



Agricultural Biotechnology Program

Agronomy 3 (Crop Production) AG 0103

(3 CREDIT HOURS)

LECTURE 6
(Forage Crops)

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Rules



Quiz

1. What is a legume?
2. List two crop plants that are members of the legume family

Student Learning Objectives

- Identify forage crops and its uses.
- Identify areas where forage crops is grown.
- Describe forage crops plants.
- Describe the soil and climatic requirements of forage crops plants.
- Explain the cultural practices of forage crops production.

What are forage crops?

- Crops grown for animal feed.

Alfalfa

Field corn (silage)

Clover

Cowpea

Soybean



Forage crops are harvested directly for animal feed.



What is forage?

- Vegetable matter in a fresh, dried, or ensiled state.
- What can you do with forage?
 - graze it
 - machine harvest and store it
 - it's animal feed
- Forage allows you to raise an agricultural crop on land where other crops cannot be produced.

- Forage crops mainly consist of members of the Fabaceae (Leguminosae) and Poaceae (Gramineae).

Gramineae forage crops





***Sorghum bicolor*,**
grain sorghum

Sorghum bicolor, cane sorghum



Johnson grass, *Sorghum halepense*



Legume forage crops



Alfalfa or lucerne, *Medicago sativa*





Cowpea



Red Clover



Egyptian Clover
(*Trifolium alexandrinum*)

Egyptian Clover (*Trifolium alexandrinum*)

King of Forage Crops

- Berseem (*Trifolium alexandrinum* L.) is one of the most important leguminous forages in the Mediterranean region and in the Middle-East. Berseem is an annual, 30 to 80 cm high.
- Clover is the most important forage crop grown in Egypt. It is grown as a main crop in all governorate of Egypt. It is best adapted to the environmental condition of Egypt during winter.

Climatic requirements

- Clover is best adapted to cool climates but it is sensitive to frost. For this reason it is grown in Egypt in winter where the temperature is moderate during growth season.
- Good germination of clover seeds requires about 15-30 c, but higher temperature, i.e. 37 c decreases the germination ratio of miskawi variety. On the other hand Fahl variety seeds and seedling are tolerant in higher temperature.
- Q: write notes about, clover climatic requirements?

Soil conditions

- Heavy clay, loamy and well drained soils of high fertility are best suited for growing clover. It is not adapted to sandy and alkaline soils.
- Egyptian clover tolerates relative salinity of soils.
- Q: write notes about, clover soil conditions?

Time of planting

- Clover seeds are sown at time from 15 September to 15 November. Earlier planting of clover seeds decreases the germination ratio

Seeding rates

- The rate of seeding varies from 20-25 kg/fed, depending on the variety used and soil fertility.

Clover varieties

There are 4 chief varieties of Egyptian clover grown in Egypt.

- Miscawi: It is the most important and wide spread variety. It makes a vigorous rapid growth, plants produce many basal branches, and yields much amounts of green food.
- Khadrawi: it is not largely spread. It is give one cutting more than Miscawi
- Q: write notes about, clover varieties?

Clover varieties

- Fahl: it is rarely used in the Delta, but it is often sown before cotton or Sugar cane in Upper Egypt. Is grown mostly in the basin lands and gives only one cutting.
- Saidi: it produces two cuttings

Fertilization

- Usually Egyptian clover is not fertilized with N but responds' to phosphatic fertilizer. Calcium superphosphate is applied to clover plants either before or after sowing but before first irrigation at a rate of 200 kgs/fed

Irrigation

- Egyptian clover is not irrigated in basin. Fahl variety is given one irrigation whereas Saidi variety is given 4 irrigations. Eight to nine irrigations is given to Miscawi variety. Plants must be irrigated 8-10 days before cuttings and 6-8 days after them
- Irrigation is prevented after May 10th in Egyptian clover.

Methods of planting

- The methods of planting depend on the locality and preceding crops etc.
- In the basins: the seeds are broadcasted on the mud after the drainage of water.
- In permanent irrigated land the method of planting depends on the preceding crop.



Harvest

- Clover plants are grazed or cut and given to animals.
- The first cutting is taken 65-70 days after sowing and the second cutting is taken 45-50 days after the first cutting.
- Then the plants are cut 30-40 days after the second cutting and the 4th cutting is taken 35 days after the 3rd one.

Grazed



Cut and given to animals



Yield

- The yield of green materials used forage differs from one variety to another, miscawi variety gives 3-4 cuttings the weight of one cutting ranges from 6-7 tons.
- On the other hand Fahl produce one cutting with 7-8 tons weight fresh case or 1.5 tons as hay.
- Saidi produce 2 cutting every cutting weighs 5.5-6 tons and hay from the second cutting with one ton weight.

Seed production

- Fahl variety plants are allowed to flower without cutting. Seeds are taken six months after sowing.
- In the Saidi variety, plants are allowed to flower and give seeds after taking the first cutting.
- Miscawi plants produce seeds after taking 2-3 cuttings.
- When seeds mature plants are harvested in the early morning . Faddan of clover produce 1-1.5 ardab seeds (one ardab = 155 kg)
- Q: write notes about, clover seed production?



The End

