Cultivation of BERSEEM (*Trifolium alexandrinum*)
Terminology

**Agrostology** is a specialized discipline of agronomy for the study of forage crops and their management and utilization.

**Pasture** is used for grass or other plants grown for feeding the grazing animals.

**Fodder** is defined as any plant that is cut before being fed to animals in the green stage or after converting hay and silage.

**Forage** the term is used broadly to means all the plants material that are eaten by the herbivores animals. Or It is the edible parts of the plants other than grains that provide feed for animals or can be harvested for feeding.
• **Grazing**, when animals eat or partially defoliate any kind of standing vegetation it is called as grazing.

• **Silage**, forage preserved by field crops dried up to a moisture level, to prevent microbial activity, that leads to silage. Or **Hay** is an animal feed, produced by dehydrated green fodder to a moisture content of about less than 15% so that the biological processes do not proceed rapidly.

• **Haylage**: It is called no moisture silage, hay crop silage or drylage is the combination of hay and silage in which moisture in the grass or forage is reduced 40 to 60 % by cutting and wilting in the field before it is chopped and stored in the silage.

• **Herbage**: It is a collective term for the above ground succulent biomass of forage crops fed to livestock.

• **Straw**: Dry stocks of cereals after threshing and removing the seeds.

• **Stower**: is a term for cereal stubbles and broken pieces of threshing.
Botanical description

- Common Name: BERSEEM
- English Name: Egyptian Clover
- Scientific Name: *Trifolium alexandrinum*
- Other Spp.
  - White clover
  - Subterranean clover
  - Red clover
  - Crimson clover
- Family: Leguminosae (Fabaceae)
- King of forage crops
Description

- Berseem is a low shrubby annual growing 60 - 90 cm high.
- The main, succulent stem gives off branches terminating in two or three leaves.
- These stems become fibrous after the flowering stage.
- Leaves are small, oblong and rounded at the extremities, bright green and slightly hairy.
INTRODUCTION:

- **BERSEEM** *Trifolium alexandrinum* is an annual leguminous fodder crop.

- One of the most suitable fodder crops for areas below 1700 m altitude with irrigation facilities.

- Remains soft and succulent at all stages of growth.

- It can be grown without irrigation in areas with high water table and under water-logged conditions.

- Indigenous to Egypt.
CHARACTERISTICS:

- Winter-annual legume
- Native to the Mediterranean region
- N content 2.6%
- Flowers May-June
- Tolerates close mowing
- Does not self-reestablish: requires annual sowing
- Does well on deep alluvial soils
- Tolerates alkalinity and salinity
USES:

1. As a grazing crop
2. As a haying crop
3. As a silage crop

Importance of forage crops

India is basically an agricultural country and about 70 per cent of its people live in villages. Their livelihood is dependent mainly on agriculture and animal husbandry. Though India has a huge livestock population of over 582 million, besides poultry, production of milk and other livestock products are the lowest compared to the production in the world.
As a grazing crop:-

- Berseem clover needs a relatively weed-free, firm seedbed for optimum germination.

- It does best under rotational grazing and must be grazed before it flowers or it loses productivity.

- It should not be grazed to less than 3 inches.

- It provides palatable and nutritious forage with a high relative feed value.

- The crude protein is equivalent or slightly higher than alfalfa. *(18-28%)*
As a haying crop:-

- Berseem clover is an excellent choice for haying.
- It should be sown in the spring with a nurse crop.
- Plants should be cut at 10 - 15 inch height when new shoots appear at the bottom of the stem.

The first cutting will be 50-55 days after planting (when companion crop has headed out) and the second will be 30-35 days later.

- It must be cut before it flowers and should not be cut lower than 3 inches.
- When planted with a nurse crop it can be taken all together for silage or chopped & allowed to regrow.
As a silage crop:-

- Berseem can be mixed with 20% ground maize to provide high quality silage
- It is possible to make silage with berseem and 5% molasses

Can also be used as:-

- Cover crops
- Soil improver and erosion control
- Weed control
Varieties:-

**Mescavi**
- It is a fast growing variety and attains plant height of about 75 cm at flower initiation stage.
- On an average, it gives 500-600 quintals green fodder and 100-125 quintals dry matter yields per hectare in about five cuttings.
- It contains about 20 per cent crude protein on dry matter basis at early flowering stage.

**BL-1**
- This is a long duration variety as compared to the commonly grown variety Mescavi.
- Because of this, one additional cutting may be obtained from this variety by the end of June.
- It gives, on an average, green fodder and dry matter yields of 600 and 130 q/ha, respectively.

