Module

07. Evaluation of Agroecosystems

Module Progress:

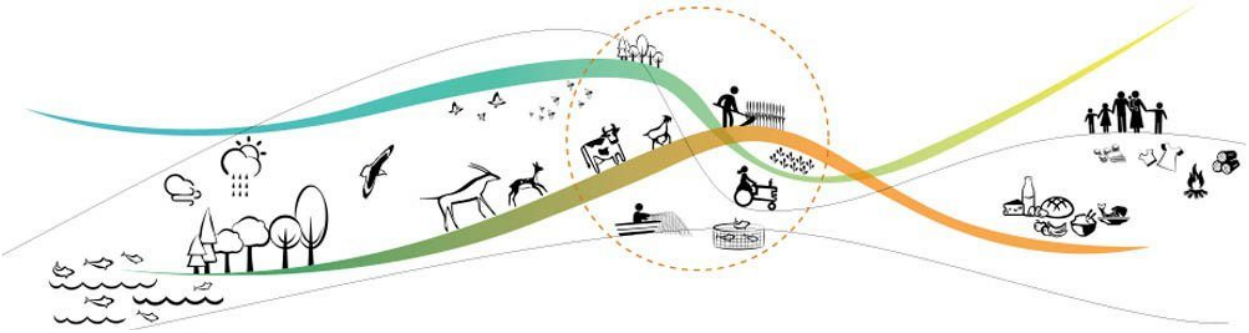
Background Material

Presentation Slides

Paul Rogé (2017) Evaluation of Agroecosystems.

Defining Sustainability

Modified from the the Manitoba Cooperator, originally published on August 2, 2016



The FAO's principles of sustainability say yield should not be the only criterion for farming, and that current intensification is detrimental to crop and animal biodiversity.

The term 'sustainable agriculture' is used often, but what does it mean? The United Nations Food and Agriculture Organization (FAO) recently issued these five principles to define sustainable agriculture.

Improving efficiency in the use of resources is crucial to sustainable agriculture.

Modifying current practices can do much to improve the productivity of many food and agricultural production systems. This principle focuses on the engine of transformation. Further gains in productivity will still be needed in the future to ensure sufficient supply of food and other agricultural products while limiting the expansion of agricultural land and containing encroachment on natural ecosystems.

However, while in the past efficiency has been mostly expressed in terms of yield, future productivity increase will now need to consider other dimensions. Water- and energy-smart production systems will become increasingly important as water scarcity increases and as agriculture will need to seek ways to reduce emission of greenhouse gas. This will impact on the use of fertilizers and other agricultural inputs.

Sustainability requires direct action to conserve, protect and enhance natural resources.

Food and agricultural production depends on natural resources and therefore the sustainability of production depends on the sustainability of the resources themselves. Much can be done to reduce negative impacts and enhance the status of natural resources.

While intensification has positive effects on the environment through reduced agricultural expansion and subsequent limitation in encroachment on natural ecosystems, it also has potentially negative impact on the environment.

The most widespread model of agriculture intensification involves intensive use of farm inputs, including water, fertilizers and pesticides. The same applies to animal production and aquaculture, with subsequent pollution of water, destruction of freshwater habitats, and destruction of soil properties. Intensification has also led to the drastic reduction of crop and animal biodiversity. Such trends in agricultural intensification are not compatible with sustainable agriculture and are a threat to future production.

3. Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable.

Ensuring that producers have adequate access to and control of productive resources, and addressing the gender gap, can contribute significantly to reducing poverty and food insecurity in rural areas.

Agriculture is the most labour intensive of all economic activities. It provides, directly and indirectly, a source of livelihoods for rural households totalling 2.5

billion people. Yet, poverty is excessively associated with agriculture, and agriculture is among the riskiest types of businesses. Agriculture can only become sustainable if it provides decent employment conditions to those who practise it, in an economically and physically safe, and healthy environment.

Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture.

Extreme weather, market volatility and civil strife impair the stability of agriculture. Policies, technologies and practices that build producers' resilience to threats would also contribute to sustainability.

Several signals in the recent past have illustrated the risks that shocks can represent for agriculture, forestry and fisheries. Increased climate variability, whether associated or not to climate change, impacts farmers and their production. On the other side, increased food price volatility impacts both producers and consumers who don't necessarily have the means to cope with them.

Rather than reducing these shocks, increased globalization has probably favoured their rapid transmission across the globe, with increasingly unpredictable impact on the production systems. Resilience therefore becomes central to the transition towards a sustainable agriculture, and must address both the natural and the human dimensions.

Sustainable food and agriculture requires responsible and effective governance mechanisms.

The transition to sustainable production can only take place when there is the right

balance between private and public sector initiatives, as well as accountability, equity, transparency and the rule of law.

Mainstreaming sustainability into food and agriculture systems implies adding a public good dimension to an economic enterprise. Agriculture is and will remain an economic activity driven by the need for those practising it to make profit and ensure a decent living out of its activities.

Farmers, fisher folks and foresters need to be provided with the right incentives that support the adoption of appropriate practices on the ground. Sustainability will only be possible through effective and fair governance, including the right and enabling policy, legal and institutional environments that strike the right balance between private and public sector initiatives, and ensure accountability, equity, transparency and the rule of law.

Reflection Questions

07. Evaluation of Agroecosystems

Back to Lesson

Edit

Your Comment...

Comment