Climate Resilient Agriculture Practices Investment Prioritization

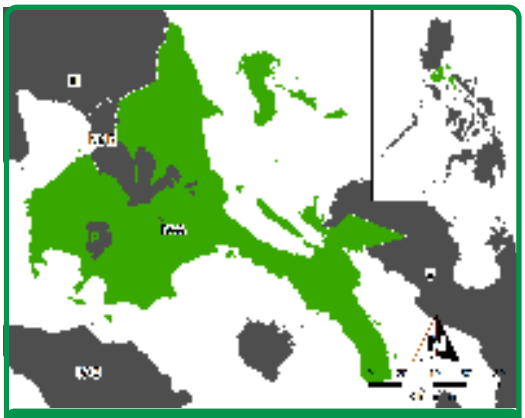
Investment Prioritization for Region IV-A: CALABARZON on Rainwater Harvesting in Vegetable Production

Overview

CALABARZON is the 12th largest region in the Philippines, with an area of 16,873.31 km^2. The region itself is relatively flat, but also consists of coastal areas and highlands. The region's agricultural sector has 282,700 farms with 2.08 ha per farm[1]. According to Philippine Statistics Authority, the Province of Quezon is the second largest province in Southern Luzon among the five provinces of the region, with 513,618 ha of land dedicated to agriculture.

Quezon Province, as one of the provinces in CALABARZON, is the largest in area, is the leading province in crop production, and is the regional source of staple crop. It is also considered as a top producer of high value crops in the region. Based on the Philippine Statistiscs Authority data, Quezon has a total of 3,885.36 ha that are planted with lowland vegetables and highland vegetables.

Quezon is frequently visited by different climatic hazards like typhoons and droughts. According to PAGASA in 2016, Quezon experienced dry spells where most of the agricultural production were highly affected specifically those areas in the coastlines.



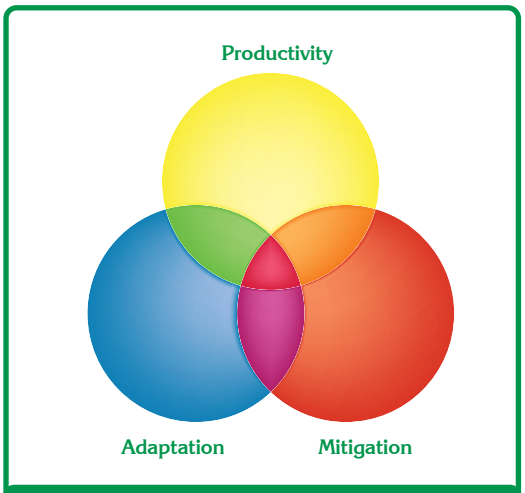
CALABARZON consists of Cavite, Laguna, Batangas, Rizal, and Quezon. Each province is composed of different environments, ranging from low coastal areas to rugged mountainous ones.

Prioritized Climate Resilient Agriculture (CRA) Practice

Quezon Province is highly affected by the devastation of the changing climate particularly El Niño that brings about drought and dry spells. In order to address the problems brought by different climatic hazards, rainwater harvesting for vegetable production will be introduced in the province particularly to areas highly vulnerable to different climatic hazards.

Rainwater harvesting is a method of inducing, collecting, storing, and conserving local and surface runoff for agricultural production. This CRA practice is an alternative way of irrigation that most of the farmers can afford and access. Through rainwater harvesting, vegetable production will increase even in times of drought. Farmers can still have their source of income even in the dry season.

Rainwater harvesting in response to climate extremes enhances the resilience of human society. An integrated perspective of knowledge on adaptation strategies such as rainwater harvesting system, is particularly useful to comprehend vulnerability and adaptation to environmental stresses at the local scale[2].



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

Key Informant Interviews (KII) with eight farmers from selected municipalities were done by the team. Farmers purposely selected were engaged in rainwater harvesting for their vegetable gardens/farms. A secondary data collection was simultaneously done by the team to validate and supplement the data that was needed for the Cost–Benefit Analysis (CBA) Tool as prescribed by the International Center for Tropical Agriculture (CIAT).

Results

The CRA practice requires a private initial investment of Php80,489.29 (USD 1,651.74) per hectare for it to be adopted. The projected net cash flow of the CRA result is profitable from the private point of view with a potential net present value (NPV) of Php214,803.79 (USD 4,408.04) and an internal rate of return (IRR) of 32.76 percent which is more than twice the 12 percent discount rate, making the CRA practice likely to be adopted by farmers. Initial investement is realized in four years.

Recommendations

It is recommended that the government promote this CRA practice because of its positive effects on farmers' living and economic development.

At the same time, in order to reduce the degree of uncertainty in the evaluation of the impacts of the CRA practice, it is recommended to allocate funds to finance research processes aimed to gain more information on Rainwater Harvesting.

On the other hand, from the point of view of the society in general and by incorporating externalities, the CRA seems to be highly attractive with a potential NPV of Php227,766.46 (USD 4,674.05) and a social IRR of 34.33 percent.

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 6,866.70*	USD 6,893.30	63.29%	63.57%	4 years	USD 1,651.05	WITHOUT CRA: Conventional Practice	WITH CRA: Rainwater Harvesting
Aggregate analysis	**Total area of vegetable**	**Current adoption rate**	**Adoption rate**	**Aggregate NPV**			**Period**	
	50 ha	3%	50%	USD 480,698.59			5 years	

*USD 1 = Php48.73

References

[1] Philippine Statistics Authority. 2002.

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