**BL-22**
- This is a long duration variety which gives additional cut during June.
- It gives, on an average, green fodder and dry matter yields of 750 and 135 q/ha, respectively.

- BL 42
- BL 180
Improved varieties

- Pusa giant
- IGFR-S-99-1
- UPB-101, 103, 104 & 105
  - Wardan
  - Hisar B 1
  - JB 1
  - JB 5 and Chindwara

**Field preparation :-**

- Fine and smooth seed bed free from clods
- Free of termites and ants
- The land should be well tilled, levelled and should be free from weeds.
CLIMATE AND SOIL:-

Climate :-
Prefers dry and cool climate
Grown during *rabi* season with high humidity
Cloudy days are not good
Temperature - 25 to 30° C for germination, 35 to 37° C for flowering

- **Season :-**
  Rabi - Oct - Nov

**Soil:-**
All soils with mild cold winter
It grows well in medium to heavy soil
Tolerant to alkali
Clay loam soil rich in calcium and phosphorus, soil must be well drained
Seed rate:

- 20-25 kg/ha is needed for sowing
- Spacing – 25 cm apart by drilling and then planked

Sowing:

- October
- Broadcasting/ line sowing
- Since seeds are small in size mixed with mustard and sown.
- Sowing Methods
  - Flooded fields
  - In dry fields
  - As relay cropping in rice field
Inoculation:-

- If berseem is going to be seeded for the first time in any field, the seed must be inoculated with **rhizobium culture** which is very essential for its growth.
Method of inoculation :-

- Prepare 10% gur solution and heat it to boiling point and then cool at room temperature.
- Sprinkle a small quantity of gur solution over the seeds to moisten them nicely.
- Spread thin layer of culture over the gur treated seeds and mix thoroughly.
- Dry the culture treated seeds in shade before sowing.

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Seed rate and method of sowing:

- Sowing should be done by broadcasting the seed at the rate of 25 kg per hectare in standing water.
- The seed should be free from seeds of weeds such as kasni.
- This can be done by dipping the seed in one per cent salt solution and decanting-off the floating seeds.
- Mixture of berseem and oats (50:50 ratio) also gives higher yield.
- Under ultera conditions, seedling should be done 8-10 days before harvesting of paddy.
Nutrient management :-

Organic manures -
- 15 to 20 tonnes/ha
- Responds well to P
- 20 - 40 - 0 Kg NPK/ha & molybdenum - 1 kg/ha

Weed management :-
- Weed free condition upto 25 DAS
- 2 hand weedings at 21 DAS and after 35 to 40 DAS
Water management:
- Interval of irrigation during October - 10 days,
- November to January - 15 days and there after 8 to 10 days
- Totally 10 to 12 irrigations

Harvesting:
- First cutting 50-55 DAS
- Subsequent cuttings at an interval of 30-35 DAS
- Number of harvest depends up on winter season
- Total cuttings - 6 to 8 per year
- 50-100 t green fodder
Yield:

- The first cutting is obtained usually 55 days after sowing and subsequent cutting at the interval of 25 to 30 days.

- In the mid-hill zone during winter, interval between cutting is about 50 to 60 days. In all, 5 to 6 cuttings may be obtained.

- On an average, nearly 550 quintals of green fodder per hectare may be obtained.

- Green fodder - 60 to 80 t/ha/year.

- Seed yield 200-250 kg/ha.
Seed production

- The final cutting should not be taken later than the end of February if crop is to be left for seed purpose.
- *Kasni* and other weeds should be eradicated.
- Irrigate frequently during the formation and ripening of seeds.
- On an average, 2.5 quintals seed may be obtained per hectare.
Disease and their control:

**Stem Rot:**

- is seed borne disease.
- It causes rotting of stem near soil surface. White fungus growth is observed on nearby soil.
- Remove and destroy affected plants. Take spray of Carbendazim @ 400 gm in 200 Ltrs of water per acre
INSECTS AND MANAGEMENT:

Grass hopper:
- It damage crop by eating leaves.
- It occurred mostly in May-June month. If infestation is observed, spray crop with Malathion 50 EC @ 500 ml in 80-100 Ltr of water per acre.
- After spraying do not feed cattle for seven days.

Gram Caterpillar:
- Avoid raising of crop nearby tomato, gram, late sown wheat.
- If infestation is observed spray with Chlorantraniliprole 18.5 SL @ 50 ml or Spinosad 48 SC @ 60 ml per acre in 80-100 Ltr water with help of knapsack sprayer.