Mainstreaming agroecology in Caribbean food systems for sustainable food and nutrition security

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Trends and challenges in Caribbean food systems
Challenges in Caribbean crop production systems persist due to...

- Use of unsustainable practices
- Limited knowledge of ecosystems and their services to production
- Low resilience to adverse weather
- Limited availability of seeds and planting material
- Lack of sufficient agricultural services and extensions support
- Inaccessibility to land; difficulties in receiving rights to land
- Increase prevalence of pests and diseases
Other production systems ...

- Limited access to animal breeding stock for genetic improvement
- Need for training on improved technologies on livestock production, genetic improvement and forage production
- Lack of availability of communal pastures and/or land for improved pasture development
- High costs of other factors of production: trained labour, animal health care and services
- Limited access to fish nursery stock to sustain production
- Lack of knowledge on the role and function of agroforestry in production systems and usually not incorporated in farm planning

Overall: little integration of components of production systems
Processing...

- Engaged in small-scale food processing at household, cottage industry level or in small establishments

- Despite regional and international exports of value-added products, food processing, its marketing and distribution are stagnant at a novelty levels

- Need for training on improved technologies on post-harvest techniques

- High cost of factors of production incurred during operations and other related costs (labour, start-up capital, machinery, energy use etc.)

- Lack of government support
Marketing challenges...

- Inadequate marketing systems; constant price fluctuations and limited market access
- Increased competition from external markets
- Unaware of and not meeting market demands; producing in surplus
- Lack of knowledge on market prices to receive fair trade
- Inability to access current and new markets
Distribution...

- Fragmented in structure, little inter-island trade among distributors
  - No economies of scale due to maritime freight system

- Outdated and segregated policies targeting single sectors rather than taking a comprehensive (food systems) approach

- Subsidies need to be regulated to support growing agricultural sub-sectors

- Lack of knowledge, evidence and data to provide for proper analysis to drive effective policy formulation

Policy formulation / development:
- Top-down approach, disregarding farmer participation and inclusion

- Interagency collaboration and contribution not considered
There is an urgent need to support local food production, encourage diverse, nutritious and healthy diets and build producer-consumer relationships to strengthen local economies.
Loss and waste…

- Annual food loss in the region represents 6% of global food losses
- Poor infrastructure and poorly organized value chains contributes to food losses
FAO’s vision for sustainable food and agriculture

We need a transformational change in agriculture that truly addresses the different dimensions of sustainability: economic, environmental and social, and allows us to work much more across sectors, objectives and interests.
What is agroecology?
Agroecology applies ecological concepts and principles to optimize interactions between plants, animals, humans and the environment while taking into consideration social aspects required for a sustainable and fair food systems.

Agroecology contributes to:

- Resilience
- Ecosystem services
- Nutritional diversity
- Human health

- Relies on biodiversity and local and circular economy rather than external inputs like chemical fertilizers, agro-chemicals, purchased feed
- Highly knowledge-intensive, builds upon farmers’ collective knowledge and innovations (attractive for rural youth)
- Emphasizes social equity (job creation & gender aspects)
- Promotes local markets and direct consumer-producer exchanges (value addition & diverse diets)
**Agroecology as a scientific discipline**

1920/30s - Scale: field/plot
Scope: biology/physics
Descriptive nature

1940/50s - From descriptive to analytical, increases scope and scale

1960/70s - Scale: agro-ecosystem
Scope: ecology/agronomy
Analytical nature

1980s - From analytical to prescriptive, further increases scope and scale

1990s - Conceptual framework to design and manage agro-ecosystems

2000s - Further increases scope and scale: agroecology as the interdisciplinary study of food systems

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**Agroecology as a set of practices**

1970s - Indigenous agricultural knowledge for natural resources management

1980s - Agroecological practices are introduced or further developed (conservation agriculture, permaculture, system of rice intensification, organic farming)

1990s - Agroecological practices as alternative paradigm to conventional agric.

2000s - Spread of practices is intertwined with movements

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**Agroecology as a social movement**

1980s - Indigenous knowledge and family farms

1990s - Agro-biodiversity; rights to food

2000s - Sustainable agricultural intensification and food systems

Source: P. Tittonell, FAO Symposium, 2015
Transition towards agroecology-based sustainable agriculture and food systems

4 Building an enabling environment for more sustainable food systems

Integrated legal frameworks, policies and governance systems provide an enabling environment supporting the transition towards more resilient and sustainable food systems. The uptake of agroecological practices requires systems of education and extension to support agricultural producers in changing their practices. Policies and legal frameworks that contribute to farmers’ land tenure and natural resources security are directly correlated with investment in agricultural production systems and the implementation of good practices. Agroecology requires cooperation through an enabling environment at territorial scale.

