

Level: Forms 4 & 5

CSEC Agricultural Science Syllabus

SECTION A: INTRODUCTION TO AGRICULTURE

3. Challenges in Agriculture

Specific objective(s):

3.1 Discuss the major challenges affecting local and regional agriculture and possible solutions (Part 1)

Objectives

Discuss the major challenges affecting local and regional agriculture and possible solutions under the following headings:

1. Climate and topography
2. Lack of rural infrastructure
3. Limited access to extension services
4. Limited access to financing
5. Issues with praedial larceny
6. Issues with land tenure systems

Climate

- ▶ Climate is the weather conditions prevailing in an area in general or over a long period. -
- ▶ Agriculture is directly affected by climatic conditions. In the Caribbean there are two seasons, dry and wet.
- ▶ In the dry season, high temperatures and a shortage of water affects the irrigation of crops and the foraging of animals.
- ▶ In the wet season there is heavy rainfall, cool temperatures, high humidity and strong winds which include hurricanes.
- ▶ Farmers face damages due to floods, strong winds and pest and disease that favor these conditions.



Source: <https://www.goconqr.com/slide/3073903/the-effects-of-climate-change>

Strategies for coping with Climate

- ▶ Development of communal ponds in agricultural districts.
- ▶ Deployment of irrigation equipment to service farmers in need.
- ▶ Improve drainage and storage network to reduce risks posed by flooding or drought, including dredging of key rivers.
- ▶ Subsidize farmers for pond construction.
- ▶ Active management of key watersheds to ensure supply of irrigation and potable water.



Topography

- ▶ Topography - The topography or external features of the land affects the type and method of cultivation.
- ▶ Hilly areas have shallow topsoil and are prone to erosion and landslips.
- ▶ Steep hillsides make using machinery such as tractors difficult to operate if at all possible.



Source: <https://fineartamerica.com/featured/hillsides>

Strategies for coping with Topography

- ▶ Limit hillside cultivation where possible.
- ▶ Sustainable hillside cultivation practices such as terracing, contour ploughing and strip cultivation.

Terracing



Contour ploughing



Source: <https://www.amazon.com/Photo-Contour-plowing-ploughing-farming/>

Strip cultivation



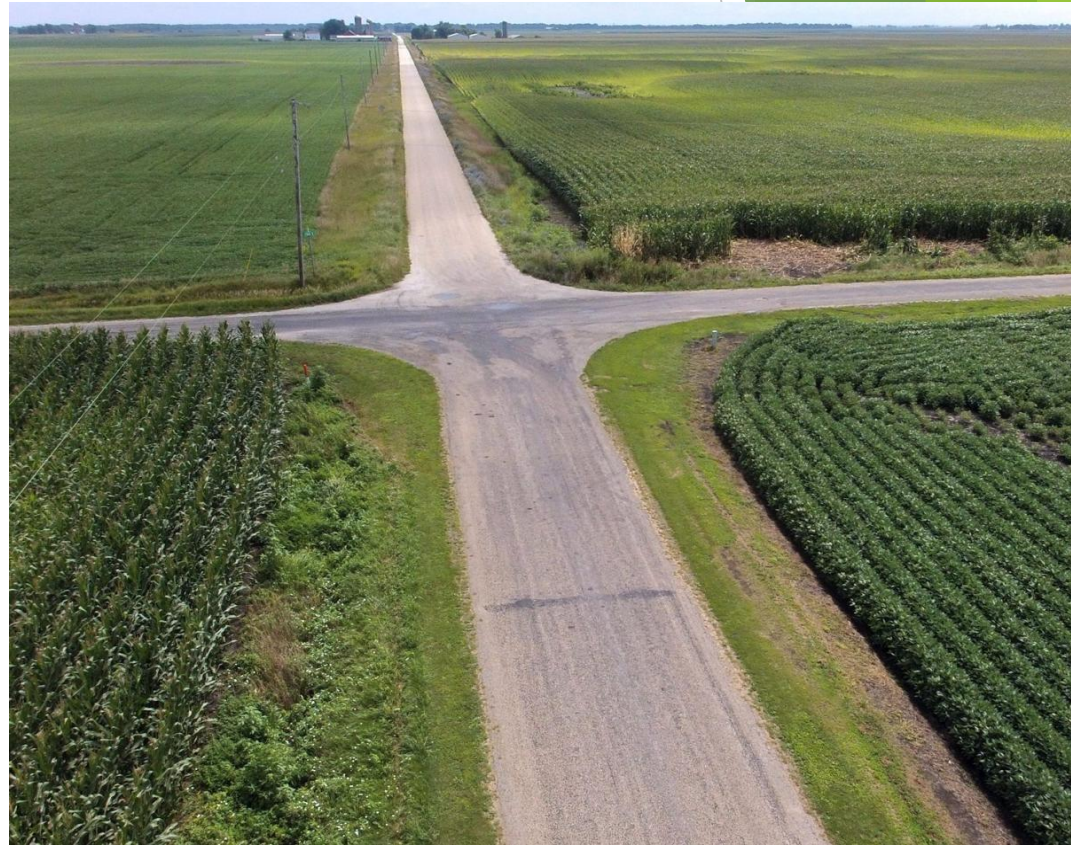
Source: <https://www.crops.org/news/science-news/helping-chinese-farmers-tackle-erosion>

Lack of/poor rural infrastructure

- ▶ Rural Infrastructure - Many rural areas lack essential infrastructure such as transportation, communication systems, water and electricity and public institutions such as schools and hospitals.
- ▶ Agricultural access roads, bridges, drains, electricity and pipe borne water to farm gate grossly inadequate in many areas. Lack of suitable post-harvest facilities in farming districts.

