

## Plantain – *Plantago lanceolata*

Originally Plantain was considered only a flat weed that was winter dormant and occurred in many cultivated lands. The potential of the plant was discovered in the 1980's. It was seen to have potential application in livestock farming in terms of forage.

Plantain is a mineral rich forage which is seeded into permanent pastures or utilized as a short-term mono-culture crop.



### Strengths

- 8-21t DM/ha/season  
**Depending on environmental conditions and management**
- Better climatic stress tolerance than ryegrass
- Decreases N leaching
- High nutritional value – superior to ryegrass/clover mixtures
- Higher summer and autumn production than most temperate grasses
- Drought tolerance
- Palatable
- Does not require high fertilization, although additional fertilization is advantageous
- Decreases the need for deworming of livestock

### Limitations

- Not a good hay crop – due to its height
- Does not tolerate waterlogging
- Does not tolerate deep sandy soils



## What can it be used for?

**Grazing:** Plantain was developed with the objective of utilizing it in a livestock production system. It is rich in minerals and vitamins and has seen the increase of Selenium and Copper in grazing animals. Plantain can be planted in a mixed pasture or managed as a straight stand. In dairy production, Plantain usually lasts for 2-3 years. Plantain has a higher forage quality compared to ryegrass and clover mixtures. This also allows for greater dry matter intake.

**Cover Crop:** Plantain is a popular cover crop as it controls erosion (due to the robust root system), suppresses weeds, and scavenges nutrients. It also attracts beneficial insects.

**Production potential:** Plantain under irrigation has been recorded to yield up to 20.8 tons DM/ha in South Africa.

## Establishment

**Climate:** Plantain prefers open vegetation where abundant sunlight can reach soil level. In the case of frost, plantain has the ability to regrow from storage organs beneath the soil. Germination is best at 25-30°C.

**Moisture:** Plantain is not restricted to areas with a certain rainfall pattern. It can be grown in winter rainfall, summer rainfall and even all-year rainfall areas. The deep taproot of the plant allows it to tolerate drought periods better as it can withdraw water from deep within the soil profile. Plantain requires an annual rainfall of 500mm.





**Soil:** Plantain can be grown on relatively poor soils, however it prefers moderately fertile soils. Plantain is not commonly found on acidic soils naturally. Germination has been recorded to be optimal at 21% soil moisture. Plantain does not tolerate waterlogged soils and very deep sandy soils. It can tolerate a pH of 4.2-7.8, however 5.8 is the optimum.

**Fertilization:** A soil analysis before establishment is essential. Although Plantain grows well in soils with low levels of Phosphorous (P) and Potassium (K), it has been recorded that additional P, K, and Sulphur is advantageous to the crop. Nitrogen should be supplemented based on the result of the soil analysis as well as considering the mixture to be planted (including the Plantain).

**Methods:** Plantain should be sown in warm soils (10-12°C) at a depth of no more than 10mm. Little to no competition for the seedlings during the first 3 months will prove beneficial to establishment.

Seeding rate:	Straight crop (with/without clover)	Mixture (Grass/clover/plantain)
	8-10kg/ha	1-4kg/ha

\*Usage as well as environmental conditions (soil type, soil health, climate, rainfall) will determine seeding rates.

**Planting time:** Plantain can either be sown in autumn or spring. Autumn sown crops develop slower than spring sown crops. It is not advised to plant late autumn or early winter.





## Management

**Utilisation:** Grazing management is important to ensure the longevity of the crop. The initial grazing should not take place earlier than the 6-leave stage. Grazing should be well managed to ensure over grazing does not occur. Sufficient rest between grazing instances is recommended. Pre-grazing height should be around 25cm and post grazing height no less than 5cm. It has been recorded that plantain left to rest during the winter allows for 50% higher yields in the next spring. Grazing during prolonged wet weather will also damage the plant. Plantain needs additional Nitrogen and an application is recommended after every grazing, unless a complementary legume species is present.

**Diseases:** Natural enemies of plantain include: *Gibberella sacchari* and *Phomopsis subordinaria*. Plantain is also the host to *Meloidogyne* nematodes.

**Pests:** Natural enemies of plantain include: *Chrysolina staphylaea*, *Gymnetron pascuorum*, *Junonia coenia* and *Trichosirocalus troglodytes*.



## Resources

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