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MODULE 2: **Sustainable Agriculture**

LESSON 4: **Constraining Factors to sustainable Agriculture**

TIME: **1 hour 36 minutes**

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LESSON 4 CONSTRAINING FACTORS TO SUSTAINABLE AGRICULTURE

AUTHOR:

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TIME:

1 hour 36 minutes

OUTCOMES:

By the end of this lesson you will be able to:

- Name factors that are constraining to production in their regions.
- Relate production to the impact of natural factors.
- Understand the impacts of land divisions.

INTRODUCTION:

There are some factors that prevent farmers from practicing sustainable agriculture. These range from lack of knowledge, finances or even support systems. It is important to understand such factors as a way of finding solutions that are affordable, appropriate and effective in such production systems.

Access the case study from the course CD ROM.
See Resource Index | Module 2 | Lesson 4 | Case Study

Identification of Constraining Factors

A number of factors constrain our efforts to carry out sustainable agriculture. Various factors are vital to achieving sustainability and these include the adoption of suitable cultivation practices such as crop rotation, retaining vegetative cover through reforestation programs, agroforestry, use of certified seed, improving cultural practices, clear land ownership, reduction of local fees and improving the financing policy of agricultural schemes. Constraining factors to all these include ignorance, lack of resources, poor policy formulation and implementation, absence of credit finances, attitudes, insufficient technology and information. There are also regional realities in the production systems that limit sustainable practices. These can vary from region to region.

Activity 1

Constraining Factors (20 Minutes)

Work in groups of four and discussions the issues below

1. Refer to the constraints box below and relate the contribution of each term to possible consequences of unsustainability in the environment. Record your discussions.

Constraints Box

Ignorance, lack of resources, poor policy formulation and implementation, absence of credit finances, attitudes, insufficient technology and information, inadequate water, declining soil nutrients, insufficient fodder, lack of agricultural extension services, wrong attitudes, animal diseases, pests, plant diseases, lack of electricity, poor roads, no communication facilities, poor market accessibility, high transportation costs,

Agricultural Activities

Cereals (maize, wheat, rice, barley), pulses (beans, peas, cow peas, pigeon peas, green grams, etc.) tubers (potatoes, sweet potatoes, cassava), dairy, beef cattle, goat herding, sheep farming, vegetables (cabbages, indigenous, kales, tomatoes, French beans, etc.), flowers, fruits (mangoes, citrus fruits, bananas, pineapples, etc.) oil seeds, aquaculture, poultry, sugar cane, etc.

2. For each region in Kenya, match agricultural activities with predominant constraint factors.

Regions of Kenya: North-eastern, Central, Rift valley, Western, Nyanza, Coast, Eastern, Nairobi

Region	Agricultural activity	Constraints to sustainability
North-Eastern		
Central		
Rift Valley		
Western		
Nyanza		
Eastern		
Nairobi		

See the Feedback section at the end of this lesson to see a completed table.

Impacts of Population Dynamics and Land Divisions on Sustainability Practices

We also need to look at how land sub-divisions affect production and sustainability practices. As the population grows and the availability of arable land comes under pressure, traditional practices of land division no longer make sense. In fact they can work against us.

Activity 2

Land Division (20 minutes)

Work in groups of four and discuss:

1. How might population dynamics and land sub-divisions limit sustainable production?
2. How might land sub-divisions enhance sustainable production?

See the Feedback section at the end of this lesson to see a completed table.

Conclusion

It is evident that constraints to sustainable agriculture are influenced by a number of factors. The level of poverty is a strong influencing factor and economic disadvantage, that, for example will result in a lower investment in conservation practices if they are not set within an affordable range. An important factor for sustainability will therefore be attitudes and affordable cultural practices.

