Chapter 4

2-Egyptian Clover Berseem

Trifolium alexandrinum L.

Prepared By

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Introduction:

Berseem (*Trifolium alexandrinum*) is an annual leguminous fodder crop. It provides fodder with high tonnage over a long period from November to May in 5 - 6 cuts. It has 20-24% crude protein and 70% dry matter digestibility. It is very good soil builder and adds about 0.38-0.46% organic carbon, 15 -26 kg available phosphorus and 45 kg available nitrogen to the soil.

Egyptian clover varieties:

There are two types of Egyptian clover; the first single cut type and the second multi cuts type:

1-The first type single cut type: cultivars has one vegetative growth periods i.e. El-Fahl cultivar give one cut weighted 8-9 ton per fed.

2-The second multi-cut type El-Mesqawi cultivars: it is a fast growing variety and attains plant height of about 75 cm at flower initiation stage. It contains about 20 per cent crude protein on dry matter basis at early flowering stage. Cultivars has multiple vegetative growth periods cultivars give 3-4 cuts weight of each 6-7 ton per fed.

Which include the following varieties:

1-Sakha 4 variety cultivate in North and west Delta region soil.

2-Gezia 1 variety cultivate in sandy soils.

3-Gezia 6 variety cultivate in Middle and North Delta regions.

4-Gezia 10 variety cultivate in Delta regions.

5-Serw 1 variety cultivate in soils affected by salinity.

6-Gezia 15 variety cultivate Middle and Upper Egypt regions.

Climatic requirements:

Best productive crop can be obtained between 15-25°C temperatures. Egyptian clover El- Mesqawy varieties germinate at temperature between 15-30C° and germination percentage reduced with higher temperature i.e. 37C° but El-Fahl variety did not affect by increasing temperature to 37C°.

Egyptian clover need a moderate temperature for vegetative growth and increases in temperature push plants to early flowering reflected decreases in number of cuts.

Soil:

Berseem can be grown on all types of soils except sandy soils. Well-drained clay loam soils rich in calcium and phosphorus are ideally suited for its cultivation. The crop can be grown successfully on alkaline soils having good water retention capacity. It grows well in medium to heavy soil and is tolerant to soil alkalinity. The suitable soil for growing Egyptian clover is clay loamy soils.

Field preparation:

The seeds being very small, berseem requires a fine seedbed. One deep ploughing with soil turning plough and 2 harrowing are essential. The field may be laid out in to smaller beds of convenient size according to topography and source of irrigation water.

Sowing Date:

Berssem can sow on Mid-September to end of October. If the seedling is delayed much in mid-hill zone, the first cutting would be obtained after three months. The suitable sowing date of Egyptian clover on First to Mid-October and we advise to not sowing Egyptian clover early or lately than this date to avoid shortage of fodder yield per unite area.

Sowing Rate:

Sowing should be done by broadcasting the seed at the rate of 18 kg per feddan in standing water. The optimum of Egyptian clover sowing rate 12kg/fed for El-Fahl variety and 18 kg/fed for El-Mesqawi varieties i.e. Sakha 4, Gezia 1, Gezia 6, Gezia 10, Serw 1 and Gezia 15.

Seed treatment:

Seed treatment with *Rhizobium trifolli* culture is essential, when the berseem crop is to be grown first time in the field. Before treating the seed, it should be first soaked into fresh water for about 8-12 hours.

Sowing method:

Seed should be sown in beds of convenient size by broadcast method after flooding the beds with 5-6 cm deep water. ***Before sowing seeds, because of their hard seed coat, seed should be soaked overnight in water before seeding.*** **The crop should be re-irrigated after 5-6 days of sowing when germination is complete.** ***Egyptian clover sown by broadcasting (Ala El-Lama) in water presence after soil levilling (settlement) for increasing seed germination***

Irrigation:

Egyptian clover Cv. El-Fahl should be irrigating by one irrigation only during it life, **but other varieties of El-Mesqawi berssem will be needed 9-10 times of irrigations during the entire crop season. First irrigation is very important and should be given one week after the seedling.** *Normally the crop should be irrigated after each cutting.*

Fertilization:

