

Week-05-L-04

Agricultural Statistics in Practice

Stability & Sustainability Analysis

Sustainability – introduction

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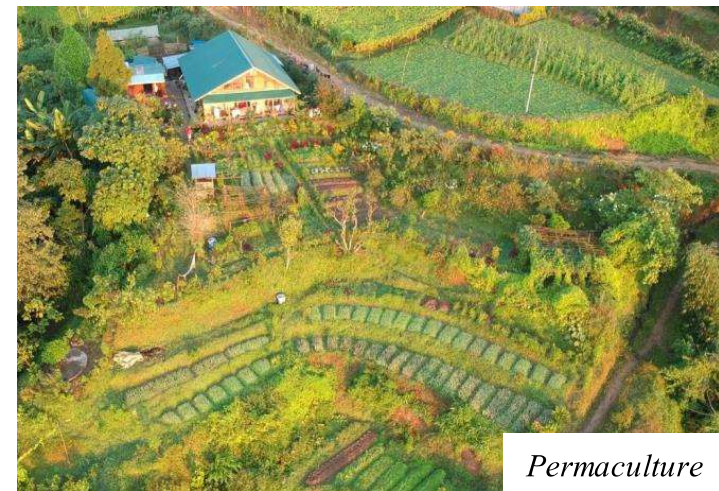
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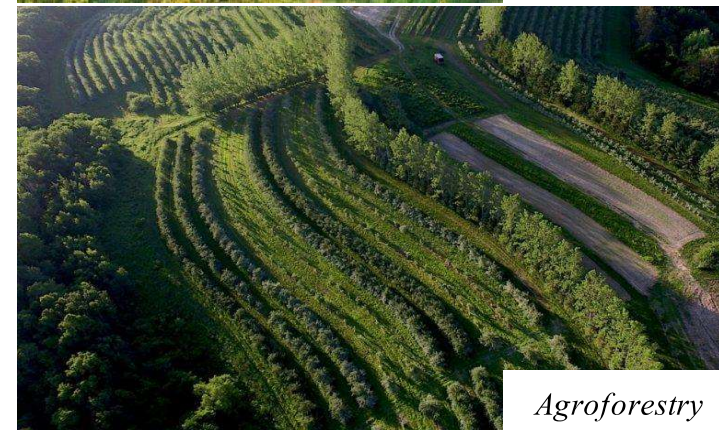


Sustainability

- Sustainable agriculture is a farming practice that aims to meet the current food and textile needs of society while ensuring the ability of future generations to meet their own needs.
- Ecosystem services play a crucial role in understanding sustainable agriculture methods. The adoption of flexible business processes and farming practices is essential to developing sustainable food systems.
- Sustainable agriculture practices include permaculture, agroforestry, mixed farming, multiple cropping, and crop rotation.



Permaculture



Agroforestry



Sustainability

- Sustainability standards and certification systems, such as organic certification, Rainforest Alliance, Fair Trade, UTZ Certified, GlobalGAP, Bird Friendly, and the Common Code for the Coffee Community (4C), exist to promote sustainable agriculture practices.
- Sustainable agriculture practices can help mitigate the effects of climate change caused by food systems, responsible for one-third of anthropogenic greenhouse gas emissions.
- Sustainable agriculture practices can help reduce water scarcity and pollution caused by agricultural processes.
- Sustainable agriculture practices can help prevent land degradation and deforestation caused by agricultural expansion.



Source:
wikipedia.org



Defining

- The USDA defined "sustainable agriculture" in 1977 as an integrated system of plant and animal production practices with site-specific applications that aim to achieve the following long-term goals:
 - Satisfy human food and fiber needs
 - Enhance environmental quality and the natural resource base that supports the agricultural economy
 - Make efficient use of nonrenewable and on-farm resources and integrate natural biological cycles and controls as appropriate
 - Sustain the economic viability of farm operations
 - Improve the quality of life for farmers and society as a whole.
- However, the concept of achieving a sustainable relationship with the land has been a prevalent practice in indigenous communities for centuries before the term was officially introduced into the lexicon.



