



NEW PROGRESS OF CASSAVA RESEARCH AND EXTENSION IN VIETNAM

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INTRODUCTION

Vietnam Cassava Program support by MARD in close cooperation with CIAT of the Nippon Foundation project, promoted the rapid multiplication and wide distribution of high-yielding and high-starch varieties, and the adoption of sustainable cassava production practices, especially in the Central Coast, Central Highlands and Northern mountains and uplands.
Objectives: The study aims to supply a production map of cassava in Vietnam and the central, production cost and production technique of farmers and supply chains, with a view to describing the lessons learned from past development interventions and their implications for a strategy of future investment in cassava research and development

METHODOLOGY

Field surveys: In order to meet the scope of the study, we will have field surveys to get primary information on farmers, trades, and processors, do group discussions with staff of Department of Agriculture and Rural Development in seventeen provinces (Thai Nguyen, Tuyen Quang, Phu Tho in the North mountain and upland; Ha Tay in Red River Delta; Thua Thien Hue in the North Central Coast, Lam Dong, Dak Lak, Dak Nong, Gia Lai and Kon Tum in the Central Highlands, Quang Nam, Quang Ngai, Binh Dinh in the South Central Coast, Dong Nai, Binh Phuoc, Ba Ria - Vung Tau, Tay Ninh in the South-East region).



Choice of site: Inclusive of visits to seventeen provinces during Sep - Dec. 2007, six provinces were chosen as the project site for analyzing and evaluating of cassava cropping systems, varieties, agronomic practices, labour use, crop utilization and farm income. The team group from TUAF, NLU, VAAS, CIAT have paid three visits to access and define the site in four provinces of Thai Nguyen, Tuyen Quang, Phu Tho, Ha Tay. Since then scientists from the Nong Lam University and Enrteam have paid three visits to access and define the site in three provinces of Binh Dinh, Gia Lai and Thua Thien Hue. Finally, Cai Lam village (in Phu Cat district, Binh Dinh province), Bau Can village (in Chu Prong district, Gia Lai province), Hong Ha village (in A Luoi district, Thua Thien Hue province) were chosen to be research site.



Collecting and analyzing data: Collecting of map cassava and analyzing secondary data of the research region, conducting general survey to identify cassava production zones and present cropping pattern, collecting economic data of production costs, cropping patterns performance at farm level (sample of good farmers: 2 good, 1 not good / province); techniques: sample of good farmers, seasonal issues: sample; selling: sample; analyzing data collected by Excel program with a view to describing the lessons learned from past development interventions and their implications for a strategy of future.

RESULTS AND DISCUSSION

New Progress in Cassava Research and Extension

Up to now, more than 350,000 ha of cassava in Vietnam were planted with new varieties, this corresponds to about 75 % of the total cassava area in the country. Ten million stakes of new varieties, mainly KM94, KM98-5 and KM140, were distributed to various provinces in this project. Cassava yields and production in several provinces have doubled, stimulated by the construction of new large-scale cassava processing factories. New high-yielding cassava varieties and more sustainable production practices have increased the economic effectiveness of cassava production.

There are now 60 cassava processing factories in operation and another seven factories under construction, with a total processing capacity of 2.4-3.8 million tonnes of fresh roots/year. Total cassava starch production in Vietnam was about 800,000-1,200,000 tonnes, of which 70% was exported and 30% used domestically.

Using cassava in bio-ethanol production is also a growing interest in Vietnam. Petrossetco, a division of PetroVietnam, plans to build two tapioca-based ethanol plants in southern and central Vietnam. The state-run company signed two separate deals with Japan's Itochu Corp. and UK's Bronzcoak Group last year. The joint venture with Itochu will see the set up of a plant with a 75 million litre annual capacity in southern part of the country. Petrossetco and Bronzcoak are investigating the possibility of a 150 million litre plant in central Vietnam.

