



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

Kale

Scientific name(s)

Brassica oleracea ssp. *acephala*

Strengths

- Drought tolerant, winter-active fodder crop with excellent feeding value

Limitations

- A slower growing Brassica. Requires high soil fertility and high levels of moisture.

Plant description

Plant: short and tall (2 m) varieties.

Leaves: flat, long. High leaf to stem ratio in modern varieties.; yellow, cross-shaped flowers with four petals; and all produce sickle shaped pods containing tiny round seeds.

Seedhead: yellow, cross-shaped flowers with four petals; produce sickle shaped pods

Seeds: pods contain tiny round seeds

Pasture type and use

Sown in spring adjacent to a run-off pasture to provide autumn-winter grazing in ~5-6 months time. Some varieties can be managed to provide grazing through winter-early spring in Tasmania and southern Vic.

Where it grows

Rainfall

>650 mm or irrigation

Soils

Tolerates a broad pH range. Some varieties are unsuited to soil with low fertility. Ensure Mo and B not deficient.

Temperature

Kale is the most cold tolerant of the Brassica fodder species. Some varieties are well able to withstand heavy frost and retain leaf.

Establishment

Companion species

Herbs: plantain, chicory

Legumes: white clover, red clover

Sowing/planting rates as single species

3 - 5 kg/ha. A high rate improves stem quality and aids a rapid early yield. Sow shallow (5-10 mm) in a finely worked firm, moist seedbed, cover with roller/mesh. Only suitable for direct-drilling in friable soil.

Sowing/planting rates in mixtures

2 kg/ha

Sowing time

Sow in spring for grazing from autumn onwards

Inoculation

Not applicable.

Fertiliser

Sow with ~20 kg P/ha as triple super or MAP/DAP. Ensure molybdenum and boron adequate. Molybdenum coated seed is available.

Management

Maintenance fertiliser

Monitor nitrogen carefully for yield vs health. N (50 kg N/ha) maybe applied late to maintain leaf in stored feed but can increase health risks.

Grazing/cutting

Can graze at any time. Matures at 5-6 months and holds feeding value so can delay grazing. Strip-graze along a long front - to reduce wastage and to minimize trampling losses. A back fence may maximise regrowth. Short types may regrow if not cut or grazed lower than ~8 cm. Use a maximum 33% in the diet of dairy cows - 100% OK for lambs but they are best suited to the short varieties. Beef cattle OK up to 70%. Late maturing varieties can be saved for use in early spring. Crops thin after each grazing. Allow access to pasture/stubble, hay/silage for fibre.

Seed production

-

Ability to spread

-

Weed potential

-

Major pests

Not as vulnerable as rape. Red-legged earth mite, slugs, Aphis, cabbage moth, cabbage white butterfly, diamond black moth, cutworms, lucerne flea and leafminers. Insecticide coated seed is available to aid establishment.

Major diseases

Rarely a problem. Varieties tolerant of clubroot and dry rot are available. Fungicide treated seed is available to protect damping off of seedlings. Some varieties have increased tolerance to Turnip Mosaic Virus.

Herbicide susceptibility

Glyphosate

Animal production

Feeding value

Excellent feed. ME approx 11-12 MJ/kgDM. The stem is of low quality, poor protein so utilisation of this can be a problem; palatability better with a higher seeding rate.

Palatability

Readily acceptable.

Production potential

Up to 12 t DM/ha where moisture is available and soil fertility is good. By sowing sections of paddock to different maturity types or by sowing at different stages, feed can be provided over a wide range of the feed year.

Livestock disorders/toxicity

Vaccinate and drench before grazing stock on Brassica. Monitor stock frequently. Scouring, nitrate poisoning (especially if molybdenum is deficient and/or if overcast conditions prevail), red water and photosensitisation/rape scald may occur if grazed while immature. Avoid unrestricted access; do not provide Brassica crops as the sole ration straight off scarce/low quality pasture. Begin 1-2 hr access daily and take 7-10 days before reach maximum

allowance.

Cultivars

| Group | Kale cultivar | Seed source/Information |
|--------------|---------------|-------------------------|
| intermediate | Sovereign | PGG Seeds |
| | Proteor | PGG Wrightson Seeds |
| | Regal | PGG Wrightson Seeds |
| | Pinfold | AusWest Seeds |
| tall | Gruner | PGG Wrightson Seeds |
| short | Kestrel | PGG Wrightson Seeds |
| | Coleor | AusWest Seeds |

Further information

Barnes RF, Nelson CJ, Moore KJ, Collins M (2007) Forages: The Science of Grassland Agriculture. Blackwell Publishing, Ames.

Pasture and forage brassica management
Species for profit: a guide for Tasmanian Pastures and Field Crops

Acknowledgements

Seed Companies, DPIs

Author and date

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