



Climate Resilient Agriculture Practices Investment Prioritization

Investment Prioritization for Region XI: Davao Region on Crop Rotation with Integrated Nutrient Management

Overview

Davao Region is blessed with good climate as it experiences Types II and IV climate and lies outside the typhoon belt. Rainfall ranges from 1,673.3 mm to 1,941.8mm while average temperature ranges from 28°C to 29°C.

However, like any other regions, it is vulnerable to floodings, droughts, temperature rises, and abnormal increases in rainfall. Davao del Norte and Compostela Valley are at very high risk for temperature change and flooding. Davao Oriental is at high risk for El Niño-induced droughts or abnormal increase in rainfall. Davao del Sur and Davao Occidental are at very high risk for El Niño-induced droughts or abnormal increase in rainfall.

Apparently, this climate variability affects the region's agricultural production like cacao, banana, coconut, rice, corn, and many others. Hence, losses in soil fertility, reduction in yield and income, and increased incidence of pests and diseases are experienced by farmers in the region.

Some of the common agricultural production practices are multiple cropping, crop rotation, contour farming, and monocropping.

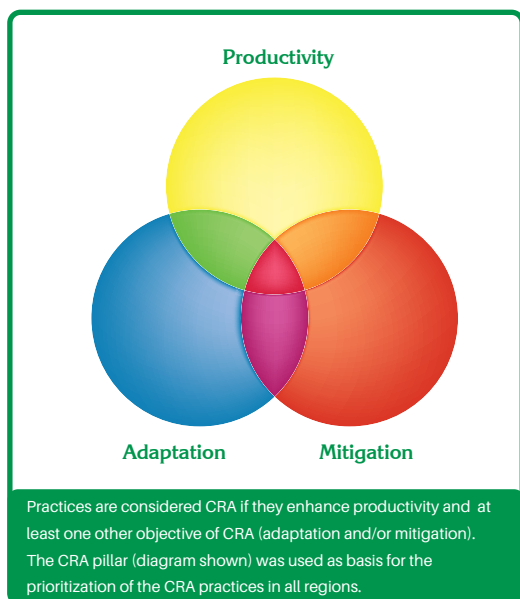
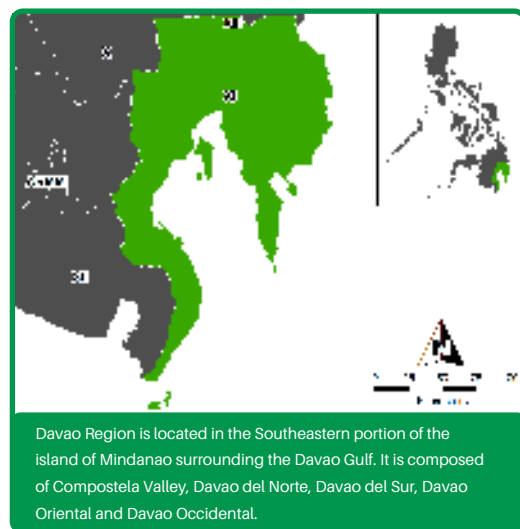
Prioritized Climate Resilient Agriculture (CRA) Practice

Crop rotation is one of the oldest and most effective cultural control strategies. In this practice, specific crops are planted in their specific planned order on the same field.

This CRA practice prevents soil depletion and reliance on synthetic chemicals. It helps in reducing soil erosion and increases soil fertility and crop yield. Moreover, it mitigates the build-up of pathogens and pests that often occur when one species is continuously cropped. It can improve soil structure and fertility by increasing biomass from varied root structures.

Hence, this system of production has been adopted by some farmers in the region. Moreover, due to fluctuations in the farm gate price of agricultural products, farmers have scheduled crop rotation with the anticipated higher market price of the commodity with the use of organic fertilizer combined with synthetic fertilizer.

Vegetable production on a small scale is common in the region. Some farmers have scheduled crop rotation to benefit the perceived higher farm gate price of the commodities. This also serves as means to maximize land use potential and optimize inputs in the production.



Data Gathering Methodology

The data were gathered through Key Informant Interviews (KII), literature reviews, opinion of experts, and survey with the farmers who are practicing the crop rotation with integrated nutrient management as identified climate resilient agriculture practice of the region. Coordination with the Department of Agriculture personnel was done in reaching the prospect respondents. Municipal Agriculturists and Agricultural Technicians were also invited during workshops and interviews. Farmers who practiced crop rotation and three farmers using monocropping as conventional method were interviewed.

Results

Based on the current and predicted real prices of crop rotation system of vegetables as CRA practice, it was found out that productivity of string beans and bitter gourd production in a rotation system eventually improved its profitability from the private point of view with a potential net present value (NPV) of Php463,714.68 (USD 9,516) and an internal rate of return (IRR) of 50 percent which is higher than the discount rate of 7 percent. Investment is expected to be recovered in 4 years.

Moreover, from the point of view of the society as a whole, the crop rotation seems to be more attractive with a potential NPV of Php491,490.78 (USD 10,086) and IRR of 54 percent after assessing the positive externalities of reduced soil erosion and enhanced soil fertility.

Recommendations

Results of the analysis have shown that crop rotation of vegetables could potentially improve the yield and income of the farmers with positive effect on the environment. For these reasons, it is recommended that the government promote adoption of crop rotation as CSA practice.

In order to reduce uncertainty in the evaluation of the CSA impacts, it is also recommended to allocate funds to finance a research process to gain more information on the crop rotation of vegetables and its other potential benefits.

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 9,516*	USD 10,086	50%	54%	4 years	USD 1,606	WITHOUT CRA: Monocrop for the whole year	WITH CRA: Rotation of two different crops
Aggregate analysis	Total area of crop rotation system	Current adoption rate	Adoption rate	Aggregate NPV		Period		
	1,700 ha	1%	60%	USD 9,115.68		10 years		

*USD 1 = Php48.73

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