CONCLUSION: Lessons from Vietnam (Trip report of Mr. Boma about Nigerian study tour to Thailand, Vietnam and China)

“Vietnam is a classic example of how cassava can contribute to rural industrialization and development. Previously, people were reluctant to grow cassava because they thought that cassava caused soil degradation and produced low profits. But in reality one hectare of cassava can produce 60-80 tonnes of fresh roots and leaves. The situation has changed because of the development of sustainable cultivation techniques and new high-yielding varieties with the availability of a large and growing market demand. Cassava has become a cash crop in many provinces of Vietnam. Cassava chips and starch is now being produced competitively, and cassava markets are promising. The combination of wide spread production of fresh cassava roots and the processing of cassava into chips starch and ethanol has created many jobs, has increased exports, attracted foreign investment, and contributed to industrialization and modernization of several rural areas.”

Many farmers have become rich by growing cassava.

For example, in An Vien and Doi 61 communes in Trang Bom district of Dong Nai province, 97% of the agricultural land has poor gray sandy soil. Cassava is the main crop (1,099 ha), followed by cashew (534 ha) and other minor crops. Previously, farmers grew the old cassava varieties Gon and HL23 with the average yield about 9 – 12 t/ha. In recent years, by growing new high-yielding varieties and applying improved cultural practices, the average yield in this commune increased up to 16-32 t/ha. Many farmers are now growing varieties KM94, KM140, KM98-5, obtaining 25-35 t/ha in areas of 3-5 hectares



In the Cat Lam village (Phu Cat district, Binh Dinh province), Bau Can village (Chu Prong district, Gia Lai province), Hong Ha village (A Luoi district, Thua Thien Hue province) of Central provinces of Vietnam, the total variable cost of cultivation in 2007 was about US\$ 455- 567.5/ha, at an average root yield of 22.0 t/ha, the production cost would be US\$ 20.68- 25.79 / t fresh roots. Gross income is US\$ 1,155- 1,237.5 /ha. Net income is US\$ 670 - 700/ha. On average, labour accounts for 59.9% of cassava production costs. In some regions, like the Binh Dinh and the Gia Lai, this may be as low as 52.8% and 68.7%, respectively. The average labour requirement is 125 mdays/ha. The second largest cost item is fertilizer, constituting 41.8% in Binh Dinh province and 24.7% in Gia Lai.

Table 1. Cassava varieties and agronomic practices in Binh Dinh province in 2007

Village - District	Sep-Dec	Phu Tho	Phu Hung - Phu My	Phu Cat - Cat Lam
Land use	On hill (upland)	On plain (upland)	On plain (upland)	On hill
Cropping system	C. monoculture	C. monoculture	C. monoculture	C. intercropping 14
Varities	GM94	GM94, KM97-20	GM94	GM94
Planting rate	2x1.5m/12 stakes	2x1.5m/12 stakes	2x1.5m/12 stakes	2x2m/10 stakes
Planting method	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha
Land preparation	Low	Low	Low	Low
Planting method	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0
Planting depth	6-10	6-10	6-10	6-10
Stake with root	12-20	12-20	12-20	12-20
Wind control	Yes	Yes	Yes	Yes
No. of weeding	2	2	2	2
Time of weeding	April	April	April	April
Time of planting	April	April	April	April
Time of harvest	10/12	10/12	10/12	10/12
Year of planting	2006	2006	2006	2006
Year of harvest	2007	2007	2007	2007
Labour use	120 mdays/ha	120 mdays/ha	120 mdays/ha	120 mdays/ha
Yield (t/ha)	22.0	22.0	22.0	22.0
Stake (t/ha)	22.0	22.0	22.0	22.0
On-stem use	5%	5%	5%	5%
Chipping	Yes	Yes	Yes	Yes
Price and cost	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)

