AGT COVER CROPS & FORAGES AFRICA

# Chicory – *Cichorium intybus*

Chicory is a persistent leafy herb typically with a lifetime of 2–3 years. It has a large tap root which can extract moisture from great depths. It performs best in fertile, free-draining soils in regions that receive more than 550 mm per annum. It has potential for high dry matter yields of excellent quality with most growth taking place through the warmer months.

Known as a forage herb or forb, it has recently become a regular component of dairy pastures either as pure stands or as part of mixed swards. On many farms the forage herbs are planted in a mixture with grass and clover species.

| Strengths | Limitations |
|---|---|
| • 8-16 t DM/ha/season<br>**Depending on environmental conditions and management**<br>• Palatable<br>• Rapid establishment with high first-year productivity<br>• Promotes high animal growth rates<br>• Adapted to acid soils<br>• Deep root system thus capable of extracting water and nutrients from depth<br>• If permitted to seed regenerates easily | • Prone to trampling and overgrazing<br>• Requires high amounts of nitrogen for maximum production<br>• Does not make good hay<br>• Limited growth rates at low temperatures |

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## What can it be used for?

**Grazing:** Best results are achieved when using a strip grazing method. Continuous grazing can result in a significant decline in plant density compared to rotational grazing systems. In general, the crop requires short, intensive periods of grazing with sufficient recovery periods.

**Silage:** Chicory has been successfully used for silage production and is suitable for pit silage and wrapped 'haylage'. Chicory can be chopped before placing it in a pit for silage. Cutting should allow for a high proportion of leaf to stalk ratio. Chicory silage can be made by harvesting / baling at a slightly drier moisture content than is normal.

**Cover Crop:** Frequently used in combination with other species as a green manure to improve soil health and aid drainage.

**Production potential:** The average production under optimum conditions ranges between 8-16t DM/ha/season. This depends on soil fertility, environmental conditions and grazing frequency.

**Metabolic disturbances in animals on cultivated pastures:**
Some varieties contain high levels of lactucin, which may cause milk taint in dairy cows. It is recommended that Chicory should not be fed to dairy cows too soon before milking, and it should not make up more that 50% of the diet.

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# Establishment

**Climate:** Tolerates moderate summer temperatures and requires well-distributed rainfall. Chicory requires an annual mean temperature of 6° to 27 °C.

**Moisture:** Chicory is adapted to a wide variety of climates, from summer dominant to winter dominant rainfall areas. An annual rainfall of between 400 mm to 800 mm is required. For optimal performance summer rain or irrigation over summer is required.

**Soil:** Deep, well-drained sandy or loamy soils are ideal, with a pH of between 6,5 and 6,9, however chicory grows on any type of soil.

**Fertilization:** Requires Phosphorus, Sulphur and Nitrogen. Can also be sensitive to Boron deficiency in limed soils. Nitrogen application is dependent on field history, soil and whether chicory is planted with a legume species. Fertilizer usage will largely be determined by plant growth and product removal:

| | N (kg/ha) | P (mg/kg soil) | K (mg/kg soil) |
|---|---|---|---|
| Requirement for establishment*** | 50 | 25 | 25 |
| Seasonal application (kg/ha) | 30—40 | Use removal rates | |

*Fertilizer just after establishment (kg/ha)
**Selected rate should maximise profit
***Determined by production potential

Phosphorus (P) and Potassium (K) can be recycled back to pastures when grazed by animals. This is dependent on the grazing system and the type of animals used. Up to 40% of P and 90% of K can be recycled [5]. It is however necessary to do annual soil analysis to determine the level to which recycling occurred. The difference should be fertilized.

**Methods:** Seed may be either drilled or broadcast. Drilling provides a more uniform depth of planting. Seeds should be sown in a fine-textured seed bed, at a depth of no more than 6 cm in rows spaced 45 to 60 cm apart. The previous crop should be sprayed off beforehand to avoid competition. Soil should be ploughed to a good depth to permit root development.

**Seeding rate:**

| Single species | Mixture |
|---|---|
| 4-5kg/ha | 1-5 kg/ha |

**Planting time:** The best time to plant Chicory is in the spring season.

## Management

**Utilisation:** Grazing of chicory can occur when it is established at the 7–8 leaf stage. Chicory should be rotationally grazed on a 4–6 week rotation.

# Resources

1. Cotswold Seeds Ltd. 2020. Chicory *Cichorium intybus*. https://www.cotswoldseeds.com/species/5/chicory (Access date 22 April 2020).

2. Department of Agriculture, Forestry and Fisheries . 2013. Production guidline Chicory (*Cichorium intybus*). https://www.daff.gov.za/Daffweb3/Portals/0/Brochures%20and%20Production%20guidelines/Production%20guideline%20chicory.pdf (Access date 22 April 2020).

3. Dairy NZ.Chicory. 2020. https://www.dairynz.co.nz/feed/crops/chicory/ (Access date 22 April 2020).

4. Agriculture & Horticulture Development Board .2016. Using Chicory and Plantain in Beef and Sheep Systems. https://beefandlamb.ahdb.org.uk/wp-content/uploads/2016/03/BRP-plus-Using-chicory-and-plantain-in-beef-and-sheep-systems-080316.pdf (Access date 22 April 2020).

5. Dear, B .,Upjohn, B and Craig, A. 2007 Pastures Australia https://keys.lucidcentral.org/keys/v3/pastures/Html/Chicory.htm (Access date 22 April 2020).