Source:
nist.gov

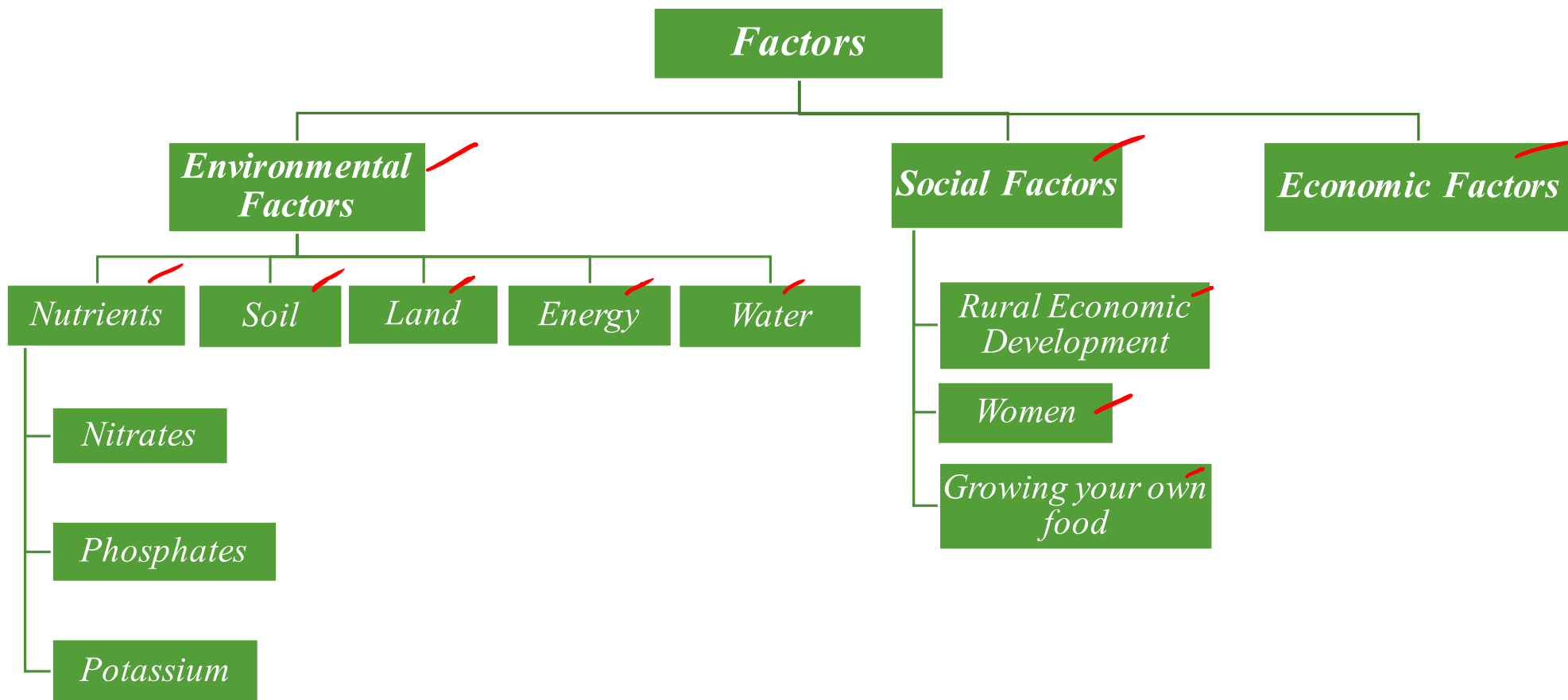


Principles

- The principles associated with sustainability in agriculture include the following:
 - Incorporating biological and ecological processes such as nutrient cycling, soil regeneration, and nitrogen fixation into agricultural and food production practices.
 - Reducing the use of non-renewable and unsustainable inputs, especially those that are environmentally harmful.
 - Leveraging the expertise of farmers to promote both productive land use and farmer **self-reliance and self-sufficiency**.
 - Accommodating biodiversity within human landscapes, known as **reconciliation ecology**.
- Adopting technology and environmentally-focused appropriate technology is often the means by which sustainable practices are implemented in farming.

