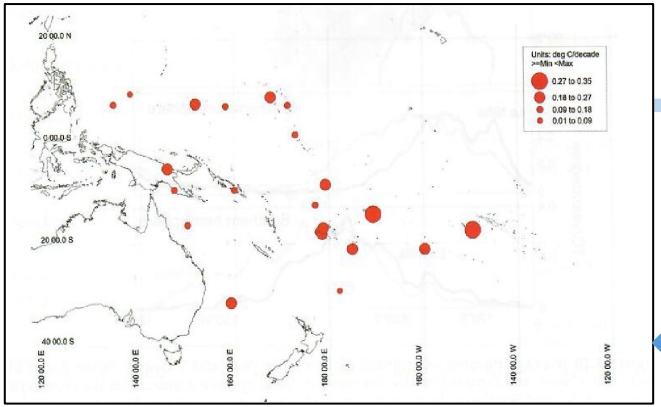
Pacific Position on the Future of KJWA

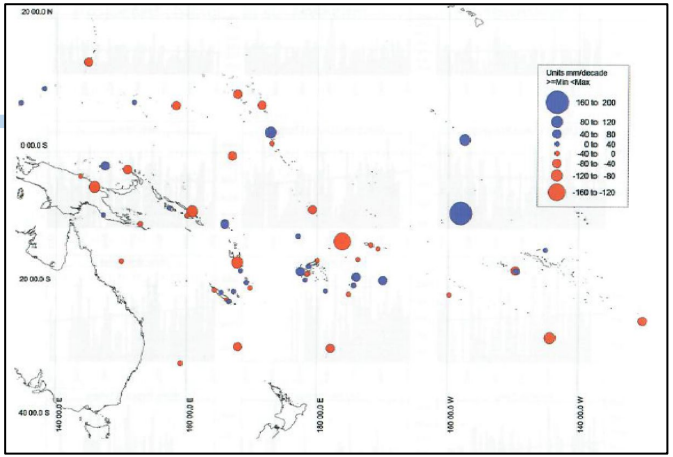
We have done more than is being reported

Climate Variability

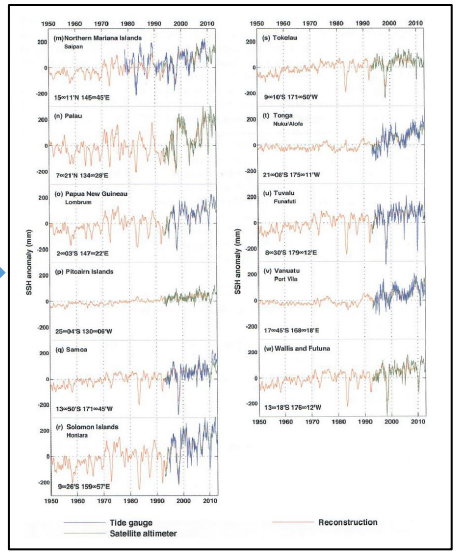


Temperature increases

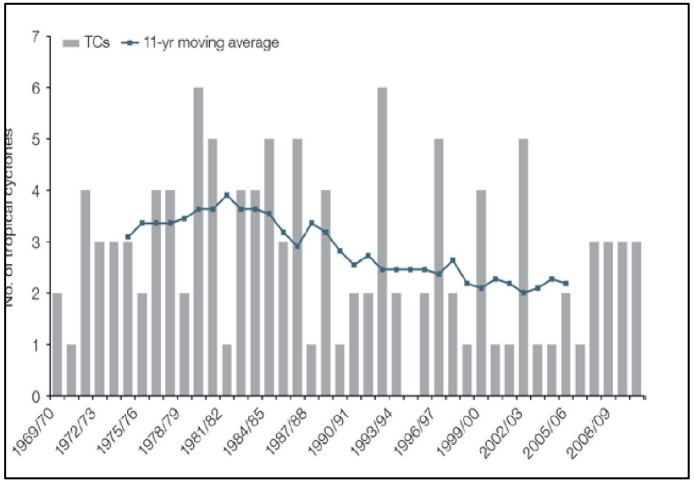
Rainfall increases in some but decreases in some



Sea level shows a general rising trend



Number of cyclone decreasing but stronger



Source: Vulnerability of Pacific Island agriculture and forestry to climate change by Taylor, McGregor, and Dawson

"Adaptation ensures that we as a people are prepared and resilient enough to survive through the impacts of climate change with our culture, resources, and identity intact for generations to come."

