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Session n°21:

Advancing agroecology for Caribbean SMEs

Caribbean Agrifood Business Series

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Sustainable Agriculture & Agroecology

SOME CRITICAL REFLECTIONS & NUANCES

AGENDA

1. Nuancing ‘sustainable agriculture’
2. Challenges and opportunities when moving towards ‘sustainable agriculture’
3. Translating principles into practice

1.

Importance to nuance ‘sustainable agriculture’

1 Why is it important today to nuance ‘sustainable agriculture’

Expectations to deliver healthy food in environmental and social friendly way, while ensuring food security

- Many diverging **expectations from agriculture** lead to heavy politicised and polarized debates

Need for increased food production to feed a growing global population, with increased **pressure on land for other purposes**	⇔	**Desire for more sustainable and eco-friendly farming practices that are socially fair**.
Food security	⇔	**Environmental & social** stewardship

➢ Need to transition towards **food systems** able to:

- Preserve natural resources
- Adapt & mitigate to climate change
- Meet the needs of growing rural and urban communities
- Satisfy changing consumer demands
- …

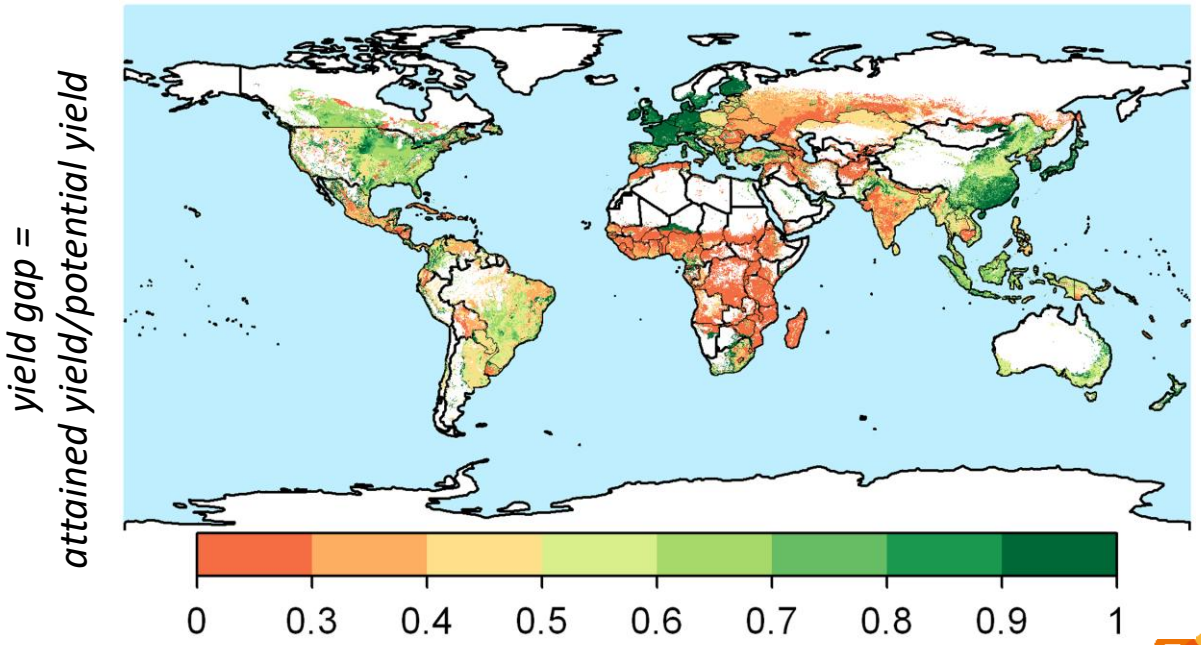
Why is it important today to nuance ‘sustainable agriculture’

1

The population and yield gap challenge

- Global population steadily grows (ca. 9.4–10.1 billion by 2050) – as so does the demand for food
- Strong regional **population explosions**!
  - Past production increase often following **area expansion –** while current use of agricultural land **suboptimal**
  - Pressure on precious environments and **disrupt agroecological systems**
  - Areas with **poor agricultural technology adoption** and huge **yield gaps**

➢ **More productive agriculture reduces pressure on natural ecosystems** by producing more food on less land, allowing natural habitats to be conserved and restored (**"land sparing"**).



