronomic practices, cassava yields are usually low (7.0 t/ha).

With financial support from the Nippon Foundation in Japan, CIAT has conducted cassava research in Lao PDR since 2004, in collaboration with national research partners, mainly the National Agriculture and Forestry Research Institute (NAFRI), and with Provincial and District Agriculture and Forestry Offices.

Objectives

- Improving the livelihoods of smallholder farmers in the uplands
- Enhancing the sustainability of cassava-based cropping systems
- Linking farmers to markets

Methodology

In line with local and regional experiences, high-yielding cassava varieties, better agronomic practices and farm tools were evaluated to show the effects of these alternative technologies on yields and income. Farmer participatory approaches were used to involve farmers in the decision making process.

Results

Introduced CIAT-derived cassava varieties have high root yields and high starch contents. In on-farm trials, root yields varied from 7 to 75 t/ha/year, depending upon soil fertility status and climatic conditions.

Results of an on-farm variety trial in Oudomxay province, Laos (planted on 2 April 2006 and harvested on 29 April 2007)

Variety	Fresh root yield (t/ha)	Starch content (%)	Starch yield (t/ha)
KU 50	75.0	29.4	22.05
Rayong 90	64.0	26.5	16.96
Rayong 72	53.0	30.0	15.90
Rayong 2	55.0	17.8	9.79
Local	15.2	17.0	2.58

Application of balanced fertilizers notably increased yields and net income. In Xieng Khouang province, the application of 25 kg N, 100 P₂O₅ and 100 K₂O/ha produced a root yield by Kasetsart 50 of 33.2 t/ha as compared to 12.4 t/ha without fertilizers (net income 2.52 million kip/ha as compared to 0.66 million kip/ha).



Intercropping cassava trials indicate that intercropping with grain legumes such as peanut (*Arachis hypogaea*) will provide farmers with better cash flow and may also reduce soil erosion.



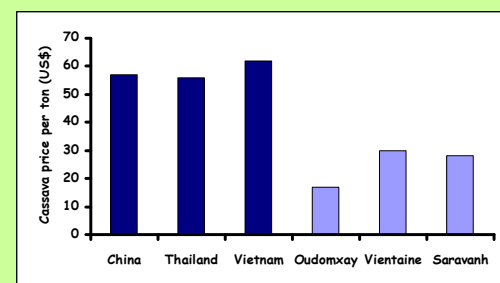
Appropriate tools, which can be fabricated locally, are now available for harvesting cassava roots, for slicing roots and for chopping leaves. The harvesting tool has reduced farmers' labor 2-4 times as compared with harvesting by hoe. The chipping tool has improved work efficiently 5-8 times as compared to chipping by knife.



Cassava roots and leaves can be utilized as carbohydrate and protein sources. Drying or ensiling of roots and leaves will reduce the HCN content (<50 ppm). Livestock can be fed approximately 10-30% of leaf silage or leaf meal in the feed ration.

Opportunities and challenges

Many opportunities now exist for achieving greater benefits from cassava production by farmers due to the extremely rapid growth in cassava demand in the region, especially in China; this is a great opportunity for Lao farmers to produce cassava commercially.



Considerable price variations exist, however, not only within the region but also within the country. The market price of fresh roots depends on whether it is peak- or off-season at time of harvest. Currently, prices which Lao farmers receive for cassava are about 50% of those in other parts of the region.

Conclusions

The prospects for increased cassava production in the immediate future are very bright. There is a need to facilitate fairer pricing for cassava products in order to help farmers; however, urgent steps are necessary to improve yields and the sustainability of production, and to reduce production costs, which will all have large income implications for smallholder farmers. Although, there is an investment climate to establish new cassava processing factories in Lao PDR, the government must set policies and create an enabling environment for the development of new markets and agro-industries to enhance rural development and poverty reduction.