



Philippine Council for Agriculture, Forestry and Natural  
Resources Research and Development (PCARRD)  
Department of Science and Technology (DOST)

# PCARRD IA IMPACT ASSESSMENT Series

*A quantitative and qualitative information on the socio-economic impacts  
and learnings from the assessments of research and development projects.*



## **CASSAVA: THE POORMAN'S LITTLE GIANT CROP**

Cassava has always been acknowledged as an important food for many Filipinos. It is a major ingredient for animal feeds and raw material for industrial products such as starch, glucose, sorbitol, adhesives, binders, to name a few. Despite the growing importance of this crop, its full potential has never been exploited. Available figures seem to show that demand for cassava, at least in the

Philippines, has reached a plateau and the productivity of cassava farms are basically static. A study by the Philippine Root Crop Research and Training Center at the Visayas State College of Agriculture (ViSCA) in 1993, however, showed that the crop could be a farmer's little giant, for so long as the market is available.

## **The Project**

The Cassava Technology Transfer Program (CTTP) aimed to promote the commercial use of cassava for food and feed, and to test the effectiveness of an integrated approach to technology transfer. CTTP was implemented to address low productivity of cassava, limited use and market of cassava, and low quality and price of cassava chips in areas where chipping is practiced. The program has covered a complete supply chain from production to processing and product utilization and supported each vital point of the supply chain with appropriate support mechanism. Under this study, cassava farm production was supported with the transfer of appropriate technologies (cassava HYVs; planting methods, fertilization methods, harvesting and chipping technologies) and access to credit. Cassava-based livestock feed processing was supported with training on feed formulation, and establishment of feed mills. Swine production, on the other hand, was supported through technical assistance and advisory services. Institutional support to the program was also extensive.

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The CTTP was implemented for a period of three and a half years (1993 to 1997) in eight (8) project sites. The eight project sites are located in Placer, Surigao del Norte; Buenavista, Agusan del Norte; Los Angeles, Butuan City; Bontoc, Southern Leyte; Camotes, Cebu; Naval, Biliran; Borongan, Eastern Samar and Northern Mindanao. During the period of the program implementation, the technologies transferred included: (1) the formulation of cassava-based feeds; (2) high yielding cassava varieties and the improved cultural management practices, and (3) cassava chips processing technology including the chipping machines. These technologies were transferred to the clientele/beneficiaries using the following transfer strategies: “training, establishment of demonstration farms/nurseries, fabrication of

chipping machines, close technical supervision, periodic monitoring/consultations, linking cooperators with funding and other support institutions, and providing assistance in market development.” (Bacusmo and Evangelio, 1998). Of the eight sites, the 3 project sites namely Borongan, Eastern Samar, Buenavista in Agusan del Norte and Los Angeles in Butuan did not materialize.

As of December 1997, only three projects under the CTTP remained operational. These projects included the following: (1) Integrated Feed mill – Livestock – Cassava Production and Processing Project in Bontoc, Southern Leyte; (2) Cassava-based Feed-mill Project in Naval, Biliran; and (3) Cassava-based Feed-mill and Swine Breeding Project in Placer, Surigao del Norte.

## **Impact Assessment**

Various testimonies of the program beneficiaries contained in the CTTP Terminal Report of 1998 showed that the program has benefited a number of households. In particular, the testimonies showed that cassava production and chips processing project created livelihood opportunities. The extent, however, of the full impact of the program was not dealt with by the Terminal Report. Moreover, it has been nearly 12 years since the completion of the project and most of the anticipated changes brought about by the project could be observed in the long run but not in the short run and the causal link between the project and these changes could be more easily established. This impact assessment study of the CTTP project is a follow-up study of the long-term impact and the sustainability of the project. The more tangible impacts of the project may only begin to appear long after it has officially finished. More importantly, CTTP is a multi-faceted program and used a wide variety of methods in order to meet its goals. As such, its impacts are inherently difficult to measure. This difficulty is compounded by the subject matter of the project, since the environmental and economic variables that are the targets for any project attempting to promote sustainability evolve very slowly and are subject to myriad influences.

