



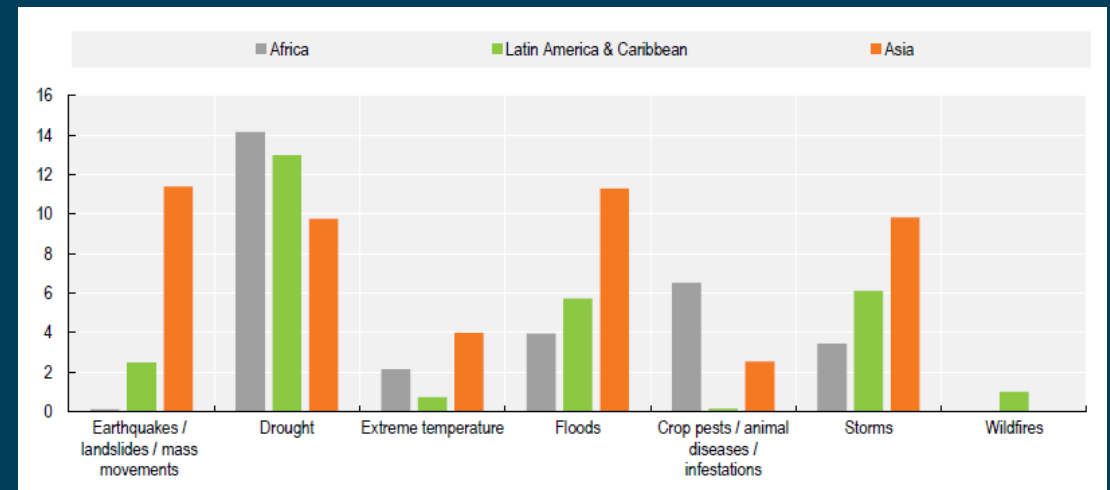
Best farming practices for resilience



Resilience in agriculture

The ability to adapt and thrive despite environmental challenges


Total crop and livestock production loss by region and per disaster, LDCs and LMICs, 2008-2018



Source: FAO (2021)

The Ministry of Agriculture and Fisheries in Jamaica has documented various drought response measures, including the planting of drought-resistant crops and rainwater harvesting

RESPONSES TO DROUGHT AND WATER SHORT-AGE IN FARMING SYSTEMS IN JAMAICA




Water harvesting Green house production

The Drought Response Measures

Mulching:

- Cushion soil from rain impact
- Reduce runoff on hillsides.
- Bind soil together when broken down.
- Adds nutrient to soil.
- Reduces pesticide usage.
- Reduces water loss from soil.
- Reduce weed growth.
- Habitat for pest such as slugs.
- Removal of grass for mulching may lead to the soil being exposed to elements of erosion.

Shade Grown Coffee:

- Coffee shaded with banana and pine plants.
- Reduce water requirement.
- Reduce evaporation.
- Roots of the plants bind soil particles.
- Canopy reduces the impact of rainfall.
- Mix-cropping improve nutrient balance in soil.
- Provide additional income.
- Reduce irrigation cost.
- Increase competition for nutrient and sunlight.

other measures include:

- Time of crop establishment/ planting of drought resistant crops.
- Rainwater harvesting.
- Construction of fire breaks.
- Reduction of watering period.
- Reduction in crop production size by reducing cultivation vegetable crops.
- Contour cultivation.
- Growth of Wild Ginger (*Hedychium sp*) to act as ground cover.

Individual Basins:

- Used mainly by coffee farmers.
- Construction is time consuming.
- Reduce irrigation schedule.
- Serve as catchment for runoff water.
- Cheap to establish.

Drip irrigation:

- Reduce irrigation schedule.
- Reduces runoff.
- Reduce pest and disease problems.
- Limits the excessive use of fertilizer.
- Requires good management strategy.
- High initial cost.

Livestock Production:

- Reduce animal stock
- Establish and maintain fodder banks.

Resilience • The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to maintain an acceptable level of functioning and structure.