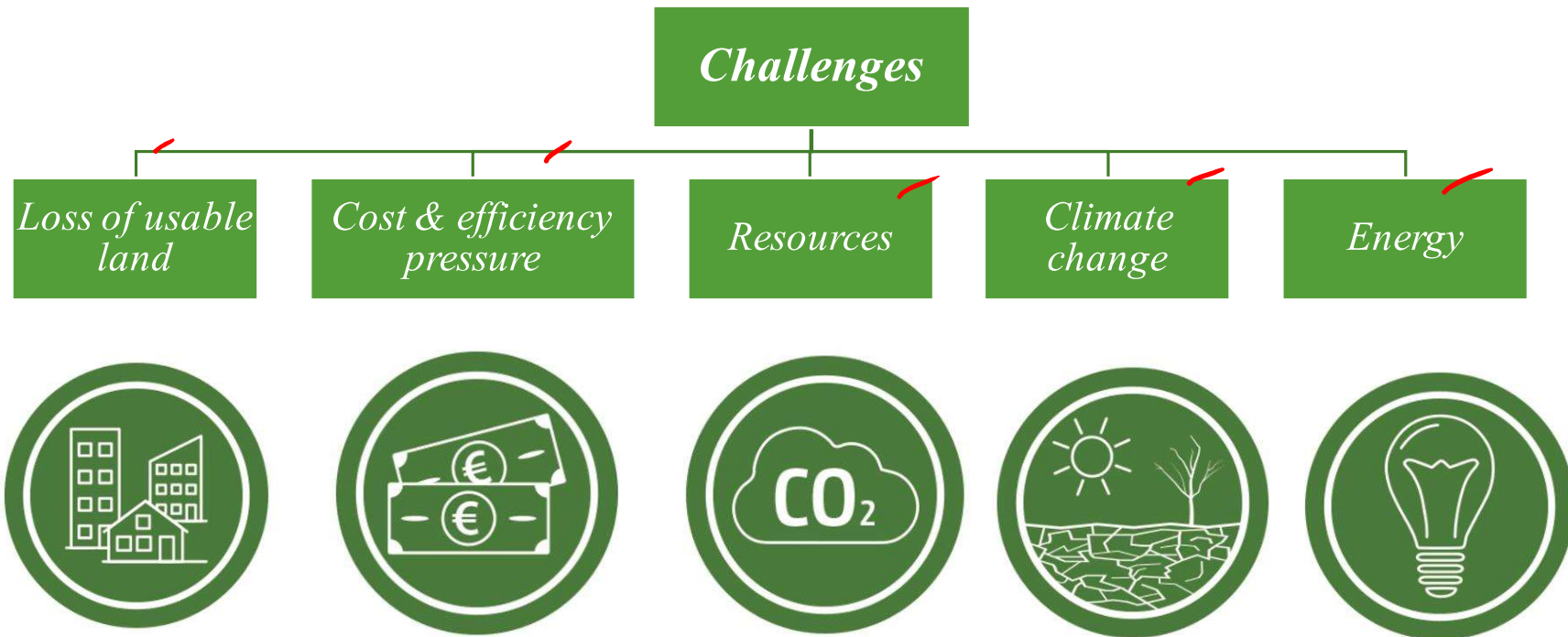


Various Factors





Challenges to Sustainable Agriculture





Sustainability indicators for agriculture

- Sustainability cannot be measured directly because it is too illusive and operates over too long of a period of time.
- We can only identify observable phenomena that, when aggregated, suggest the potential sustainability of our system.
- In a variety of human endeavours, indicators are utilised as benchmarks to evaluate performance.
- For instance, the consumer price index and gross domestic product are indicators of economic performance, albeit rudimentary ones.
- Several criteria can be used to evaluate an indicator's utility.



Sustainability indicators for agriculture

The criterion used characteristics:

- ✓ Is it quantifiable?
- ✓ Is it applicable and simple to use?
- ✓ Does it provide a representative picture?
- Is it straightforward to interpret, and does it reveal tendencies over time?
- Is it adaptable to change?
- Does it have a standard against which to compare it so that users can evaluate the significance of its values?
- Can it be measured and updated for a reasonable price?



Sustainability indicators for agriculture

Regional/national indicators can be categorized into four primary categories:

- ✓ Profitability.
- ✓ Land and water quality for production sustainability.
 - Competencies in management and off-site environmental impacts.
 - Relevancing indicators to producers.



Sustainability indicators for agriculture

Why should farmers pay any heed to sustainability indicators?

- Indicators can assist producers in recognizing changes at an early stage and obtaining necessary guidance.
- Indicators of profitability can highlight strengths and weaknesses and reveal trends.
- Indicators of land and water quality can reveal issues with natural resources that may be "sleepers" and not apparent to the naked eye until they are advanced and difficult to address.
- Managerial skills self-auditing can assist individual business partners in evaluating their talents and planning for professional development.

Thank You



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