



AGT Foods Africa Pty Ltd.
 8 Jacobs St., Chamdor, Krugersdorp 1739
 P.O. Box 414, Krugersdorp, South Africa 1740
 Reg. No. 1994/001269/07
 VAT Reg. No. 484 014 1495

Tel: +27 11 762 5261
 Fax: +27 11 762 4111
 0861 AgriCote (247426)
 sales@advanceseed.com
 www.agtfoods.com/za

Forage Pea – *Pisum sativum*

Forage Pea is an annual, cool season legume with an upright- or prostrate- growth form. Forage Peas have a dual purpose, namely used for grain- and as a diverse forage crop. Legumes have the ability to fix atmospheric Nitrogen, reduce the N requirements of the species in a blend as well as the follow-up crop. An annual rainfall of 800 mm and more is required for production, but best productions are achieved under irrigation.



Strengths

- 5 - 35 t DM/ha/season
Depending on environmental conditions and management
- High forage production
- Good quality forage
- Fixes atmospheric Nitrogen (N)

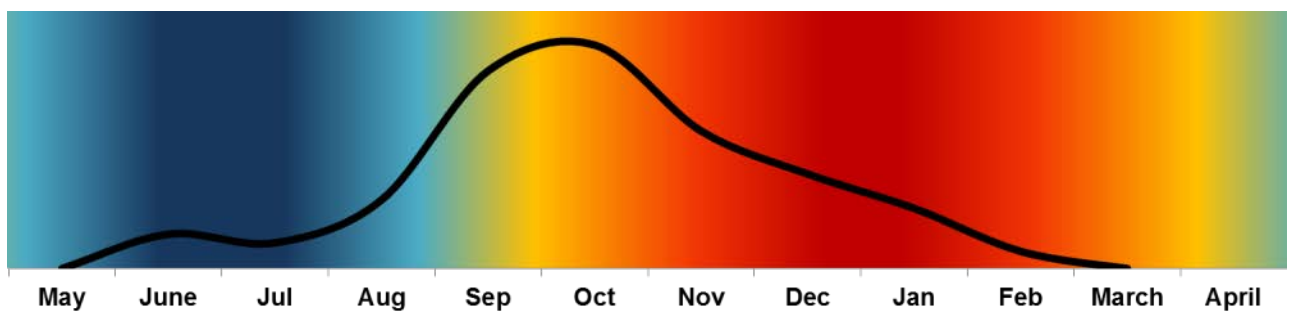
Limitations

- Danger of causing bloat in livestock



What can it be used for?

- Silage:** Planting Forage Pea with a forage cereal like Oats for silage is a common practice. Pure stands can also be ensiled if a new variety, such as Flex, for which lodging is not a problem, is planted.
- Grazing:** Grazing Forage Pea is not a common practice; however, it can be grazed effectively if managed properly.
- Hay:** Cutting at an early pod development stage (flat pod stage), produces the best quality forage. High moisture levels may cause slow curing and poor quality hay. It is recommended that equipment like a crimper is used to enhance drying.
- Cut-and-carry:** A zero grazing system can be followed, as long as soil doesn't contaminate forage during cutting.
- Cover Crop:** Peas build the soil organic component, scavenges Phosphorus from the soil and introduces Nitrogen by means of Nitrogen fixation. It stabilises the soil aggregates and competes with weeds, while acting as a habitat for beneficial insects, like pollinators.
- Grain:** Peas can be harvested green or dry, depending on its use.
- Production potential:** Has a high forage yield in short period of time. Good quality in terms of protein levels. Yields of 5 - 35 t DM/ha/season can be reached, depending on soil fertility, climatic conditions and frequency of utilisation ^(1,2).



Relative growth curve of a Forage Pea stand - one year cycle



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Metabolic disturbances in animals on cultivated pastures:

Frothy Bloat: Build-up of gas in the rumen due to stable foam forming, causing animals to suffocate.

Establishment

Climate: Forage Peas require a cool climate for optimal performance. Relatively high humidity and higher altitudes in Tropical areas suits Forage Peas. It is however adapted to varying climatic conditions. Plants can tolerate severe frost, however this depends on the stage of development.

Moisture: Best production is achieved under irrigation.