Lack of/poor rural infrastructure- Possible Solutions

- ▶ Farmers must have input in the design, location and construction of infrastructure to ensure appropriateness and functionality.
- ▶ Develop a clear schedule for infrastructure improvement in all farming districts and implement immediately.
- ▶ Each farming district should have adequate post-harvest facilities.



Source: <https://www.news-gazette.com/news/rural-roads>

Limited access to extension services

- ▶ Extension Services -
Extension officers are employed by the Ministry of Agriculture to help farmers become aware of the latest developments in agriculture and to encourage them to adopt modern technology so that their production can be increased.
- ▶ In some countries there is a shortage of extension officers to carry out this function.



Source: <https://www.google.com/search?q=agriculture+extension+officer>

Limited access to extension services- Possible Solutions

- ▶ Hiring additional Extension Officers to work with farmers to provide on-going advice and support in all areas of agricultural production.

Limited access to financing

- ▶ Cost of loans too high for most small farmers to access for increased farm production.
- ▶ Lack of availability of crop insurance against losses due to extreme natural phenomena and business failure.



**Agricultural
Development
Bank**

Limited access to financing-

Possible Solutions

- ▶ Set loan interest rate at 1% for all agricultural production activities.
- ▶ Provide programme of crop insurance.
- ▶ Provide a programme for guarantee of loans to farmers.
- ▶ Provide a grant to landless farmers as seed capital to improve their skills and ability to become more productive farmers.

Issues with praedial larceny

- ▶ This is the stealing of agricultural produce which causes farmers to lose their earnings. A lack of policing and inadequate penalties for those who may be caught stealing leads farmers to become discouraged and give up on farming altogether.



Issues with praedial larceny-

Possible Solutions

- ▶ Introduction of a Praedial Larceny Commission to efficiently and effectively try praedial larceny cases and consequently reduce the length of time for praedial larceny cases, when called in the courts.
- ▶ Issues of praedial larceny need to be treated with greater seriousness in the courts, though special sessions at least once a day at the Commission.
- ▶ Modify relevant legislation so that farmers have the right to protect farm produce, livestock and equipment without undue prejudice to the farmer.
- ▶ Expand, equip and appropriately retrain the Praedial Larceny Squad and deploy in each district.
- ▶ Install fencing around property, use of surveillance cameras/drones to monitor property

Issues with land tenure systems

- ▶ Land tenure - This refers to the rights and conditions under which people hold, own, use, control and enjoy land.
- ▶ Due to fragmentation of land (big parcels of land being broken up into smaller pieces), it makes it uneconomical to operate a farm on these small parcels. In addition, for those farmers who wish to rent land may find that rates of rent are high and can face the possibility of being evicted at short notice
- ▶ The best agricultural lands continue to be converted into housing and other development.

Land tenure systems- Possible Solutions

- ▶ The rental of agricultural state lands must be set at a level to encourage farming.
- ▶ Grant leases to all farmers who have received letter of offer within one year.
- ▶ Approve construction of a dwelling on all leased properties so that the farmer can have a better physical presence on the land to minimise praedial larceny.
- ▶ Provide all utilities to each agricultural property.
- ▶ Establish that all agricultural lands should have an annual lease/rental not exceeding \$200/acre.

EVALUATION

1. Identify 4 challenges affecting local and regional agriculture
2. Explain how climate affects local and regional agriculture
3. Describe the services provided by an agricultural extension officer
4. Explain what is land tenure.
5. Explain what is 'Praedial Larceny' and suggest 3 possible solutions to this issue.

ANSWERS

1. Identify 4 challenges affecting local and regional agriculture

1. Climate and topography
2. Lack of rural infrastructure
3. Limited access to extension services
4. Limited access to financing
5. Issues with praedial larceny
6. Issues with land tenure systems

ANSWERS

2. Explain how climate affects local and regional agriculture

Agriculture is directly affected by climatic conditions. In the Caribbean there are two seasons, dry and wet. In the dry season, high temperatures and a shortage of water affects the irrigation of crops and the foraging of animals. In the wet season there is heavy rainfall, cool temperatures, high humidity and strong winds which include hurricanes. Farmers face damages due to floods, strong winds and pest and disease that favor these conditions.

ANSWERS

3. Describe the services provided by an agricultural extension officer

Extension officers are employed by the Ministry of Agriculture to help farmers become aware of the latest developments in agriculture and to encourage them to adopt modern technology so that their production can be increased.

ANSWERS

4. Explain what is land tenure.

This refers to the rights and conditions under which people hold, own, use, control and enjoy land.

ANSWERS

5. Explain what is 'Praedial Larceny' and suggest 3 possible solutions to this issue.

This is the stealing of agricultural produce which causes farmers to lose their earnings. Possible solutions include:

- Introduction of a Praedial Larceny Commission to efficiently and effectively try praedial larceny cases and consequently reduce the length of time for praedial larceny cases, when called in the courts.
- Issues of praedial larceny need to be treated with greater seriousness in the courts, though special sessions at least once a day at the Commission.
- Modify relevant legislation so that farmers have the right to protect farm produce, livestock and equipment without undue prejudice to the farmer.
- Expand, equip and appropriately retrain the Praedial Larceny Squad and deploy in each district.