Table 2. Cassava varieties and agronomic practices in Gia Lai province in 2007

Village - District	Phu Tho	Chu Prong	Phu Hung	Phu My	Phu Cat - Cat Lam
Land use	On plain (upland)	On plain (upland)	On plain (upland)	On plain (upland)	On hill
Cropping system	C. monoculture	C. monoculture	C. monoculture	C. monoculture	C. intercropping 14
Varities	GM94	GM94	GM94	GM94	GM94
Planting rate	2x1.5m/12 stakes	2x1.5m/12 stakes	2x1.5m/12 stakes	2x1.5m/12 stakes	2x2m/10 stakes
Planting method	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha
Land preparation	Low	Low	Low	Low	Low
Planting method	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0
Planting depth	6-10	6-10	6-10	6-10	6-10
Stake with root	12-20	12-20	12-20	12-20	12-20
Wind control	Yes	Yes	Yes	Yes	Yes
No. of weeding	2	2	2	2	2
Time of weeding	April	April	April	April	April
Time of planting	April	April	April	April	April
Time of harvest	10/12	10/12	10/12	10/12	10/12
Year of planting	2006	2006	2006	2006	2006
Year of harvest	2007	2007	2007	2007	2007
Labour use	120 mdays/ha	120 mdays/ha	120 mdays/ha	120 mdays/ha	120 mdays/ha
Yield (t/ha)	22.0	22.0	22.0	22.0	22.0
Stake (t/ha)	22.0	22.0	22.0	22.0	22.0
On-stem use	5%	5%	5%	5%	5%
Chipping	Yes	Yes	Yes	Yes	Yes
Price and cost	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)

Table 3. Cassava production practices in Thua Thien Hue province in 2007

Village - District	Hong Ha - A Luoi	Hong Ha - Dong Giang	Hong Ha - Hiep Hoa
Land use	On plain (upland)	On plain (upland)	On plain (upland)
Cropping system	C. monoculture	C. monoculture	C. monoculture
Varities	GM94	GM94, KM94	GM94
Planting rate	2x1.5m/12 stakes	2x1.5m/12 stakes	2x1.5m/12 stakes
Planting method	400-500 kg/ha	400-500 kg/ha	400-500 kg/ha
Land preparation	Low	Low	Low
Planting method	1.0 x 1.0	1.0 x 1.0	1.0 x 1.0
Planting depth	6-10	6-10	6-10
Stake with root	12-20	12-20	12-20
Wind control	Yes	Yes	Yes
No. of weeding	2	2	2
Time of weeding	April	April	April
Time of planting	April	April	April
Time of harvest	10/12	10/12	10/12
Year of planting	2006	2006	2006
Year of harvest	2007	2007	2007
Labour use	120 mdays/ha	120 mdays/ha	120 mdays/ha
Yield (t/ha)	22.0	22.0	22.0
Stake (t/ha)	22.0	22.0	22.0
On-stem use	5%	5%	5%
Chipping	Yes	Yes	Yes
Price and cost	500 VND/kg (*)	500 VND/kg (*)	500 VND/kg (*)

Table 4. Production results and returns per ha in the central provinces of Vietnam

Expenditures	Unit	Binh Dinh		Gia Lai		Total cost (USD/ha)
		Amount (USD/ha)	Price (USD/t)	Amount (USD/ha)	Price (USD/t)	
Total cost						
Labour	md	34	4,330	34	4,330	2,280
Land preparation	md	5	640	5	640	5,500
Planting	md	5	640	5	640	5,500
Weeding	md	40	4,880	40	4,880	10,280
Harvesting	md	50	6,000	50	6,000	10,280
Weeding material	kg	200	2,000	200	2,000	11,300
Fertilizers						
Family and constant	USD	7	7	7	7	11,300
GM94 20-20-15	kg	400	2,400	300	2,400	13,000
Plastic	USD	0	0	0	0	14,400
Other	USD	20	20	20	20	14,600
Gross income	USD	22	500	22	500	14,800
Net income	USD	15	300	15	300	11,200

Notes: USD=1 VND/16.5 VND. Dong in Dec. 2007

Lessons from CassavaVet

- Six essential conditions for a successful cassava R&D program include:
 - Materials, Markets, Management, Methods, Manpower and Money (6 Ms).
- Main experiences in linking cassava R&D activities in Vietnam include:
 - Establishment of the Vietnam Cassava Program (VNPC) including advanced cassava farmers, researchers, extension worker, managers of cassava research and development projects, cassava trade and processing companies.
 - The establishment of on-farm research and demonstration fields (farmer participation research FPR)
 - Ten mutual link-up activities (10 T - in Vietnamese)