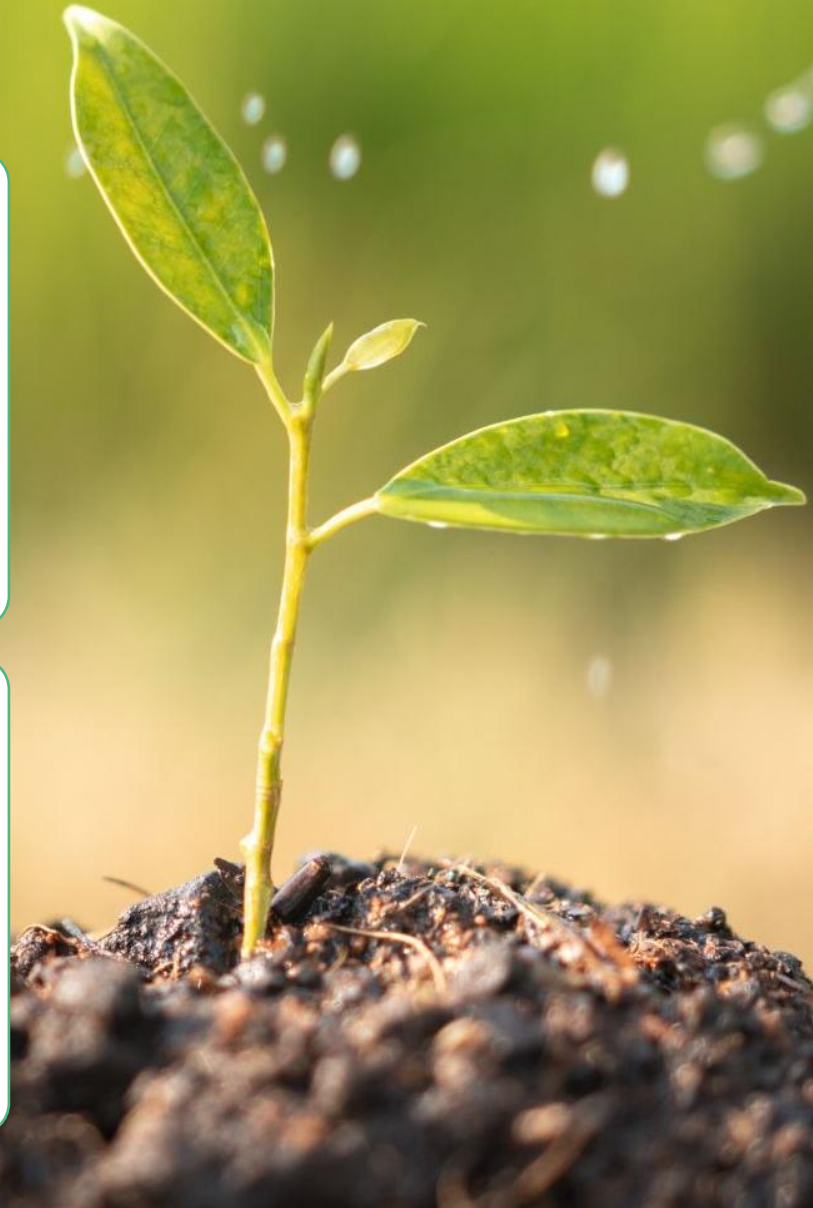
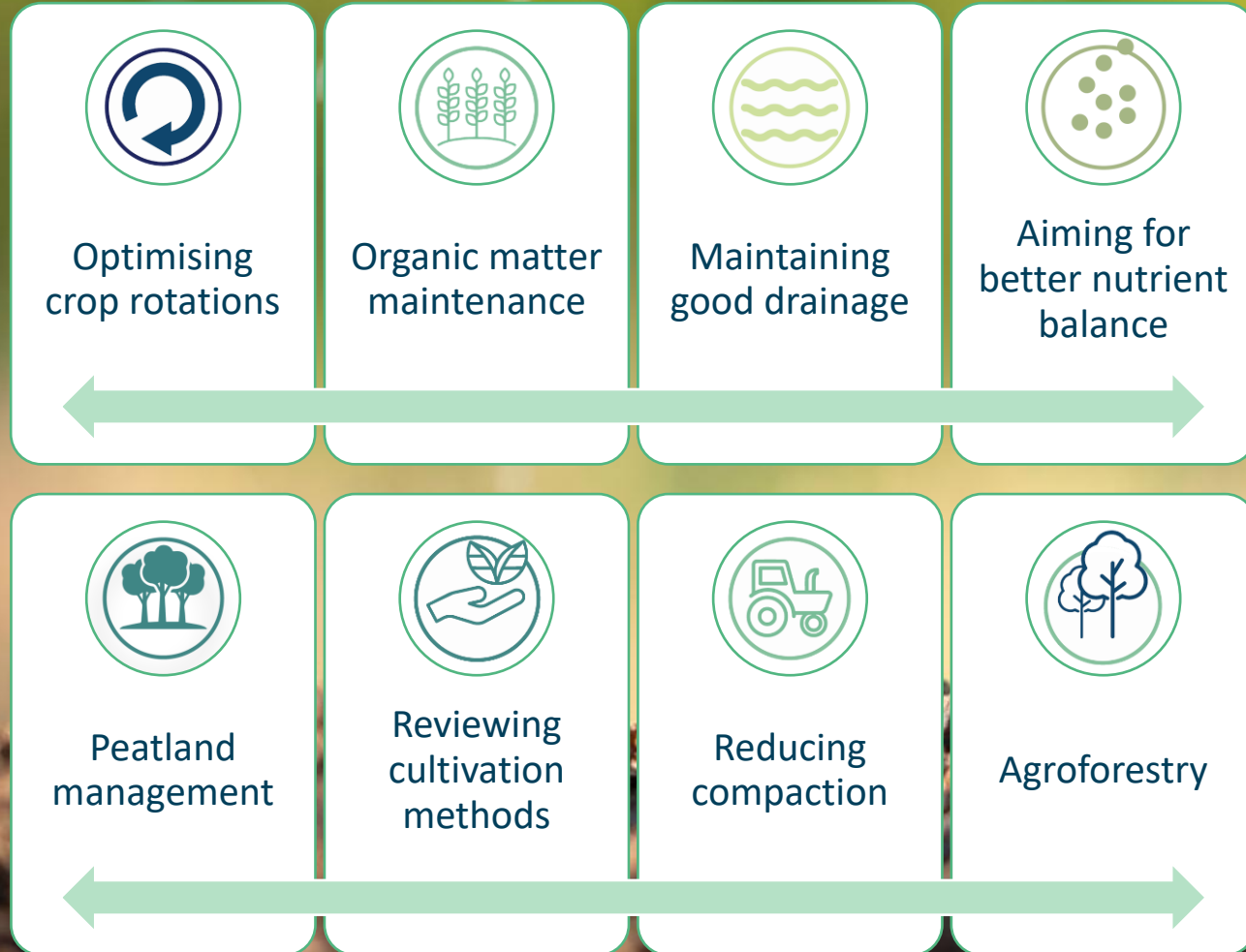
Adaptation • Adjustments and changes made to reduce the negative impacts or damages associated with climate change, i.e. actions to reduce vulnerability or enhance resilience.