3 Strengthening markets that support agroecology

Transitioning to agroecology can only be sustainable if markets are adapted, or new markets established, to incentivize agricultural producers to produce biodiverse, local food and to invest in improving their agricultural production systems. Market arrangements that support agroecology include: public procurement, participatory guarantee systems, geographical indications, farmers’ markets and consumer-supported agriculture schemes. Consumers can help drive these changes.

2 Transforming agricultural production systems to be more resilient and sustainable

Redesigning agricultural production systems is necessary to address the root causes of problems, such as degradation of land, loss of biodiversity and ecosystem services and water scarcity. The new systems increase biodiversity, recycle by-products and diversify landscapes.

1 Increasing the efficiency of practices and resources and substituting external inputs

Optimizing biological processes is the starting point as it reduces the need for external inputs that negatively impact human and environmental health. Products and practices are replaced with those that are more environmentally sound. Though they may lead to creating sustainable agriculture and food systems, activities at this level are not in themselves considered agroecology.
Supporting innovation in integrated agroecological production systems, youth employment creation and youth engagement in productive processes and access to land in Jamaica, St. Lucia, and Trinidad and Tobago

Capacities of institutions are strengthened to promote the adoption of more integrated and cross-sectoral practices that sustainably increase production, address climate change and environmental degradation.

- Base line studies describing the major crop, livestock, forestry and aquaculture production systems and their potential for integrated agroecological production and opportunities and obstacles to improve the current status of rural youth employment

- Regional forum to promote agroecology and agree on components for a GEF project proposal
10 Elements of Agroecology

- Diversity
- Co-creation and sharing of knowledge
- Synergies
- Efficiency
- Recycling
- Resilience
- Human and social values
- Culture and food traditions
- Co-creation and sharing of knowledge
- Responsible governance
- Circular and solidarity economy
The 10 Elements of agroecology and sustainable food systems
Sustainable food systems

A sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

This suggests that it:

- is profitable throughout (economic sustainability);
- has broad-based benefits for society (social sustainability); and
- has a positive or neutral impact on the natural environment (environmental sustainability).
Sustainable Food Systems Approach

- Considers the totality of the food system
- Not confined to one single sector or sub-system
- People-centered
- Facilitates multi-stakeholder collaboration and policy coordination at different levels

Source: FAO, 2014
Agroecology and Sustainable Food Systems

**Environmental**
- Synergies occur, reducing the use of external inputs
- Increased nutrient recycling and agroecosystems efficiency
- Builds resilience to climate change, pests and diseases
- Supports soil carbon sequestration and soil health

**Social**
- Encourages local governance and advocacy for improved policies
- Generate local food products complimentary to cultural values and food traditions
- Increased nutrition security

**Economic**
- Diversified income and resilience to market shocks
- Contributes to circular economy
- Provides for rural job opportunities and strengthens value chains
The 2030 Agenda for Sustainable Development calls for a transformation in food and agricultural systems.

Sustainable food systems approach and agroecology can help to make this transformation happen.
Agroecology and sustainable food systems approach:

An example for the Caribbean
Small ruminants production

- Can be well integrated into existing small holder farming systems
- Increase the diversity of income and reduce economic risk
- High rates of reproduction
- Ability to utilize local farm by-products
- Animal protein and milk source for households or sales
- Manure enhances crop production
- Low start-up capital required
Pigeon pea production

- Good for rain fed agriculture in semi-arid areas; resilient to droughts
- Adaptable to a wide range of soil types
- Encourage healthy diets; low in fat, high in protein and dietary fiber
- Culturally appropriate and frequently used in traditional meals
- Pigeon pea seeds can be used to replace soybean meal in concentrated animal feed
- Excellent source of organic nitrogen and assists with nutrient recycling, soil structure and quality
Conclusions

1. Caribbean agriculture and food systems face massive challenges

2. Collaboratively, the Sustainable Food Systems and Agroecology approaches can provide holistic solutions and guide the transition to sustainable food and agriculture

3. Addressing food systems in its totality can make the significant change needed

4. Well integrated animal-crop-tree production systems can support the transition to sustainable food systems through agroecological approaches
Thank you!

For more information visit the

FAO Agroecology Knowledge Hub

at www.fao.org/agroecology