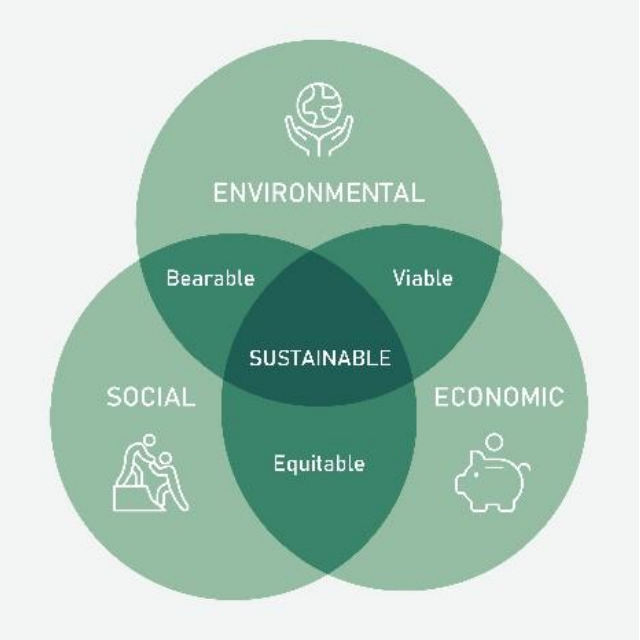
2.

Challenges and opportunities when moving towards ‘sustainable agriculture’

2 Challenges and opportunities

The definition problem

- Absence of a simple and clear definition of 'sustainable agriculture'
- **Definition of sustainable development** (1987): "*able to meet the current needs of society without compromising the ability of future generations to meet their own needs*"
- It should encompass **three central pillars:**



The tree pillars of sustainability.

- Sustainability criteria are measured with **indicators**
  - For agriculture relevance may vary in place and time
- What is "sustainable" in terms of economic, environmental and social criteria **varies according to local context**.
  - What is sustainable in one context, may not be sustainable in another where **agroecological and socio-economic factors are very different**

➢ **One-size-fit-all solution** towards sustainable agriculture **does not exist**

2 Narratives and concepts in perspective

Several pathways to sustainable agriculture – some nuances

- Search for **simplification of a complex issue:** contrasting ideologic narratives and/or concepts are rapidly arising
  - Being proposed as **THE pathway to achieve 'sustainable agriculture'**
  - Being spread, advocated for, and adopted by diverse stakeholders
  - Have often **diverse backgrounds, agenda's or contrasting ambitions**

- Popular **agricultural concepts** currently **influencing the public debate:**
  - Conventional agriculture
  - Intensive agriculture
  - Agroecology
  - Regenerative agriculture
  - Carbon farming
  - Organic agriculture
  - Climate-smart agriculture
  - Other approaches: Nature-inclusive agriculture, Permaculture, Biodynamic agriculture, Conservation agriculture, High nature value farming, Agroforesty, Low external input agriculture, Circular agriculture,…

- **BUT the global food system is highly complex and differences** in agrifood systems include:
  - Different *scales of operation, agronomic practices*, *agroecological* and *socio-economic* circumstances
  - Diverse challenges, needs, and dynamics

***Further reading**: Giller, K. E., Hijbeek, R., Andersson, J. A. & Sumberg, J. Regenerative Agriculture: An agronomic perspective. Outlook Agric **50**, 13–25 (2021).*

2

Narratives and concepts in perspective

Several pathways to sustainable agriculture – Key takeaways

- Several ‘sustainability’ concepts co-exist, often overlap and are not mutually exclusive
  - Popularity of such concepts often a response to trends in time
- Agriculture is inherently complex, and broad concepts (such as agroecology) can lose important nuances and practical realities when generalized across diverse contexts.
- Due to global diversity: Often remains unclear what concepts mean in practice and how these can be implemented?
- Recognize and embrace global variations and take into account local nuances

2

Example

Soybean production: 36 km² agricultural land

Southern Brazil

Eastern Kenya

Which of following agroecosystems do you think is most sustainable?

Could be both, depending on the indicators you look at

e.g. yield/ha, income per capita, pest pressure, pesticide use/ha, soil organic carbon, labor efficiency, input us per unit yield, Gender equality, biodiversity index etc.

3.