—Tommy E. Remengeesau, Jr

Vulnerability Analysis

Parameters	Indicators	Perceived changes/remarks	Score
Temperature	• Numbers of hot days increased • Number of cold days decreased	High High	3 3.
Rainfall	• Rainfall has become increasingly unpredictable	High	3
Plant and animal indicators	• Flowering and fruiting of some of the fruit trees like breadfruit and pineapple • Animal behavior like pig litters are getting smaller • Cows difficulty to deliver in hot weather	High High Med	3 3 2
Climate-induced disasters	• Drought seems to change little recently • Hurricanes getting stronger • Sea level rise increasing	High Hig	
	Average Exposure index		

Parameters	Hazard	Indicators	Perception/changes	Rank
Agriculture and food security	Cyclone	Loss in agriculture systems	• Decrease in co… producti…	
		Changes in faunal species dwelling in agriculture land	• M…	
		Changes in produ… quality		
				2
Forest and biodiversity			…cycles	
			…ire …crease in temperature	4
			• Lack of microorganisms • Abundant of pests	1
		…ge in quality	• Reduced production	3
		Changes in ecosystem services	• Loss of habitat • Hot • Migration	2
		…ty		2.6

Parameters	C…	…nk
Human assets		
Natural asset…	…c	2
	…ves …ciency for household needs	2
S…	…ce delivery (Government and NGOs) Social networks (men, women, and youths)	2
Phys…	• Road access • Water facilities	3 3
Averag…	…e Capacity	2.3

Question: How can we continue to intensify food production and yet maintain sustainability of the production systems of the Pacific Islands in the face of climate change.

The vulnerability of the food production of these communities were calculated using the formula

Vulnerability (V) = Exposure (E) x Sensitivity (S)/Adaptive capacity (AC)

When these values were substituted into the equation;

V for Eastern District = E x S/ AC

= (3 x 2.6/2.3)

= 3.4 (high)

Non CC stressors – declining soil health, pest and diseases, land use change, population growth, capacity, migration, etc.

Go Climate Smart Agriculture (CSA)

CSA is growing agriculture and incomes in the face of climate change by:

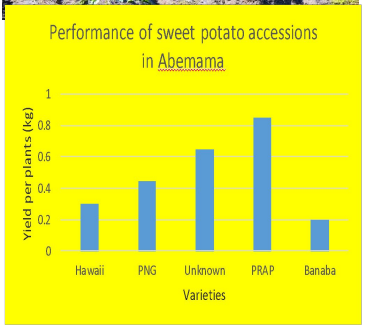
- Improving agriculture productivity and incomes from food production
- Improving resilience of the production systems
- Reducing greenhouse gas emissions

By being:

- **Weather Smart –** use long term weather records and weather forecast
- **Seed smart -** develop and use climate resilient seeds
- **Breed smart -** develop and use climate resilient breeds
- **Nutrient and carbon smart -** employ technologies that improve nutrient supply to the food production systems as well as sequester carbon
- **Institutional and market smart -** strategies to improve cross-sector linkages, strengthen local institutions, gender strategies, financial services, and market information

