Chapter 4

3- Alfalfa Lucern

Prepared By

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Introduction:

***Alfalfa is the most cultivated forage legume in the world*. Worldwide production was around 436 million tons in 2006 (FAO, 2006). It is perennial (3-4 years), persistent, productive and *drought tolerant forage legume which contains 15% crude protein with 72% dry matter digestibility*. It supplies green fodder for a longer period (November - June) in comparison to berseem (December - April).**


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ALFALFA

Species Groups Cultivars of Alfalfa:

1-Common alfalfa: includes types of fast and slow recovery, depending on its origin.

2-Variegated alfalfa: it very hardy and relatively slow recovery after cutting.

3-Turks alfalfa: have a great force winter, its cultivars store large amounts of carbohydrates before fall dormancy

4- Non-resistant alfalfa: The cultures of this group are more erect than before and have no dormancy in late autumn.

5-Rhizomatous alfalfa: most cultivars are characterized by heavy and aggressive root, which penetrates deeply into the soil.

Varieties growing in Egypt:

1-Baladi 1 variety cultivate in sandy soils.

2-Sewa 1 variety cultivate in North Coast region soils.

3-Ismaillia 1 variety cultivates North Delta soils.

Climatic requirements:

Lucerne is adapted to relatively dry conditions and it may tolerate heat as well as cold. The optimum temperature for growing alfalfa is 15-25C°. *Increasing temperature than the optimum required more water irrigation and reduce forage yield*, in addition, decreasing temperature less than 10C° reduce plant growth and reduce final forage yield per unite area.

Soil:

Lucerne prefers a fertile soil which is rich in organic matter, calcium, phosphorus and potash. The suitable soil for growing alfalfa is clay soils. Alfalfa plants can tolerate soil acidity to pH 6.8.

Sowing time:

The best sowing time of the crop in Egypt is two times per year the first one on March and April and the second one on September and October in Egypt. The suitable date is the first date due to increase in germination percentage.

Sowing Methods:

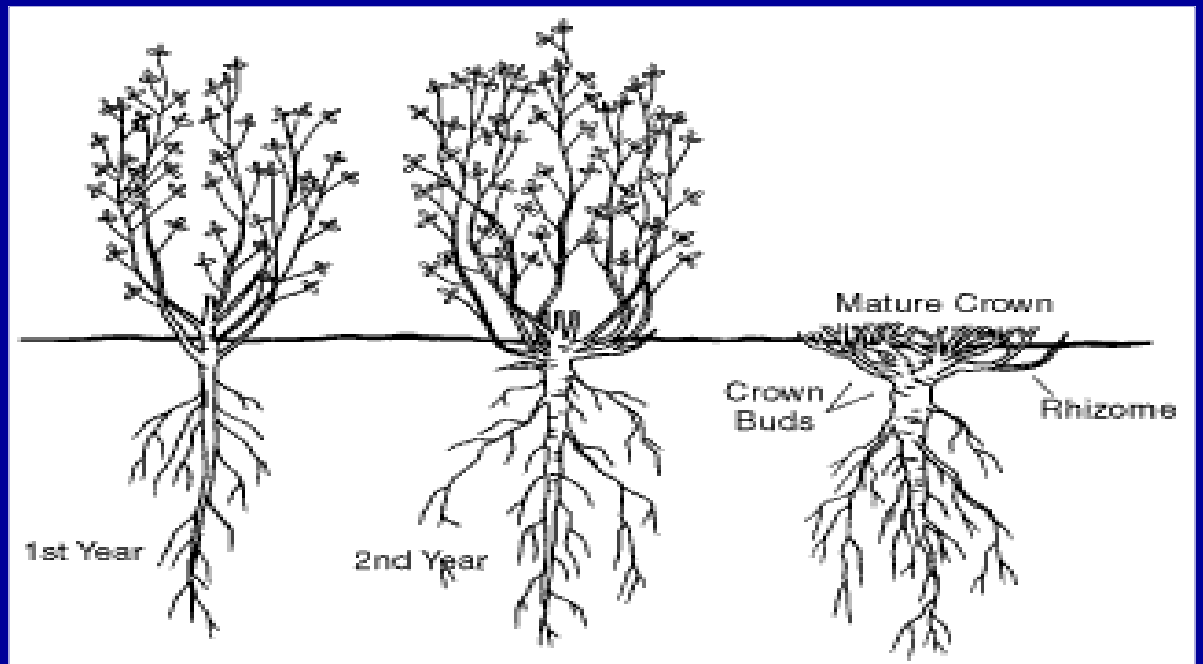
Alfalfa sowing by broadcasting (Ala El-Lama) in water presence after soil levilling (settlement) for increasing seed germination in clay loam soil but in sandy soil alfalfa will be sown using drill planter 15 cm between rows. Seeding should be done in rows at a seed rate of 18 kg per feddan. Because of their hard seed coat, seed should be soaked overnight in water before seeding.