Translating principles of Agroecology into practice

Some nuances

Agroecology concept in perspective – built around principles

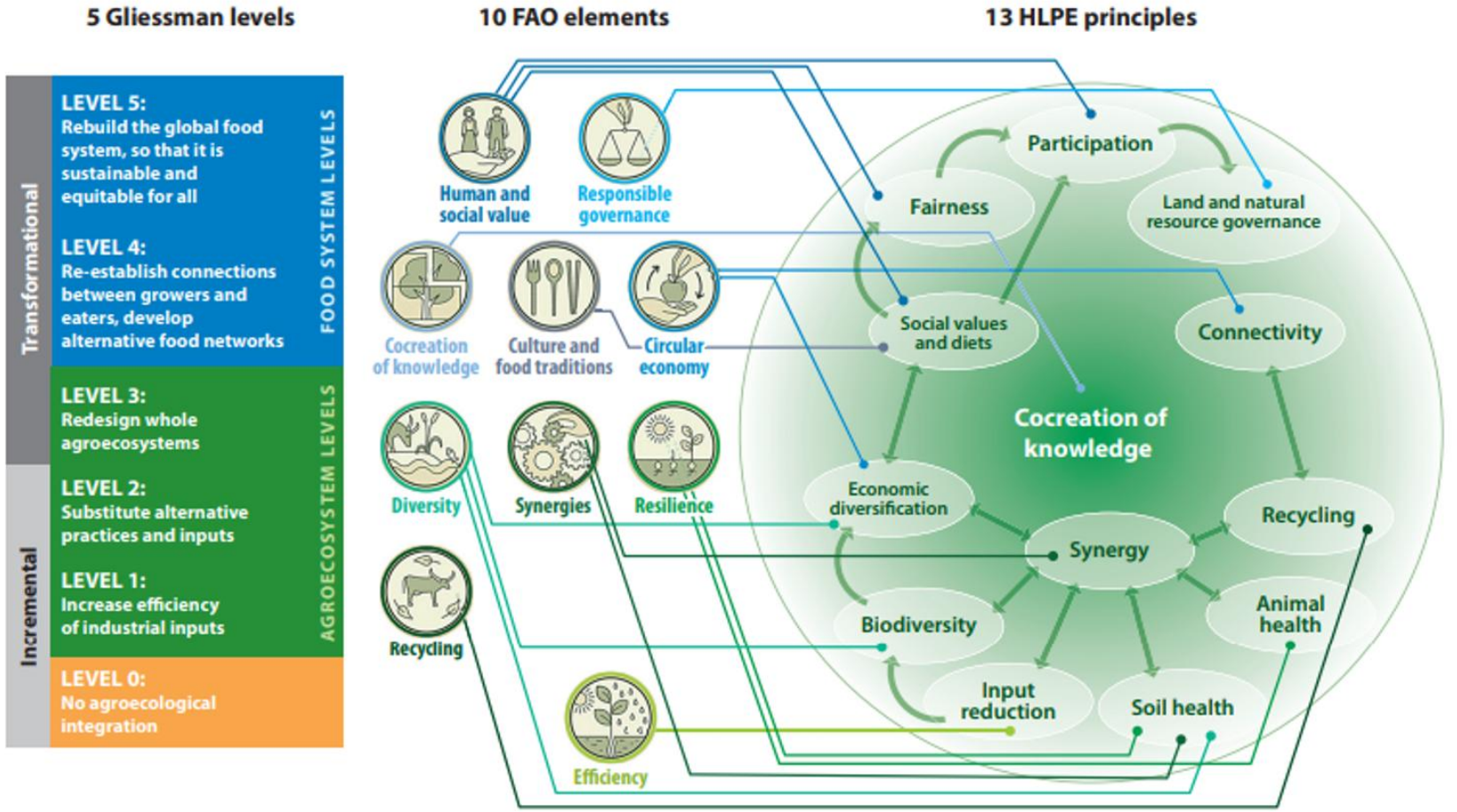


Figure 1

Levels, elements, and principles of agroecology. Note that links between elements and principles are shown through connecting lines, whereas the color of the lines refers to the levels on the graph. Figure adapted with permission from Atta-Krah et al. (2021) and Wezel et al. (2020).