Case study 1 – Use of targeted Compost and improved crop varieties on Atolls

Research

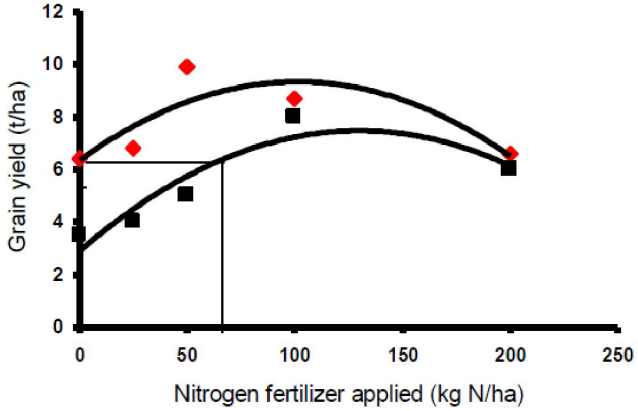


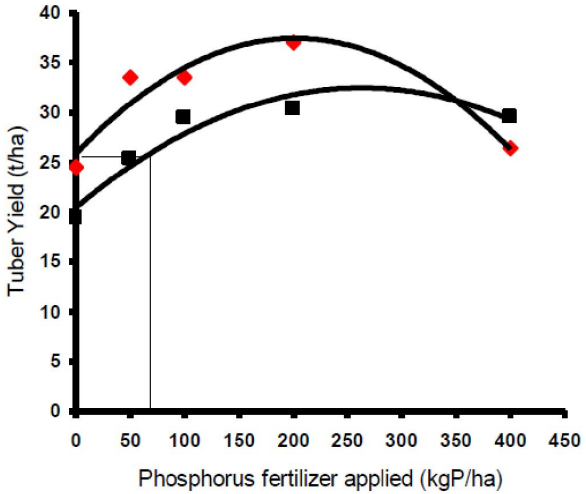
Babai Food Systems

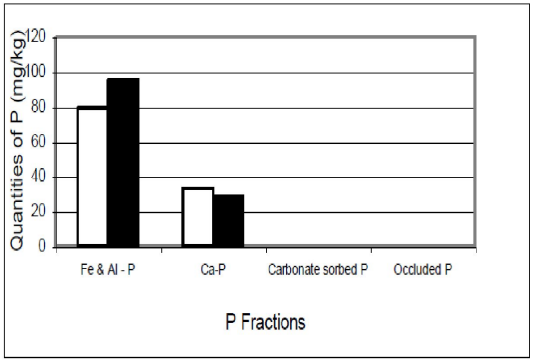
Rain-fed Systems

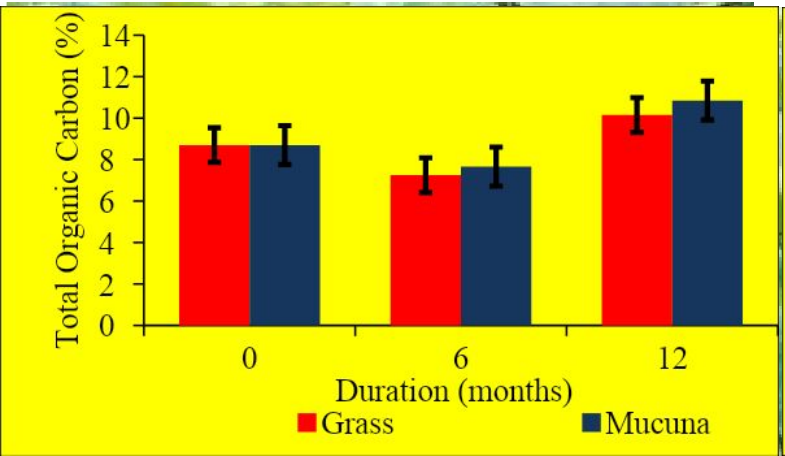
Case Study 2: Use of Magic Bean (*Mucuna pruriens)* on Higher Islands