Irrigation:

Alfalfa need 20 irrigation times during a year according to soil type. ***The first irrigation after one week and then irrigate each ten days intervals*** ***may reduce of increase according to temperature of weather.*** **In sandy soil the first irrigation after 3 days from planting. Irrigation intervals for each irrigation are 4-6 days intervals.** ***The suitable soil moisture environment for forage crops where objectives tend to be luxuriant vegetative growth, higher dry-matter yield and better forage quality have been worked out.***

Harvesting:

Alfalfa plants will be cut when it was 20-25 cm above soil surface 5-6 cm. **Alfalfa give 8-9 cuts during a year, the first cut should be taken at 55-65 days after sowing and then plants cuts after 35-40 days intervals during a year with weight an average 5 ton for every cut. The crown is area of cuts taken**


Mature Crown
Crown Buds
Rhizome
1st Year
2nd Year

Hay making:

The principle of hay making is to preserve nutritional value of forages through drying it to a level at which the activity of microbial decomposers is inhibited. In Egypt, sunlight is available in abundance, which enables farmers to dry the green forage in open sunlight and thus making hay more economical. The hay making leads to reduction of moisture content to 10-20%, which inhibits the enzyme activity in the plant to be conserved.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Factors affecting the quality of hay:

The following factors affecting the quality of hay are important and should be given due consideration:

(i) plant species,

(ii) stage of harvest,

(iii) leaf : stem ratio,

(iv) chemical composition,

(v) physical form,

and (vi) deterioration during storage.

Select the most appropriate answer from the following questions.

1. Alfalfa plants is an annual leguminous fodder crop and has % crude protein

a)10%. b) 12%. c) 15%. d) 20%.

2. The optimum temperature for Alfalfa germination is

a)10-15°C. b)10-20°C. c) 15-25°C. d) 25-30°C.

3. Alfalfa optimum sown method in sand soils is

a)Drill planter 15 cm between rows

b) broadcasting in water presence

c) broadcasting without water

d) hand dilling.

4. The optimum Alfalfa sowing date is

a) mid- September. **b) March and Aplril.**

c) End-November. **d) February and January.**

5. Alfalfa growth and production are best in

a) clayey soils. b) calcic terrarosa.

c) deep black cotton soil. d) sandy soils.

6. Alfalfa give number of cuts per year abouts

a) 8-9 cuts. b) 9-10 cuts. c) 10-11 cuts. d) 11-12.

7. The type of Alfalfa are generally very hardy and relatively slow recovery after cutting is

a) common alfalfa. b) Turks alfalfa.

c) hybrid alfalfa. d) Variegated alfalfa.

8.The first cut of Alfalfa should be taken after

a) 35-40 days. b) 40-45 days. c) 45-50 days. d) 55-65 days.

9.Cuts after the first one of Alfalfa should be taken by

a) 20-25 days. b) 25-30 days. c) 30-35 days. d) 35-40 days.

10.Optimum seeding rate of Alfalfa in is

a) 15-18 Kg /fed. b) 18-20 Kg /fed.

c) 20-25 Kg /fed. d) 25-30 Kg /fed.

11. Alfalfa cultivars sown in North Coast region is

a) Sewa 1. b) common alfalfa. c) baladi. d) Ismailia 1.

Put sign True or False before the following sentences:

1-( ) Alfalfa is the most cultivated forage legume in the world, drought tolerant forage legume which contains 15% crude protein.

2-( ) Most rhizomatous alfalfa cultivars are characterized by heavy and aggressive root.

3-( ) Increasing temperature than the optimum required during alfalfa grown; more water irrigation and reduce forage yield

4-( ) Alfalfa first irrigation after one week and then irrigate each ten days intervals may reduce of increase according to temperature of weather.

5-( ) The suitable soil moisture environment for alfalfa forage where objectives tend to be luxuriant vegetative growth, higher dry-matter yield and better forage quality have been worked out.

6-( ) Alfalfa plants will be cut when it was 20-25 cm above soil surface 5-6 cm.