كلية معتمدة بالقرار رقم (١٥٤) بتاريخ ٢٠١٦/٥/٢٣

Benha University
Faculty of Agriculture at Moshtohor
Agronomy Department
Land cultivation (Advanced)
Post graduate studies **Code: AG 635** **Time: 2 hours**

Final Exam
First Semester 2019-2020

Answer the following questions:

Question No. (1) : 30 marks
Write about three only:

1- How can you cultivate sandy calcareous soils? **10 marks**

2- What is meant by horizontal agriculture concept? **10 marks**

3- Soil and water resources for horizontal agriculture. **10 marks**

4- Management of the water (Up surface and surface) in new lands. **10 marks**

Question No. (2) : 30 marks
Write about three only:

1- How to improve and enhance the soil properties in the new land? **10 marks**

2- the most important project of the horizontal agriculture. **10 marks**

3- How can you cultivate salinity soils? **10 marks**

4- Conservation of the soil from the water and wind erosion. **10 marks**

GOOD LUCK

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Model answer for land cultivation (Advanced) curse
First Semester 2019-2020
Post graduate studies Code: AG 635

Answer question No. (1) : **30 marks**

Write about three only:

1- How can you cultivate sandy and calcareous soils? **10 marks**

Sandy soil Problems
• Surface roughness the soil
• High filtration(leaching) rate in sandy soil
• Speed lost irrigation water
• Loss fertilizer element with irrigation water
• Easy to be affected by wind
The solutions:
1- Protection from the wind.
2- Reducing water loss.
3- Improving land fertility.
4- Choose the right crops().
5- add compost to sandy soil)20m3/fed)
6- Using new system irrigation(sprinkler and drip irrigation system).
7- Add fertilizer at the right time and in the appropriate quantity for the crop
Favorite crops for Sandy soils:
Barley - wheat - peanuts - sesame - sorghum –Maize - Alfalfa
Calcareous soils Problems
1- Solid surface.
2- Water scarcity.
3- Scarcity of micronutrients.
4- The appropriate crop
5- Fertility imbalance.
6- The soil layer is deaf.
The solutions:
The most important points to note: -
1- Add organic fertilizer and green fertilizer care.
2- Set the dates of phosphate fertilization
3- Adding potassium fertilizers.
4- Not to add nitrogen in the form of ammonia.
5- Spray with the iron element.
6- Good tillage.
7- Converged irrigation
8- Drain good irrigation water.

Crops: Corn, cotton, beets, tomatoes and olives

2- What is meant by horizontal agriculture concept? **10 marks**

Horizontal expansion (new areas cultivation)

- Bringing uncultivated area under cultivation by providing proper technical support, making available affordable technology and adequate water.
- Increasing availability of water by construction of new small and medium dams and popularizing rain harvesting techniques.
- Saving water by reducing water losses through proper water conveyance and efficient irrigation techniques.
- Economical management of ground water pumping through incentives,legislation and awareness.

Horizontal expansion(rehabilitating degarded lands)

- Launch asustained campaign for the use of gypsum in every acre and provide incentives.
- Forbid by law the burning stubs of wheat and rice and encourage the farmers to plough them into the field.
- Encourage the sowing of humus making plants soon after the harvesting of wheat and plough them back into the lands.

3- Soil and water resources for horizontal agriculture. **10 marks**

State of Water Resources

1 –1 River Nile Basin, General Description

Water is one of the most valuable resources on earth, Egypt is fed by the River Nile, not only does Egypt share the Nile water with many countries but it also lies at the end of the Nile's route toward the sea . In 1959 Egypt signed an agreement with Sudan. The agreement specifies that Egypt's share of the Nile water is 55.5 billion M3 /year Egypt

1 - *2 Ground Water of Egypt*

Ground water is the portion of the water beneath the surface of the earth that can be collected with the wells, tunnels, or drainage galleries, or that flows naturally to the earth’s surface via seeps or spring

1-3*Reuse of agriculture drainage water mixing with canal water*

The total reused of agriculture drainage in Egypt 4.5 billion M3 /year)

1 - 4 *Rain Water*

Egypt is a very arid country, where the average annual rainfall seldom exceeds 200 mm along the northern coast. This meager rainfall occurs in the winter in the form of scattered showers, and cannot be depended upon for extensive agricultural production.