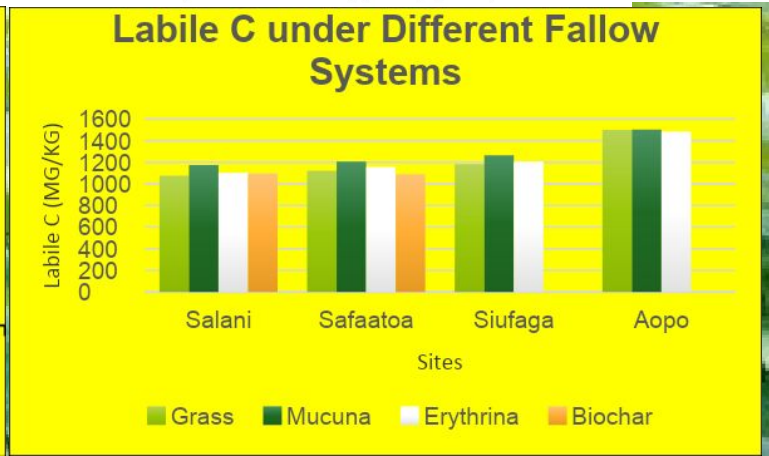
Benefits











Water Smart

Soil loss in a mechanized farming system

Soil loss experiment in ginger farm

It is estimated that in Fiji 51 t/ha soil is lost annually from 1990's experiment

A field experiment was designed this year to measure the soil losses on slope land ginger farm. Data are collected on a monthly basis

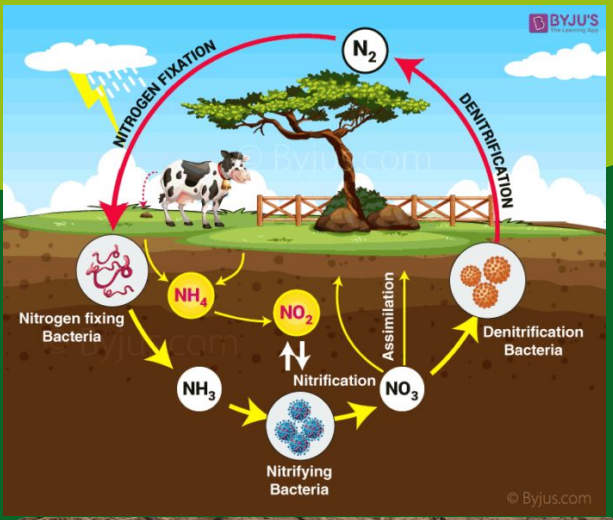
Sediments trapped in a half cut drums

Source: Dr. Rohit Lal

Reducing soil losses through use of Vertivar grass

Planting of vertivar grass to stop soil losses
Comparing the effect of vertivar grass and double row pineapple planting on the soil losses

Biodiversity



Above ground - permanent (trees) and temporary (crops)

