

Scientific Cultivation of Berseem: A Nutritious Fodder Crop

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Abstract:

Berseem (*Trifolium alexandrinum*), commonly referred to as Egyptian clover, is a highly nutritious leguminous fodder crop renowned for its digestibility and rich protein content. Widely grown in regions with mild winter climates, it serves as an essential feed for livestock. Beyond its nutritional benefits, berseem supports sustainable agriculture by enhancing soil fertility through nitrogen fixation, making it a key component in integrated farming systems. Scientifically, cultivating berseem involves implementing modern agronomic practices to optimize growth and yield. Preparing the seedbed properly, applying balanced fertilizers such as phosphorus and potassium, and ensuring timely irrigation are critical steps for healthy crop establishment. Effective weed and pest control are vital to maximizing productivity, with a preference for biological and integrated pest management approaches to minimize chemical use. Berseem's ability to produce 4-6 harvests in one growing season makes it an economically attractive option. Additionally, incorporating berseem into crop rotation systems enhances soil quality and reduces the need for synthetic fertilizers. By adopting scientific cultivation methods, farmers can increase berseem's productivity, support livestock feed demands, and improve soil health. Its adaptability and economic benefits highlight its significance as a sustainable and eco-friendly fodder crop.

Introduction:

Berseem (*Trifolium alexandrinum*), often called Egyptian clover, is a highly valued fodder crop that plays a critical role in livestock production and sustainable agriculture. Originally from the Mediterranean region, it has gained widespread popularity due to its excellent nutritional profile, high

palatability, and adaptability to various soil types and climatic conditions. With its rich protein content and superior digestibility, berseem is an essential feed for ruminants such as cattle and buffaloes, contributing significantly to enhanced milk and meat yields. As a leguminous plant, berseem serves a dual

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purpose in agricultural systems. Apart from being a dependable source of fodder, it enhances soil fertility through natural nitrogen fixation, reducing the reliance on chemical fertilizers and promoting sustainable farming practices. The crop grows best in well-drained loamy soils under cool conditions, making it suitable for cultivation in tropical and subtropical regions. The scientific cultivation of berseem involves modern agricultural practices such as proper soil preparation, the use of high-quality seeds, balanced fertilization, efficient irrigation, and integrated pest management. These practices help achieve higher yields, multiple harvests, and improved forage quality. This introduction emphasizes the significance of scientific cultivation techniques in meeting the rising demand for nutritious fodder while supporting environmentally sustainable and economically beneficial farming.

Climate Requirements:

Berseem thrives in areas with a mild and cool climate. The ideal temperature for its growth ranges from 20°C to 25°C. Excessive heat or frost can adversely affect its growth. Therefore, it is generally grown during the rabi (winter) season in countries like India, from October to March.

Soil Requirements:

Berseem grows best in loamy to silty soils with good drainage and high fertility. It

can tolerate slightly saline soils but thrives in neutral to slightly alkaline conditions with a pH range of 6.5 to 8.0. Preparing the soil with adequate organic matter improves its yield and quality.

Varieties of Berseem:

Some of the widely cultivated varieties of berseem include:

- ⇒ **Muscavi:** Known for its high yield and adaptability.
- ⇒ **Pusa Giant:** Produces more biomass and is ideal for longer growing seasons.
- ⇒ **Vardan:** Suitable for areas with saline soils.
- ⇒ **BL-42:** Recommended for disease resistance and superior quality fodder.

Field Preparation:

Proper field preparation is essential for successful berseem cultivation:

Ploughing: The field is plowed 2-3 times to ensure the soil is fine and well-tilled.

Leveling: A leveled field ensures even water distribution.

Manuring: Incorporating 10-15 tonnes of farmyard manure (FYM) per hectare improves soil fertility.

Sowing of Berseem:

Seed Rate and Sowing Method

Seed Rate: 20-25 kg of berseem seeds per hectare is recommended.

Sowing Method: Seeds are usually broadcast or drilled into the soil. Mixing seeds

with sand in a 1:2 ratio ensures even distribution.

Seed Treatment:

Treat seeds with Rhizobium culture to improve nitrogen fixation and enhance crop growth. Additionally, soaking seeds in water for 12-24 hours before sowing improves germination.

Time of Sowing:

Berseem is sown from mid-October to early November to ensure optimal germination and growth.

Irrigation Management:

- ☞ Berseem requires frequent irrigation as it is sensitive to water stress:
- ☞ The first irrigation is critical immediately after sowing.
- ☞ Subsequent irrigations are given every 10-15 days, depending on soil moisture and climatic conditions.
- ☞ Avoid waterlogging, as it can lead to root rot and other diseases.

Nutrient Management:

Berseem benefits from a nutrient-rich soil:

Nitrogen: Berseem is a legume, so it fixes atmospheric nitrogen through Rhizobium bacteria. Additional nitrogen is not required unless the crop is planted in poor soils.

Phosphorus and Potassium: Apply 20-25 kg of phosphorus and 15-20 kg of potassium per hectare during sowing to promote root and shoot development.

Organic Manure: Application of FYM improves soil fertility and crop quality.

Weed Control:

Weeds compete with berseem for nutrients and water, reducing fodder yield. Effective weed management includes.

Cultural Methods: Regular weeding and hoeing, especially during the early growth stages, help keep weeds in check.

Chemical Control: Herbicides like pendimethalin can be used as a pre-emergence treatment to control weeds.

Harvesting and Yield:

Berseem is a multi-cut crop, capable of producing fodder for several months:

- ☞ The first cut is taken 45-50 days after sowing.
- ☞ Subsequent cuts are made every 25-30 days, depending on growth and weather conditions.
- ☞ On average, berseem provides 5-6 cuts in one season.

Yield:

Green Fodder Yield: 80-100 tonnes per hectare.

Dry Matter Yield: 15-18 tonnes per hectare.

Nutritional Value:

Berseem is highly nutritious and palatable, making it an ideal fodder for livestock:

Protein Content: 16-20%.

Fiber: Low fiber content ensures easy digestibility.

Minerals: Rich in calcium, phosphorus, and other essential nutrients.

Advantages of Berseem Cultivation:

High Yield: Produces abundant green fodder, meeting the feed demand of livestock.

Nitrogen Fixation: Improves soil fertility by fixing atmospheric nitrogen.

Suitability for Crop Rotation: Enhances soil structure and fertility, benefiting subsequent crops.

Continuous Fodder Supply: Provides a steady source of green fodder throughout the growing season.

Challenges in Berseem Cultivation:

Water Sensitivity: Requires consistent irrigation and is susceptible to waterlogging.

Pests and Diseases: Susceptible to aphids, cutworms, and fungal diseases like root rot.

Seasonal Crop: Limited to the winter season in many regions.

Conclusion:

Berseem (*Trifolium alexandrinum*) is a valuable and sustainable fodder crop that significantly supports livestock nutrition and soil improvement. Its rich protein content, excellent digestibility, and ability to provide multiple harvests make it a cost-effective and dependable feed option. Additionally, its natural nitrogen-fixing properties enhance soil

fertility, minimizing the need for chemical fertilizers. By implementing scientific farming techniques, such as using high-quality seeds, balanced fertilization, efficient irrigation, and effective pest control, farmers can maximize their productivity and quality. Berseem's versatility and benefits underline its critical role in sustainable agriculture, meeting the rising demand for nutritious fodder while promoting environmental and economic stability.

