BERSEEM

Botanical Name : *Trifolium alexandrium*
Family : leguminoseae
Origin : Egypt

Economic Importance:

- Berseem is an important winter season forage crop.
- It gives **high yield of succulent, Palatable and Nutritious** fodder.
- It has 20 per cent crude protein and 70 per cent digestibility and Berseem also reach in calcium, phosphorous.
- Because of its **quality, palatability and gives high yield**, it is known as **King of fodder crop.**
- Cultivation of Berseem **improves physical, chemical and biological properties** of soil.
- Due to **smothering effects** on weeds, the crop also minimizes intensity of weeds.
- The fodder is very useful for milch cattle as well as horses, camels and Donkeys.

Geographical Distribution:

Berseem is grown only in few countries of the world. It is mainly grown in Egypt, Syria, Persia, Pakistan and India. In India it is mainly cultivated in Punjab, Haryana, Delhi, Rajasthan, Uttar Pradesh, Gujarat and Some parts of Bihar, Maharashtra and Andhra Pradesh.

Ecology:

Climatic requirements:

Berseem required a **dry and cool climate** for its normal growth. It needs mild temperature for germination and establishment. The crop growth is very fast at 18-21^{0}C. It cannot withstand drought and frost. It can be grown successful in areas where annual rainfall is up to 250 cm. it cannot be grown in heavy rainfall region.

Soil requirement:

Berseem can be grown on all types of soil except very light soil. The crop is grown best on **well drained, medium loam soils rich in phosphorous and calcium**. Crop can be grown successfully on alkaline soil having good water retention capacity but cannot be grown in acid soil.

Field Preparation:

As seed of Berseem is small due to that a fine, well pulverized and leveled seedbed is must. A fine seed bed ensures better contact of seeds with soil particles and facilitates better germination. For prepare good seedbed, one ploughing should be

done with mould board plough followed by three to four harrowing's and planking to break soil clods and well leveled the field.

Seed and Sowing:

1. **Seed treatment :**
    a. **Common salt solution:** Generally Berseem seeds are mixed with Kasani (*Cinchorium intybus*) weed seeds, So for separating weed seeds treat the seeds with 5 per cent solution.
    b. Seed Soaking: The seed coat of Berseem is hard and if the seed is sown as such takes more time for germination, therefore seeds are soak in water for 10-12 hours to soften hard seed coat.
    c. **Rhizobium Seed Treatment:** Seeds are inoculated with *Rhizobium trifolii* @ 250 gm. per 10 kg of seeds.
2. **Sowing Time:** October to November.
3. **Seed-rate :**25-30 Kg/ha
4. **Spacing :** Generally seeds are sown by broad casting method if Line sowing is followed maintain 20-30 cm apart in rows.
5. **Sowing Depth: 1-2 cm**.
6. **Sowing method:**
    a. Dry Bed Method: Under this method, there should be sufficient moisture in the soil. The seeds are broadcasted over the field and mixed in properly. The irrigation should be given after germination.
    b. Wet Bed method: The beds are filled with water to depth of 4-5 cm standing water. Soaked seeds are broadcasted in standing water. The seeds germinate rapidly and the seedlings establish as soon as water recedes.

Manures and fertilizers:

Berseem is a forage leguminous crop which fixes atmospheric nitrogen. However, light dose of nitrogen is needed at initial stage which helps in better and quick growth of Berseem seedlings. Apply well decomposed **farm yard manure or Compost @ 10-12 t ha^{-1}** should be applied at the time of land preparation and fertilizer dose of 20:80:40 Kg NPK per ha.

Irrigation and Water Management:

Provide one pre sowing irrigation for better germination. Apply irrigation water at 12-15 days interval in *rabi* season while 8-10 days during Summer season.

Weed control:

It takes long time to establish itself and due to that there is a scope for weed growth up to time of first cutting. Generally, one weeding at 20-25 DAS gives effective control. Subsequently one weeding is carried out at each cutting for controlling weeds.

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Harvesting and Threshing:

The first cutting should be taken when the crop is about 50-55 days old. The subsequent cuttings should be taken at 25-35 days interval. Second cutting should be taken after 40-45 days after first cutting. Only two cuttings are taken for high yield and quality forage. Cutting should carry out above 5-7 cm height for better and quick regrowth.

Seed Production:

In case, the crop is to be left for seed, no cutting should be taken after middle of March. Normally the crop is left for seed production after three to four cuttings. More cuttings results in reduction in yield of seed but also produce seeds of poor viability. At flowering and seed setting stages, irrigation should give frequently. Seed crop matures in the end of May when seed bolls turn to yellow brown in colour. The crop should be harvested and threshed either by beating with sticks or by trampling with bullocks.

Yield:

Average yield of Green fodder 800-1100 qtls/ha.

When crop is taken for seeds: seed crop gives 500-600 qtls green forage and 4 to 6 qtls seeds per ha.

Varieties:

Miscavi, Berseem Ludhiana-1 (BL-1), khadaravi, IGFRI-99-1, Pusa Giant, T-678, Vardhan. JB-1, JHB-146, Pusa Vishal.

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