https://www.fao.org/documents/card/en/c/I9037EN/

Agroecology concept in perspective

3

Several pathways to sustainable agriculture – some nuances

- **Main stakeholders:** NGOs, non-profits, and (increasingly) some politicians and development players in the (mostly European) arena. Perceived that traditional agro-industries and commercial farming systems are generally less involved in the debates around agroecology
- **Three pillars of sustainability:** Claims to include environmental, social, and economic sustainability aspects; Criticism: economic aspects might be underexposed

- **General nuances with a global perspective:**

- Broad concept with multiple dimensions
- Reported challenges to translate broad principles into real agronomic practice (‘it can be anything’)
- Criticisms: more ideologic than rational and pragmatic
- Can bring benefits in certain intensive agroecosystems, care must be taken in extensive, low-input systems to not further increase pressure on land and population

Translating principles of Agroecology into practice: some nuances

3

Embracing all dimensions of sustainability: recognising local context and diversity

Agriculture in ACP counties is often characterized by:

- Low-input mixed cropping systems
- Minimal use of pesticides and fertilisers
- Often locked-in into local markets
- Poor capital & technological investments
- Intrinsic poor soil fertility and degradation
- Low levels of mechanization

- In essence already 'agroecological'

➢ Consequently, **low attainable yields** and **large post-harvest losses**
- Further conversion of natural land
- Further expansion of low-input, extensive agriculture

➢ **Poverty** levels, absence of **alternative labour markets**, and **poor investments** in the sector

"Good practice" in the context of sustainable production in ACP countries **may not be the same as the good practice most appropriate for European farmers**!

Agroecology concept in perspective

3

Examples of How Context-Blind Application of Agroecological Principles Can Lead to Unintended Outcomes

➔ Input reduction principle: context matters

AE principles promote reducing mineral fertilizers. In major parts of SSA, decades of nutrient mining left soils severely depleted. Restoring soil fertility is initially required by increased use of mineral fertilizers. African governments have committed to increase fertilizer access and use (cfr. Nairobi Declaration on Fertilizer and Soil Health)

Lesson: reducing inputs is not inherently sustainable – and sometimes in contrast with regional policy efforts - where nutrient deficits are driving land degradation.

➔ Recycling principle: not all recycling practices are sustainable

AE principles encourage farmers to recycle and re-use farm resources, including seed. This has led to the promotion of farm-saved seed without adequate sanitary controls or seed treatment. Recycling seed without proper quality assurance can increase the carry-over of seed-borne pests and diseases, reduce germination and vigor, and result in lower yields. It may also compromise compliance with Sanitary and Phytosanitary (SPS) requirements and limit access to high-value domestic and export markets.

Lesson: recycling resources should not come at the expense of seed health, crop performance, or phytosanitary security.

***Further reading**: Falconnier, Cardinael, Corbeels, Frédéric Baudron, Pauline Chivenge, Antoine Couëdel, Aude Ripoche, François Affholder, Krishna Naudinut, Emilie Benaillon, Leonard Rusinamhodzi, Louise Leroux, Bernard Vanlauwe, and Ken E Giller, 2023, The input reduction principle of agroecology is wrong when it comes to mineral fertilizer use in sub-Saharan Africa, outlook on agriculture, Outlook on Agriculture 2023 52:3, 311-326*

3

Agroecology concept in perspective

From concepts towards practice: Key Takeaways

- A principle that is beneficial in one context may be counterproductive in another; agricultural sustainability depends on local biophysical realities, not universal prescriptions
- Some initiatives to address environmental issues can have devastating effects on a sector when not properly implemented
- Risk of improperly imposing concepts from one context/continent to another
  - Concepts are not **a guarantee for sustainability** in all contexts
  - **Blindly transferring** principles risks **oversimplicity in addressing complex issues**
- Translation of concepts into agronomic practice that make sense locally, using proper indicators, always remains challenging: More technical support, knowledge transfer, research, and innovation is needed
  - All possible solutions should be considered, in order to select 'best-bets' towards true sustainability
- **Integration and adaptation according to the three sustainability pillars to local context is key for <u>sustainability</u>!**
  - Key role for producers and extensionists to decide and determine what concepts & practices are most applicable to their context
  - Can only be achieved when transcending **beyond simplified concepts & principles**

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Thanks

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Thank you

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