



Climate Resilient Agriculture Practices Investment Prioritization

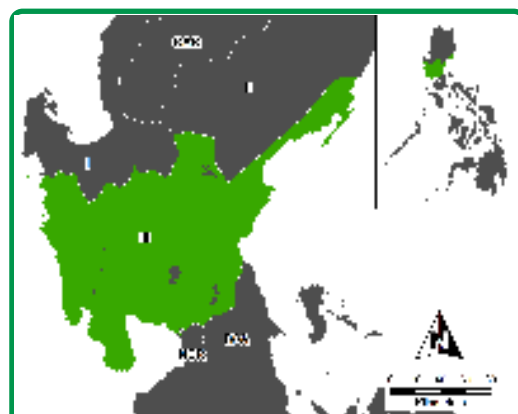
Investment Prioritization for Region III: Central Luzon on Water Conservation Technology (AWD)

Overview

Region III has a total land area of 2,147,036 ha spread in seven provinces, 14 cities, and 116 municipalities^[1]. It contributes almost 10 percent to the National Gross Domestic Product. The agricultural sector gives 17 percent to the regional output, employing 22 percent of the labor force^[2].

The province of Tarlac has a total population of 1,366,000, composed of 280,382 households. Tarlac City is the most populous while Anao is the least populous^[1]. Out of the 305,345 ha of land in the province, 54.37 percent is utilized for agriculture. Rice, corn, and rootcrops are the main crops cultivated in the province^[3].

Typhoons and floods frequently visit the province. Likewise, limited access to water is a concern in areas without irrigation facilities^[4]. The effect of these calamities on agricultural lands is a major concern.



Region III is located in the central plains of Luzon and is composed of the provinces of Aurora, Bataan, Bulacan, Nueva Ecija, Pampanga, Tarlac, and Zambales.

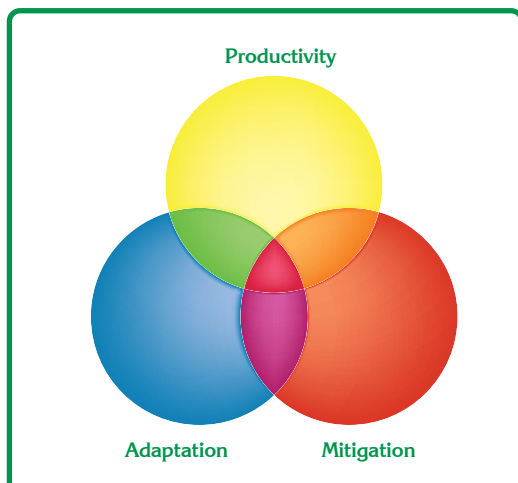
Prioritized Climate Resilient Agriculture (CRA) Practice

Some parts in the province depend on shallow tube wells and Tarlac Ground (TG) water as their main source of irrigation. In these areas, one of the main expenses incurred by farmers comes from gasoline. This fuel is used to run pumps.

Water conservation technology, specially Alternate Wet and Dry (AWD) method, was prioritized among the CRA practices identified during a series of Focus Group Discussion (FGD) with farmer leaders, agricultural technologists and city/municipal agriculturists.

This practice was mentioned because of its ability to give farmers the right timing for irrigation. The intermittent drying of fields enables the farmers to save on time and money.

This practice saves at least 96 L/ha (approximately Php3,600) on fuel alone versus the traditional practice of continuous flooding. Farmers' experience also revealed that there is no significant difference in the output produced per hectare.



Practices are considered CRA if they enhance productivity and at least one other objective of CRA (adaptation and/or mitigation). The CRA pillar (diagram shown) was used as basis for the prioritization of the CRA practices in all regions.

Data Gathering Methodology

Four farmers practicing AWD method were interviewed in Anao and Victoria. These areas rely on shallow tube wells and Tarlac Groundwater as their main source of irrigation. The data were compared with that from four farmers in the same area who are not practicing AWD. To validate the data, interviews and focus group discussion were done with agricultural technicians and the municipal agriculturist.

Data gathered were then analyzed through the Cost-Benefit Analysis (CBA) Tool prescribed by the International Center for Tropical Agriculture (CIAT).

Results

Based on current prices, results of field trials, and past experiences of key informants, the use of Alternate Wet and Dry Method is privately profitable at 12 percent discount rate with a net present value (NPV) of Php42,763 (USD 877.55). This comes from savings of farmers from fuels used for irrigation.

From the point of view of the society as a whole, the eventual use of AWD seems to be beneficial with an aggregate NPV of Php184,589.24 (USD 3,788). Social NPV is at Php48,670.55 (USD 998.78) after taking into account the value of reduction of CHG.

Recommendations

The use of the AWD method is recommended in areas that rely on shallow tube wells and Tarlac Groundwater as source of water for irrigation. This method is highly efficient in terms of fuel consumption because it maximizes the use of water without sacrificing the quantity of output.

Multi-stress varieties of rice especially drought-tolerant ones may be used to increase the yield of farmers who practices this method. Currently, there are field trials conducted by PhilRice on the effectiveness of AWD in rice.

Proper documentation on the part of the farmers should be given importance because AWD could be utilized in areas where water is scarce.

CBA Tool Summary Results

Farm-level Analysis	Net present value (NPV)	Social and Environmental NPV	Internal Rate of Return (IRR)	Social IRR	Payback Period	Initial Investment	Scenario in the Analysis	
	USD 877.55*	USD 998.78			NA**	USD 2	WITHOUT CRA: Shallow Tube Wells (STW) and Tarlac Ground (TG)	WITH CRA: Alternate Wet and Dry (AWD) Method
Aggregate analysis	Total area of coconut	Current adoption rate	Adoption rate	Aggregate NPV		Period		
	14,588 ha	1%	10%	USD 3,788		10 years		

*USD 1 = Php48.73

**NA = Not Applicable

References

- ^[1] Philippine Statistics Authority. 2015.
- ^[2] Department of Agriculture Regional Field Office III. 2015.
- ^[3] Tarlac Agricultural Profile 2016. Provincial Agricultural Office.
- ^[4] Philippine Rural Development Project. Provincial Commodity Investment Plan. 2015.

About the authors

This investment brief was authored by the team from the Tarlac Agricultural University (TAU), CIAT-AMIA's partner SUC for the CRA-DS project in Central Luzon.

Dr. Lilibeth B. Laranang: Project Leader, Tarlac Agricultural University
lilibeth717@gmail.com

Orlando H. Locading, Jr.: Socio-economist, Tarlac Agricultural University
locadingjr@yahoo.com