**Table 1. Area planted, cassava production and yield, by location**

Location	Before CTTP			During CTTP			After CTTP		
	Area Planted	Prod. (MT)	Yield/ha (MT)	Area Planted	Prod. (MT)	Yield/ha (MT)	Area Planted	Prod. (MT)	Yield/ha (MT)
Bontoc, So. Leyte (n=25)	3.3	10.4	3.2	20.8	389.25	18.8	1.8	11.5	6.6
Camotes Island (n=30)	13.4	268	20.0	18.4	423.2	23.0	14.4	302.4	21
Naval, Biliran (n=10)	1	1.7	1.7	6	120	20.0	2	36	18
Placer, SDN (n=20)	6.3	56.25	9.0	18.0	324	18.0	1.5	6	4
Northern Mindanao (n=66)	43.5	413	9.5	64.0	1,248	19.5	76.3	1,794	23.5

Source: Actual Survey

The overall objective of the study is to assess the impact of the CTTP. Specifically, the study aims to:

- (1) assess the effects of the program on the standard of living of the beneficiaries;
- (2) evaluate if there has been an increase in the productivity of cassava in the project areas;
- (3) assess the employment effect of the program;
- (4) evaluate the financial status and sustainability of the existing and remaining projects;
- (5) determine the impact of cassava cultivation-to the physical environment; and,
- (6) document lessons learned and recommend possible options and/or strategies for the development of the cassava industry in the Philippines.

much to the improvement of the area and level of production in the sites.

There was significant increase in the household income during the program that can be attributed to CTTP as measured by the percentage share of cassava to total income in all sites. On the average, percentage increase in income from cassava is 10% before the program to 25% during the program. This increase in income was backed by comparing the net income in the farmers level in the “*with*” and “*without project*”. The net income in the *with project* was computed at PhP 16,598.13 while the *without project* is PhP 7,386.00. This substantial difference is brought about the difference in the level of yield in the two sites.

In 2010, PCARRD commissioned the University of Southeastern Philippines (USEP) to conduct impact assessment of CTTP. Result of the study revealed that the program able to increase the area and yield of cassava in five (5) sites as shown in Table 1. The impact was felt due to the presence of support agencies and cooperatives as well as the establishment of the feed mills. This increase in production is due to the demand for dried cassava chips as input to the cassava-based feed formulation. The CTTP was seen to have strengthened this economic activity and to contribute



Table 2. Summary of cost and return analysis, cassava vs corn-based formulations

Type	Cassava-based feeds			Corn-based feeds		
	Net income before taxes	Cost/Kg	P/Kg	Net income before taxes	Cost/Kg	P/Kg
Starter	8,863.61	13.07	18.13	3,403.42	19.39	21.33
Grower	6,653.31	11.88	15.68	1,434.01	17.63	18.45
Finisher	6,647.18	10.27	14.07	2,672.66	15.03	16.55

Potential income for feed millers was based on the comparison of net income from formulating cassava based-feeds and corn based-feeds as shown in Table 2. The major factor that makes cassava-based feed formulations more profitable than corn-based feeds formulation is the availability of cheap cassava meal in the area.

The monthly cost savings in cassava based-feeds utilization instead of corn based-feeds was computed at PhP153,129.14. This was based on the actual data from the operation of the 150-sow level piggery project of BCCI.

The benefits from the CTTP program resulting from a change in demand of cassava were estimated using the standard welfare (economic surplus) analysis. Using the conservative k-shifts and other parameter values and the maximum actual level of technology, the annual potential benefits were projected forward after the project to compute the annual potential welfare gains. The present value of the benefits ranged from PhP1.18 million from Naval, Biliran to PhP652.66 million from Northern Mindanao. Results also suggest that the economic surplus were derived more from the consumer's surplus than the producer's surplus.

Result of the financial analysis show that the net present value (NPV) of the investment ranged from -PhP5.67 million in Naval to PhP645.81 million in Northern Mindanao. Positive benefits were noted only in Camotes Island and Northern Mindanao.

Table 3. Summary of Benefits

Indicator	Bontoc	Camotes	Naval	Placer	N. Mindanao
BCR	0.43	11.96	0.17	0.87	95.23
NPV (m Pesos)	-3.94	75.09	-5.67	-0.89	645.81

Many believed that cassava production would result to nutrient depletion, soil degradation, and serious erosion. These negative effects associated to cassava farming, however, have not been observed in the different study sites. The cassava farms are located in generally flat topography therefore the issue on soil erosion is not significant. Farmer respondents opined that there is not possible occurrence of soil erosion. The method of farming widely used in cassava farming is intercropping. Cassavas are intercropped with corn, coconut and other trees. Hence, it is difficult to attribute nutrient depletion and soil degradation to cassava plant alone. Furthermore, there are no available base line data on soil analysis.



