Context
Corn is one of Cebu province’s staple foods. The crop is primarily planted in two seasons, normally adopting a corn-corn cropping pattern. However, unpredictable climatic conditions coupled with soil alkalinity (pH level greater than 7*) often limit corn production [1]. Corn monocropping is also prone to pests such as stemborers during the second cropping, thereby reducing productivity levels. Rotating corn with peanut provides much needed nutrients to the alkaline soil as well as breaks pest cycles.

Corn-Peanut Crop Rotation
Corn-Peanut Rotation is highly feasible in upland and hilly areas where corn is the major crop. This practice is done by planting peanuts after the corn is harvested. Peanuts can fix atmospheric Nitrogen through the aid of the N-fixing bacteria called rhizobia. This allows for much needed nutrients to enter the soil, improving soil fertility for the succeeding cropping. Furthermore, this CRA practice lowers the incidence of pest and diseases by breaking the cycle of pests under monocropping. Therefore, this practice reduces material costs as well as labor costs for fertilization and pest management. Hence, this strategy could result to higher profitability due to lower production cost.

Additionally, the main purpose of planting peanut after corn is to utilize the organic matter derived from decomposing crop residues into the succeeding cropping periods.

Available Technical Briefs

**LUZON**
- Cordillera Administrative Region (CAR): Corn-Based Integrated Pest Management in Benguet
- Visayas Region: Mango Production in Iloilo
- Calabarzon Region: Rice-Corn Crop Rotation in Cavite
- Visayas Region: Rice-Mungbean Crop Rotation/Intercropping in Iloilo

**VISayas**
- Region VI: Water Conservation Technology in Aklan
- Region VII: Rice-Corn Crop Rotation in Cebu
- Region VIII: Organic Crop Intercropping in Aklan

**MINDANAO**
- Region IX: Crop Rotation with Integrated Nutrient Management in Bohol
- Region X: Alternate Wet and Drying for Rice in Davao
- Region XI: Rice-Rice-Mungbean Crop Rotation in Davao

**References**
- Department of Agriculture Regional Field Office VII (DA-RFO VII).
- Julian Jul. A. Loreto, Science Research Assistant
- Dr. Dionesio M. Bañoc, Agriculturist

Acknowledgment
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**TECHNICAL BRIEF on Climate-Resilient Agriculture (CRA)**

**Central Visayas (Region VII)**

- **Mitigation**
  - Higher annual farm income due to higher crop yield compared to non-adaptors

- **Adaptation**
  - Improved resistance to drought and rising temperatures

- **Productivity**
  - Improved soil fertility through nitrogen fixing leading to fewer inorganic fertilizers used

**Corn-Peanut Crop Rotation**

- Corn-Peanut Crop Rotation is a practice that effectively maintains soil fertility by growing crops with different growth habits in sequenced seasons. This system increases the productivity and profitability through cost-reducing options pertaining to fertilizer and pesticide applications. As such, the carbon emission associated with crop production is less than that of conventional monocropping, thus contributing to climate change mitigation.

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Cost of Adopting CRA

+ Corn grits PhP 38/kg
+ Peanuts PhP 30/kg

Study Site
Cebu Province

Data Gathering
1. Analysis of 18 case farms identified by the Municipal Agriculturists in Daanbantayan, Cebu.
2. Conduct of Experts’ Workshop with experts from the academe (Visayas State University) and the government (Department of Agriculture Region 7) pooling knowledge and insights on emerging climate resilient farm practices.
3. Conduct of workshop with 40 Municipal Agricultural Officers (MAO) to validate and add to results from Experts’ Workshop and case farms.
4. Review and synthesis of secondary information

Recommendations
All parts of Cebu province are recommended to invest in this cropping system.

Although recommended in all parts of Cebu, the mid and northern parts of the province have better edaphic factors in growing corn than in southern Cebu.

Support and training may be provided.
The local government unit, the provincial agriculture office and Department of Agriculture Regional Field Office – 7 (DA-RFO7) may provide inputs such as seeds and fertilizer subsidies to farmers opting to adopt corn-peanut rotation. Training components can also be provided so that aspiring farmers will be encouraged to adopt this CRA practice.

Large and small scale farmers are encouraged to invest in corn-peanut rotation.
Large scale farmers can sell to the private sector while small scale farmers can cater to the the local market. The DA-RFO7 in coordination with other agencies (e.g. Philippine Crop Insurance Corporation, state colleges and universities) should take the lead in scaling out this CRA practice.

Cost & Benefit

1. Initial Investment / ha
   PhP 51,500

2. Payback Period
   1 year

3. Estimated Additional Annual Profit / ha *
   PhP 25,250
   USD 492

Yield & Prices

Without CRA
- Average annual farm yield
- PhP 38/kg corn grits
- PhP 30/kg peanuts

With CRA
- Average annual farm yield
- 1st cropping season: 769 kg/ha corn grits
- 2nd cropping season: 529 kg/ha corn grits
- 1st cropping season: 750 kg/ha peanuts

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Initial Investment Breakdown

- Initial Investment
  PhP 51,500

- Labor & Services
  PhP 12,300

- Carabao & Equipment
  PhP 29,500

- Inputs
  PhP 9,700

Cost of Adopting CRA

- Initial Investment
  PhP 51,500

- Labour & services
  PhP 12,300

- Carabao & Equipment
  PhP 29,500

- Inputs
  PhP 9,700

- Maintenance
  Annual costs (Years 2-10)
  PhP 24,600

- Operations
  Annual costs (Years 2-10)
  PhP 8,300

Reasons to Invest

1. Increased soil fertility through Nitrogen-fixation
2. Lower risk of pests and diseases
3. Higher potential farm yield and income due to diversity in production
4. Decreased use of fertilizers and pesticides leading to lower GHG emissions
5. Increased carbon sequestration by peanut and corn in the soil

Externalities
Social and Environmental NPV
PhP 140,976
USD 2,747
Social IRR
168%

Financial Analysis

- Net Present Value
  PhP 134,972
  USD 2,630
- IRR
  162%

Sensitivity Analysis

The CRA practice will still be more profitable than non-CRA practice even when:
- Yield of corn decreases by 50%
- Yield of peanut decreases by 50%

Aggregate Impact*

- Total Area Planted (ha)
  1,400 ha

- Aggregate NPV
  PhP 52.9 million

Assumptions:
- Period of Analysis: 10 years
- Discount Rate: 10%
- Exchange Rate: $1 = PhP 51.32

- Current Adoption Rate: 10%
- Projected Adoption Rate: 50%

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