Below ground biodiversity

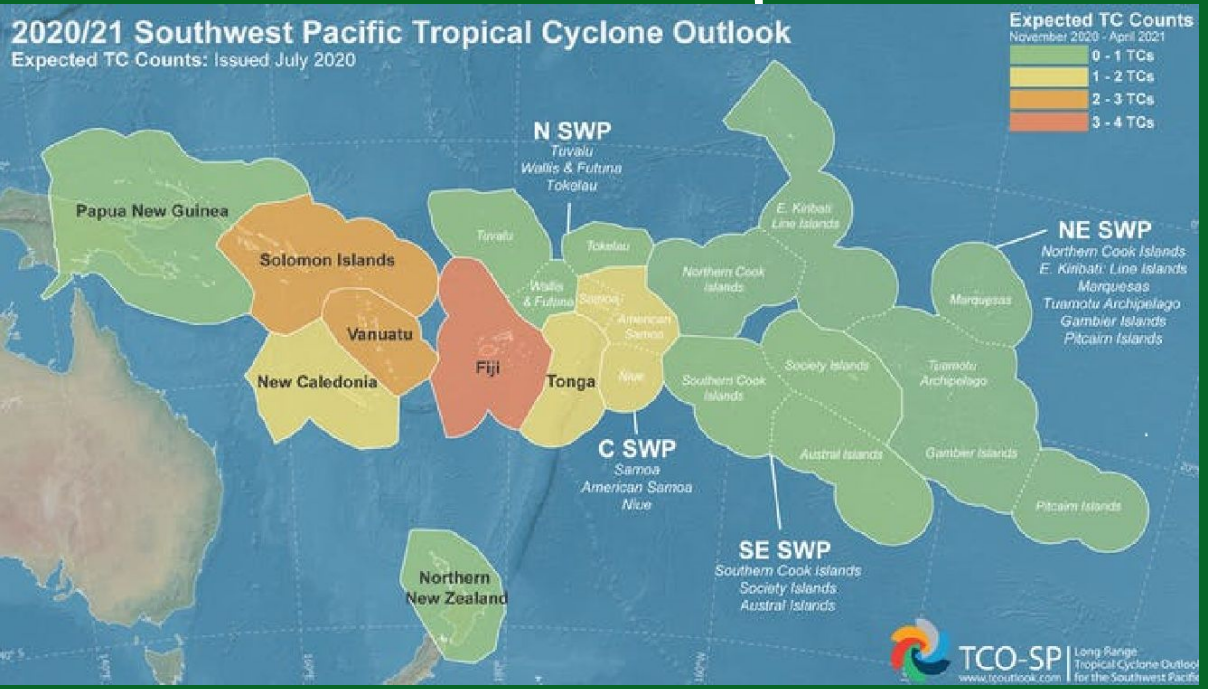
Correlation between climate change and transboudary invasive pests and diseases

There is a huge volume of works on climate change and agriculture but there is very little done on the correlation between climate change and transboundary invasive

FAO and SPC currently working on a concept note for GCF funding

KJWA future works also included this

Use of longterm weather data



	Nov 2020 - Jan 2021 (%) chance)	Feb–Apr 2021 (%) chance)
Niuafo'ou	47	37
Niuatoputapu	57	43
Vava'u	56	38
Ha'apai	54	47
Fua'amotu & 'Eua	58	51
Nuku'alofa	57	43

ACIAR and WMO are supporting this for agriculture in the region.

Food Waste

Globally 30% of food production goes to waste

8% of global greenhouse gas emissions comes from food waste

Very little information on food waste in the PSIDS - live cycle assessment and strategy developed for countries

CH4 and N2O reduction

Case study on Dry Litter Pig Production in Kiribati

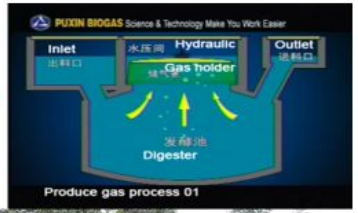
Current Piggery waste management practices — Facts and Figures

- 2015 Census: there are 2.4 pigs per household in Kiribati – 16,705 pigs on South Tarawa
- Survey on Piggery waste survey 2019: 70% household leased their pigs
- Most pigs are allowed to wallowed in a muddy
- Fence pigpen use water to clean and path pigs.
- No wash-down system to collect liquid waste

Source: Dry litter technology piggery system in Kiribati by Teema Biko, KJWA Webinar 3

What are Biogas digesters ?

* **Biogas Digesters** are used to anaerobically decompose biodegradable materials such as kitchen waste, human and animal excreta to produce biogas (comprising of methane, carbon dioxide, and small traces of hydrogen sulphide) and bio-slurry