Mitigation • human intervention aimed at reducing the sources or enhancing the sinks of greenhouse gases.

Vulnerability • The degree to which a system (e.g. farm) is susceptible to, or unable to cope with, adverse effects of climate change.

Reference: Eastern Caribbean Research Paper, No. 189A Integrated Urban and Rural Environmental Management, LW-Mona

Soil management



Mulching and its benefits



Mulching involves covering the soil with organic or inorganic materials, such as straw, wood chips, or plastic.

Benefits of mulching:

1. **Moisture retention:** Reduces evaporation, keeping soil moist and supporting crop growth during dry periods.
2. **Weed suppression:** Limits weed growth, reducing competition for nutrients and water.
3. **Soil temperature regulation:** Helps maintain optimal soil temperatures for root development.
4. **Nutrient enrichment:** As organic mulch breaks down it adds valuable nutrients back into the soil.



Terracing to reduce erosion

Terracing involves creating stepped levels on sloped land to slow down water runoff

Benefits of terracing:

1. **Erosion control:** Reduces soil erosion by slowing down water flow and allowing for better absorption.
2. **Improved water infiltration:** Enhances water retention in the soil, making it available for crops.
3. **Increased arable land:** Maximizes the use of hilly terrains for agriculture, expanding productive land area.
4. **Enhanced biodiversity:** Terraces can create diverse microenvironments that support various crops and wildlife.



Agroforestry: integrating trees for biodiversity and protection



Benefits of agroforestry:

- 1. Biodiversity enhancement:** Increases habitat for various species, promoting ecosystem health.
- 2. Soil health improvement:** Tree roots help stabilize soil and improve nutrient cycling.
- 3. Wind protection:** Trees act as natural windbreaks, reducing wind speed and protecting crops.
- 4. Carbon sequestration:** Contributes to climate change mitigation by capturing carbon dioxide.

Wind management

Windbreaks are rows of trees or shrubs planted to reduce wind speed and protect crops.

Benefits of windbreaks:

1. **Reduced wind damage:** Protects crops from strong winds and reduces physical stress.
2. **Microclimate creation:** Helps maintain a more stable environment for crops, improving growth conditions.
3. **Soil conservation:** Reduces soil erosion and moisture loss.
4. **Wildlife habitat:** Provides shelter and food for various species, enhancing biodiversity on the farm.

Raised beds

Benefits of raised beds:

- 1. Improved drainage:** Enhances water management, reducing waterlogging during heavy rains.
- 2. Soil warmth:** Warmer soil temperatures promote early planting and faster crop growth.
- 3. Accessibility:** Easier access for planting, weeding, and harvesting, reducing physical strain on farmers.
- 4. Increased yield:** Optimized soil conditions can lead to higher crop yields.