1 - 5 Reuse of Treated Waste Water

That could be available for agricultural activities– Reuse of treated agriculture water. - Reuse of treated domestic water.
The use of non-conventional water sources has been practiced for a long time in Egypt. An additional option is desalinization which is being
1 - 6 Desalination of Sea Water
applied in several areas (some costal towns, islands, remote industries sites)

4- Management of the water (Up surface and surface) in new lands. **10 marks**

Management of the water resources (up surface an surface) in new land
Water sources in Egypt
- **The Nile River**
- **underground water**
- **rain water**

The causes of the problem of water loss
- **Population increase**
- **Groundwater lost**
- **Water Pollution**

Reducing water losses
- Lining of canals
- Reducing evaporation from the soil surface
- The application of new irrigation methods
- Croping less water crops

Answer Question No. (2) : **30 marks**

Write about three only:

1- How to improve and enhance the soil properties in the new land? **10 marks**

Inevitability of Horizontal Expansion

• Imbalance between the rate of population increase and the cropland rate of increase is, in itself, animportant indicator of the need to add new lands through horizontal expansion.

• The major objective of horizontal expansion is to increase production to meet the need for food, feed and fibers for the increasing population.

• It also helps provide more work opportunities, alleviate population pressure on the old cities and reduce loss of croplands to urban development.

• It creates a new, developed social system in the new communities in a manner that enables them to establish a more effective agricultural sector capable of attracting investments and of restructuring agricultural production.

2- the most important project of the horizontal agriculture. **10 marks**

Cultivation of one million and half Fadden's

The project aims to reclaim and cultivate one million and half fattens in order to create an integrated society inside the new lands and achieve a comprehensive agro-industrial development

2-2-*South Western development project, Toshka*

The South Western Development Project, imprecisely called Toshka
project for short, is located in the southwest of Egypt. 0.97 Million ha of agricultural land are to be reclaimed in the Southern Valley. The project aims to create 2.8 million jobs

2-3-*Sinai development project; El-Salam*

The agriculture plane of the project is divided into several phases. In phase I, about 168000 ha aim to be cultivated with the utilization of 3 km3year1 of freshwater. That water should be obtained from El-Salam canal, which formed as 50% of recycled water and 50% of Nile water

2- 4-*Cultivating Ten Thousand Fadden's at Farafra:*

Within the framework of the celebration held, the first 40 groundwater wells in Farafra area, dug inside youth-dedicated arable.

3- How can you cultivate salinity soils? **10 marks**

Saline soils Problems: -
Salting sources: -
1- erosion factors affected on saline soil .
2- Transfer from saline soil to another.
3- result of evaporation from the soil surface.
.The salts are collected at:
• In dry areas.
• Low areas.
• With high ground water level.
• Increase the time between irrigation
• In case of draining bad water in the soil
• Use salt water for irrigation
The solutions:
• Mix the salt water with good water
• Lower the water level
• Replace the sodium with calcium
• Addition of agricultural gypsum
• Protection from salting again.
• Cultivation of crops that bear salinity
Crop management
• Cotton 7.7
• Sugarbeet 7.0
• Sorghum 6.8
• Wheat 6.0
• Soybean 5.0

• Rice 3.0
• Maize 1.7
• Sugarcane 1.7

4- Conservation of the soil from the water and wind erosion. **10 marks**

Conservation of the soil form the water and wind erosion

Definition of erosion

A natural process that occurs by water or wind,

Factors soil erosion :

- topographic
- geologgical
- hydrological
- climate
- soil
- wind
- ice

Types of drift

Wind drift

Is soil erosion caused by wind , affected on surface .

Water drift

It is soil erosion caused by water, anathor affected on surface .

Soil erosion damage

- Increase the sandy area.
- Reducing green areas
- Decreased soil fertility.
- Remove the vegan in the soil
- Increased soil pollution

Methods of protecting the soil from erosion:

- Agriculture plants(planting all the time).
- Discontinue stubble plant in the soil .
- Building dams to hold water.
- Leveling of sloping areas
- Cultivation of perennial trees.
- Not grazing.
- Increased soil fertility.

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