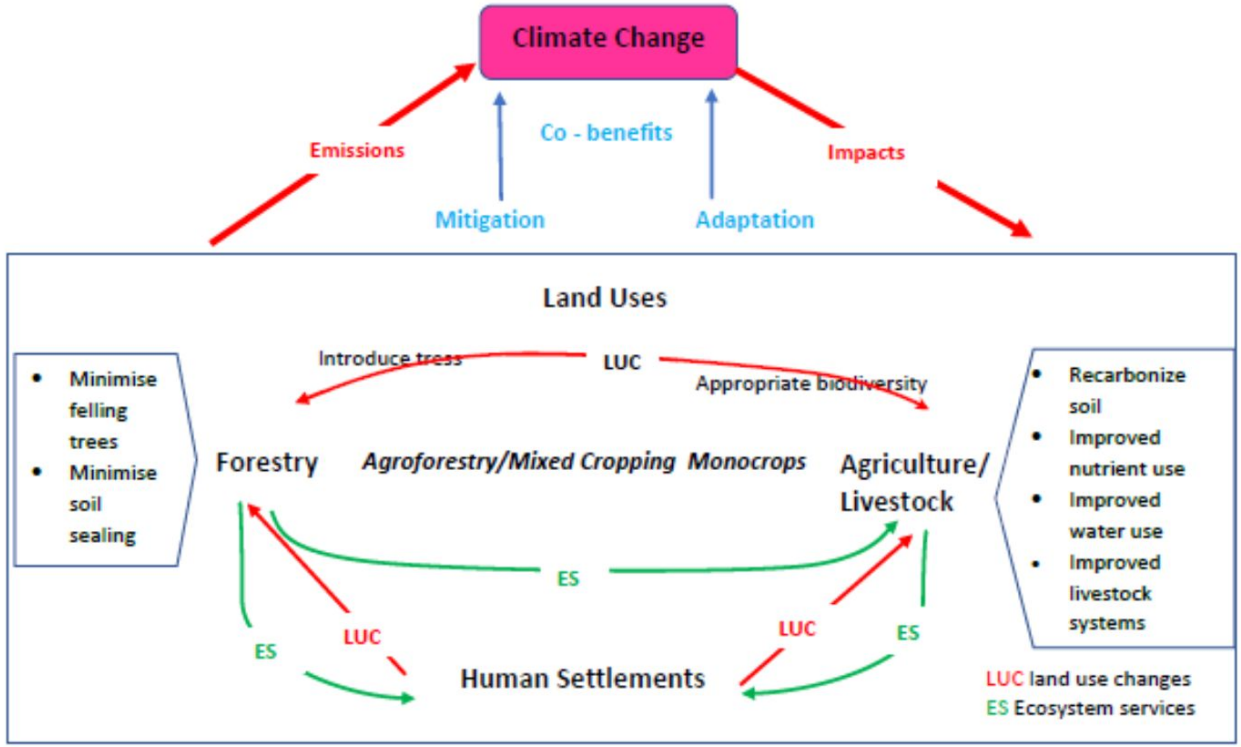


* **HOUSEHOLD BIOGAS DIGESTER**

A 8 cubic meters of household biogas digester could produce 10,000 ~ 20,000 kg of ADS, 450 cubic meter of biogas, and 3,000 kg ADR, every years.

BOOSTING KORONIVIA

Adaptation and co-benefi



Co-benefits: SDG 2 – Zero hunger; SDG 5 – Gender equity; SDG 6 – Clean water and sanitation; SDG 7 – Affordable and clean energy; SDG 8 – Decent work and economic growth; SDG 10 – Reduced inequality; SDG 12 – Responsible consumption and production; SDG 13 – Climate action; and SDG 15 – Life on land. Adopted and modified from Lopez, et al, 2020. FTA Science Conference. CGIAR

Capacity Building

Areas

- **Vulnerability analysis**
- **Adaptation and mitigation measures**
- **Disaster risk reduction**
- **Climate Resilience of Food Production Systems - agriculture and coastal fishery (collaboration of FAO, SPREP and JICA)**

- **Webinars**

- Developing submission to UNFCC
- Soil organic Carbon
- Improved nutrient use
- Improved livestock systems

To improve resilience and productivity of food systems and minimise GHG emissions

- Improve biodiversity – above ground and below ground
- Improve soil management to increase soil organic C – soil is biggest C sink
- Reduce food loss and waste – 8% of GHG emissions
- Introduce trees – more permanent sink
- Agriculture must contribute to NDC plans
- Improve water management
- People – most important component of adaptation