References

Abu Baker Elsiddig Ahmed Eltohami. (2000). Constraints of sustainable Agriculture in Mechanized rain fed schemes of Sudan case study of Dali Mechanized Schemes. Available online http://www.ses-sudan.org/Abu%20Baker%20Elsiddig%20Ahmed%20Eltohami.pdf

Duvel, D.H and Botha A.J. (1999). Human constraints to sustainable agriculture in the arid regions of South Africa. The Journal of Agricultural Education and Extension. Vol. 6 Issue 1, pgs 47 – 60.

Kamoni P.T. and S. N. Makokha; Influence of land use practices and socio economic factors on land degradation and environmental sustainability in Gucha District, Kenya. Available online at www.kari.org/biennialconference/conference12/docs/Contents.htm

Feedback

Feedback Activity 1

Regions of Kenya: North-eastern, Central, Rift valley, Western, Nyanza, Coast, Eastern, Nairobi

Region	Agricultural activity	Constraints to sustainability
North-Eastern	Beef cattle, goat herding	Poor policy formulation and implementation, ignorance, inadequate water, absence of credit finances, attitudes, insufficient technology and information
Central	Cereals (maize, rice, barley), pulses, vegetables, tubers (potatoes, sweet potatoes), dairy cows, poultry, pigs, sheep, aquaculture.	Poor policy formulation and implementation, ignorance insufficient fodder, animal diseases, pests, plant diseases
Rift Valley	Cereals (maize, wheat, rice, barley), pulses (beans, peas, cow peas, pigeon peas, green grams, etc.) tubers (potatoes, sweet potatoes, cassava), dairy, beef cattle, goat herding, sheep farming, vegetables (cabbages, indigenous, kales, tomatoes, French beans, etc.), flowers, poultry, sugar cane	Poor policy formulation and implementation, ignorance, lack of agricultural extension services, lack of credit finances, wrong attitudes, insufficient technology and information, animal diseases, pests, plant diseases communication, poor market accessibility, high transportation costs

Region	Agricultural activity	Constraints to sustainability
Nyanza	Cereals (maize, rice), pulses (beans, peas, cow peas, green grams, etc.) tubers (potatoes, sweet potatoes, cassava), vegetables (cabbages, indigenous, kales, tomatoes poultry, sugar cane, aquaculture	Poor policy formulation and implementation, ignorance, lack of agricultural extension services, lack of credit finances, wrong attitudes, insufficient technology and information, animal diseases, pests, plant diseases communication, poor market accessibility, high transportation costs, poor roads
Western	Cereals (maize, rice), pulses (beans, peas, cow peas, green grams, etc.) tubers (potatoes, sweet potatoes, cassava), vegetables (cabbages, indigenous, kales, tomatoes poultry, sugar cane, aquaculture	Poor policy formulation and implementation, ignorance, lack of agricultural extension services, lack of credit finances, wrong attitudes, insufficient technology and information, animal diseases, pests, plant diseases communication, poor market accessibility, high transportation costs, poor roads
Eastern	Cereals (maize, wheat, rice, barley), pulses (beans, peas, cow peas, pigeon peas, green grams, etc.), beef cattle, goat herding vegetables (cabbages, indigenous, kales, tomatoes	Poor policy formulation and implementation, ignorance, inadequate water, absence of credit finances, attitudes, insufficient technology and information
Nairobi	Vegetables, dairy cows, poultry, pigs,	Land, attitudes, insufficient technology and information

Feedback Activity 2

	Impact	Consequence
Population increase	Land subdivisions	Continuous cultivation leading to soil erosion and hence land degradation
Farm-Yard Manure + fertilizer mix	Soil properties and nutrients improved	Reduced erosion and higher yields
Intercropping	Soil nutrient levels maintained	Food variety and reduced soil erosion
Greenhouses for vegetable varieties	Lowered impact on land	High productivity
Zero-grazing	Demand for fodder shifted elsewhere	High milk outputs
Soil and Water conservation practices (ridging, Napier grass ridges, drains, cover crops, improved crop seeds)	Reduced soil erosion, high soil moisture content	Higher productivity
High value agricultural products	Lower pressure on land	High economic earnings