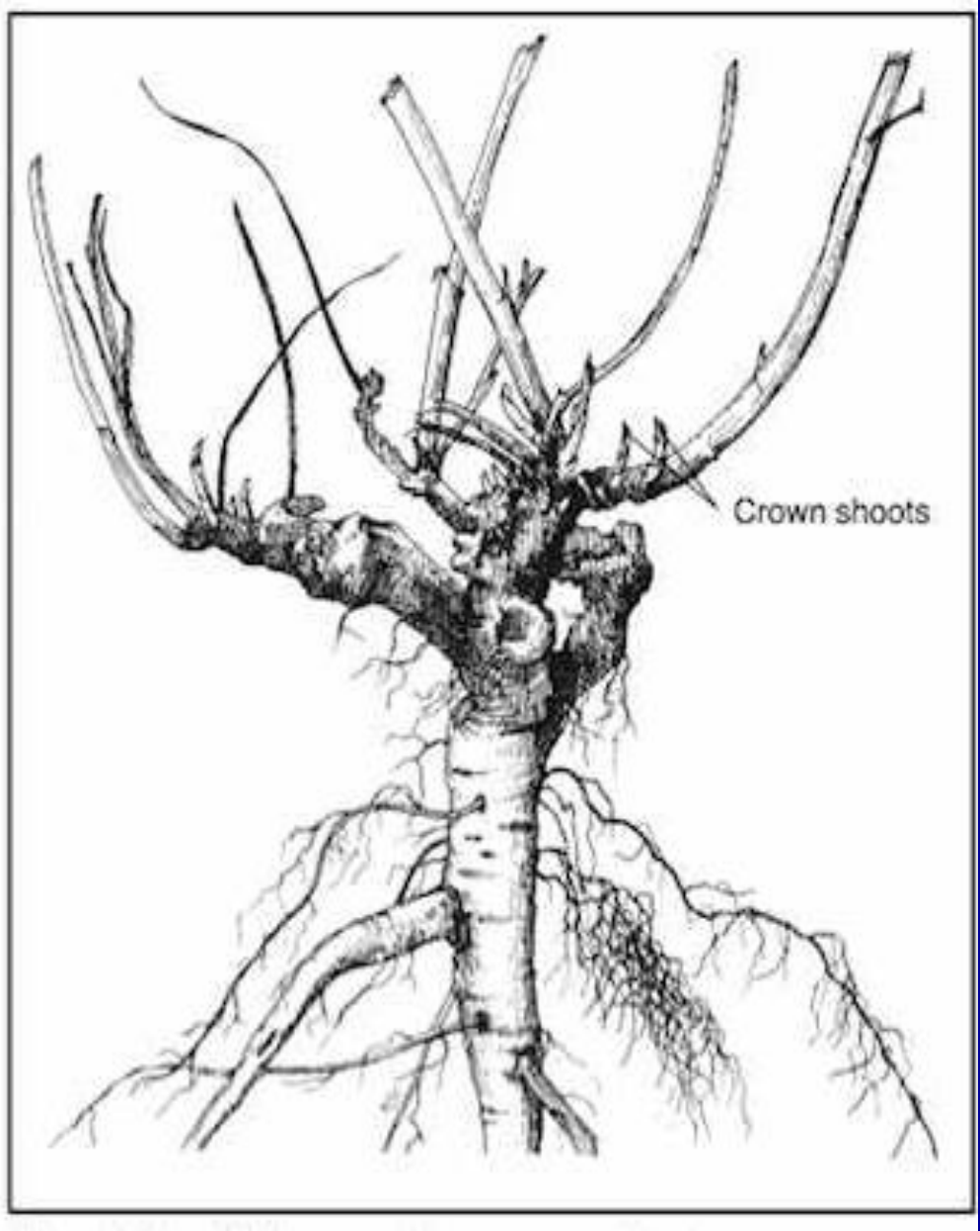
Egyptian clover did not fertilized with nitrogen except a starter dose 10-15 kg N/fed from Calcium Nitrate in the beginning of vegetative growth. The suitable phosphorus fertilizer must be at rate of 30Kg P_2O_5/fed i.e. about 200 kg from Calcium superphosphate before (El-Mohaia) irrigation.

Harvesting:

The first cutting should be taken at 50-55 days after sowing of crop. The subsequent cuttings should be taken at 25-30 days interval. The number of cuts depends upon rate of growth and temperature during the life cycle of the crop. ***The stage of plant development is generally a reliable predictor of energy reserve status and when the plants should be harvested. A harvesting delay after the new crown shoots begin to grow can delay regrowth and reduce yield of the next harvest.***

Fodder Yield:

Type of Egyptian Clover	El-Fahl	El-Saiedy	El-Mesqawy
Number of cuts	one	2-3	3-4
Average cut weight /fed	8-9	5-6	6-7


Crown shoots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Seed Yield

The final cutting should not be taken later than the end of April if crop is to be left for seed purpose. Weeds should be eradicated, irrigate frequently during the formation and ripening of seeds. On an average, 2-3 ardab per feddan seed may be obtained; weight of one ardab is 157 kg/fed.

Put sign True or False before the following sentence:

1-( ) Berssem normally the crop should be irrigated after each cutting.

2-( ) Egyptian clover Cv. El-Fahl should be irrigating by one irrigation only during it life.

3-( ) Before sowing berssem seeds, because of their hard seed coat, seed should be soaked overnight in water before seeding.

4-( ) Egyptian clover sown by broadcasting (Ala El-Lama) in water presence after soil levilling (settlement) for increasing seed germination

5-( ) Egyptian clover need a moderate temperature for vegetative growth and increases in temperature push plants to early flowering reflected decreases in number of cuts.

Select the most appropriate answer from the following questions.

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

a)10-12%. b) 12-18%. c) 20-24%. d) 25-30.

2. The optimum temperature for Berssem germination is

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

3. Berssem cultivar sown in sandy soil is

a)Serw 1 b) Sakha 4 c) Giza 1 d) Giza 15

4. The optimum berssem sowing date is

a) mid- September. b) First to mid-October.

c) End-November. d) First December.

5. Berssem growth and production are best in

a) clay loamy soils. b) calcic terrarosa.

6. Berssem cultivar give only one cut is

a) El-Fahl. b) Giza 15. c) Giza 1. d) Serw 1.

7. Berssem Giza 15 cultivar has give number of cutting is

a) 1-2 cuts. b) 2-3 cuts. c) 3-4cuts. d) 4-5 cuts.

8.The first cut of berssem El-Mesqawi type should be taken after

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

9.The third cut of berssem should be after the second cut by

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

10.Optimum seeding rate of berssem in is

a) 12-18 Kg /fed. b) 18-20 Kg /fed.

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

11. Weight of ardab of berssem seed is

a) 127 kg. b) 137 kg. c) 147 kg. d) 157 kg.