Soil: It does well on clay/alluvial soils, but is widely adapted. Soils must be well drained, because it is intolerant of waterlogging. A soil pH (KCl) of 5.5 – 6.5 is recommended to ensure optimal growth for both plant and its bacterial symbionts.

Fertilization: Forage pea is a legume and therefore fixes atmospheric N into a usable form of N. For this reason, no N should be applied when cultivating this crop. A soil analysis before establishment is essential ^(1, 2, 3).

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment*	0	30	120
Seasonal application (kg/ha)	0**	Use removal rates	
Production - Removal rates (kg/ton):			
Good quality fodder	38	4	36
Average quality fodder	26	3.2	25
Poor quality fodder	18	2.5	14

* Determined by production potential

**Fixed from atmospheric-N in symbiosis with *Rhizobium*

Phosphorus (P) and Potassium (K) can be recycled back to pastures when grazed by animals. This depends on the grazing system and the type of animals used. Up to 40% of P and 90% of K can be recycled ⁽⁴⁾. It is however necessary to do annual soil analysis to determine the level to which recycling occurred. The difference should be fertilized.

Methods: Planting in rows (3 – 5 cm deep) ensures a uniform depth and sufficient soil cover. Establish on a firm, fine, weed free seed bed. Consolidating



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(rolling) the seedbed after planting will ensure good seed-soil contact and subsequently better germination and establishment. Seed must be inoculated with the correct bacteria before planting. Some soils previously planted to Forage Pea do contain the wanted *Rhizobium* bacteria, however, inoculating seed prior to planting can be beneficial but not necessary.

Our prescribed seeding rate:

Forage:

Rows (15-20cm) ^(1,2)

Blend with Oats

Pure Stand

Irrigation	100 kg/ha Peas, 50 kg/ha Oats	120-200 kg/ha *
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Grain:

700 000 - 800 000 (minimum of 600 000) plants per hectare

* Seed size and germination percentage will differ between seed lots

Planting time:

In temperate regions, spring planting dates can be successful, but autumn planting dates are more ideal in most areas.

Management

Utilisation:

Forage Peas improve silage quality when ensiling with oats. Oats can support forage peas which may have lodging problems. This combination makes it easier to cut Forage Peas. Rotational grazing will minimise wastage. Care should be taken to prevent bloat occurring in animals.

Cultivars

Flex

FLEX is a white flower pea that will do well whether planted in spring (temperate areas) or autumn. It is a leaf type – long-vined plant that is less hard-seeded than purple-flowering forage varieties. FLEX pea out-yields most other pea varieties and is faster producing. Supplement with grass hay or plant with oats, spring triticale, or spring barley for added effective fibre and a slower digestion rate. Alone, the feed value is comparable to lucerne hay. It has exceptional forage growth, white flower indicates better palatability and



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digestibility, has seedling vigour like spring pea but stooling capability and late flowering like winter pea.

Greenwood

Greenwood is an early maturing pea with white flowers. Greenwood's yield advantage is from longer pod, carrying 1 to 2 additional grains per pod compared with Aragorn. It has excellent lodging resistance with medium to high tillering capacity. The grain colour is dark green with good bleach resistance. Resistant to Fusarium wilt, Powdery mildew and tolerant to Downy mildew and Ascochyta blight.

Aragorn

Aragorn is an early maturing pea with white flowers. Aragorn's yield advantage is from the larger grain, compared with Greenwood. It has excellent lodging resistance. The grain colour is dark green with excellent bleach resistance. Aragorn is resistant to Fusarium wilt and PSbMV (Pea Seed borne Mosaic Virus).

	Greenwood	Aragorn
Days to flower (days after planting)	60-64	60-64
Days to physiological maturity (days after planting)	90-94	90-94
Vine length	65-70 (90) cm	65-70 (90) cm

Resources

1. North Dakota State University Extension Service - Field Pea Grain and forage for beef cattle, <https://www.ag.ndsu.edu/pubs/ansci/beef/as1301.pdf>
2. USDA-NRCS, Plant guide, Pea - <http://plants.usda.gov/core/profile?symbol=PISA6>
3. Feedipedia, Animal Feed Resources Information System, Pea Forage (Pisum sativum) - <http://www.feedipedia.org/node/7047>
4. Dannhauser CS. 1991. Die bestuur van aangeplante weiding in die somerreëval-dele, vol. 1. Warmbad



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