

FORAGE BRASSICAS

TURNIPS Turnip varieties vary in yield potential, ploidy level, maturity, size of bulb, bulb keeping quality, and these factors considerably influence the choice and intended usage. Spring and early summer sowings produce summer feed, whilst later sowings through to early march produce autumn-winter feed with specific cultivars for each sowing time. Turnips may be sown alone or in mixtures with rape or grasses. Turnips are generally susceptible to aphids, clubroot, dry rot, and virus. Yields tend to increase with later maturity types. Turnip crop yields can vary from 8-15t DM/ha. A highly digestible turnip bulb provides a good source of sugars which, combined with a high protein concentration in the turnip tops, stimulates good rumen function.

Cultivar	Type: W = winter S = summer	Sowing Rate in kg/ha		Days to Maturity	Clubroot Resistance	COMMENTS
		Alone	Mixture			
Marco	S	2-3	1	55-65	R	Marco is a newer tetraploid cultivar with a large seed. Very quick maturing, highly palatable, with a large bulb size. Good clubroot resistance and excellent bolting resistance. Can be used as a flexible summer feed option if sown early, but is also widely used as an early autumn winter feed option with later sowings. Sowing rates should be increased compared to diploid varieties.
Barkant	S	1.5-2	0.75	60-90	MS	A diploid, soft, early maturing, summer turnip which produces more leaf than other traditional turnips but with a relatively small tankard shaped bulb positioned to provide good utilisation.
Ceres Rival	S	1.5-2.5	0.75	60-90	R	An early maturing white fleshed summer stubble turnip. A tankard bulb shape with a high above ground bulb portion particularly suited to dairy grazing. Improved virus tolerance and a high leaf to bulb proportion. A single graze type.
Dynamo	S	1.5-2	0.75	60-80	?	An early maturing soft turnip suited to summer feed crops. Produces a good amount of bulb so when pests and diseases are present it doesn't get too affected.
Manga	W	0.75	0.5	60-80	MR	An early mid-season maturity cultivar, being a reselection of York Globe with some resistance to clubroot.
York Globe	W	0.75	0.5	60-80	S	Originally a turnip for human consumption, York Globe is an early-mid season maturity, soft white fleshed, purple skinned cultivar. It has low top yields, and mid-sized round bulbs. The bulbs have good keeping quality, but are submerged in the ground making them a little inaccessible to stock.
SF Envy	S	2-3	1	60-90	?	A fast establishing, high energy white fleshed, summer stubble turnip with excellent leaf to bulb ratio. Its tankard shape ensures good utilisation.
Appin	W	0.75	0.5	60-100	S	A soft, early maturing stubble winter turnip with a high proportion of leaf yield compared to bulb. It is multi-crowned with excellent regrowth potential. Its high leaf to bulb ratio results in a very leafy crop with high digestibility.
SF White Star	W	0.75	0.5	90-110	S	A white skinned round bulb stubble turnip with mid maturity of 90 to 110 days from sowing to grazing. Good frost tolerance.
HT Bulb Turnip*	W	0.75	0.5	80-120	S	A Green Globe type, herbicide tolerant (HT) bulb turnip sold with Telar® herbicide. Telar provides control of: Calandrinia; Californian Thistle; Chickweed; Dandelions; Docks; Fathen; Hawksbeard; Nodding Thistle; Rayless Chamomile; Redroot; Scarlet Pimpernel.
Green Globe	W	0.75	0.5	80-120	S	A slower growing, hardy, longer maturity, white firm fleshed, green skinned cultivar. Rounded bulbs keep well into the winter and will yield well if sown early.
Ceres New York	W	0.75	0.5	110-120	S	A medium maturing, purple-skinned, white-fleshed, oval-bulbed turnip with good disease tolerance. A single graze type.
SF G2	W	0.75	0.5	110-120	S	A late maturity green skinned, white fleshed, round traditional globe shaped turnip for winter use. Improved disease tolerance.

Turnip hybrids						
Hunter	S	3-5	1-2	45-65	MR	An intra-species hybrid developed by crossing turnips with related Asiatic leaf vegetables of the same species. A quick growing, 'leafy turnip', which has minimal bulb development, and is best suited to multiple grazings for summer and early-autumn feed requirements. Better suited to summer moist/irrigated environments. Good resistance to most clubroot races, but susceptible to drought and aphids.
Pasja II	S	3-5	1-2	45-65	MR	A re-selection of Pasja for improved reduction to bolting. Early maturing leafy turnip cultivar with little bulb. A multi-grazing type.
SF Pacer	S	3-5	1-2	45-65	MR	Like Pasja and Hunter it is a leafy turnip which is fast to establish, has vigorous re-growth, increased persistence and low bolting tendency. Multiple grazing type.
HT Leafy Turnip™	S	3-5	1-2	50-70	MR	Herbicide tolerant (HT) leafy turnip sold with Telar® herbicide. Multiple graze Pasja type provides a flexible grazing option for summer, autumn and early winter. Telar provides control of: Calandrinia; Californian Thistle; Chickweed; Dandelions; Docks; Fathen; Hawksbeard; Nodding Thistle; Rayless Chamomile; Redroot; Scarlet Pimpernel.

FODDER BEET Fodder Beet (*Beta vulgaris*) is a cross between mangels and sugar beet, aiming to combine the ease of harvest of mangels (syn. mangold) with the high DM and high sugar levels of sugar beet. The basic distinction between mangels and fodder beet is one of dry matter content; in general cultivars with less than 13 percent dry matter are called mangels and those over this value fodder beet. It is a long growing-season crop which requires a high level of care in establishment. Compared to brassicas, Fodder Beet is not as susceptible to clubroot and dry rot and has a lower nitrogen requirement, and once established is highly palatable to animals. Fodder Beet requires a weed free, firm fine seeded that is well drained with no sub-soil compaction and a soil pH greater than 6.0. Sowing is best in late September to mid November (soil temp 5 degrees Celsius, after the last frosts). Sowing rate is recommended at 80,000 plants per hectare through a precision drill to a depth of 2-3cm preferably with a 0.5m row spacing. If seed is sown using a conventional drill, then a higher seeding rate (120,000 seeds per hectare) is needed to reduce gaps within the crop. Seed coat quality and germination percentage need to be high to obtain a good sowing result. Fodder Beet is a demanding crop but if done properly can be extremely profitable. The seed supplied may be monogerm or multigerm. Multigerm seed is several seeds produced in a cluster which is usually mechanically separated usually using a rubbing apparatus. This process may not guarantee all seeds will be singular, and rubbing can lead to slightly lower germination. Plant breeding efforts have resulted in selection for genetically produced monogerm seeds but these will be more expensive to buy. Weed control is very important and pre-following with cultivation and /or glyphosate is recommended. Post-emergent herbicides such as Pyramin (chloridazon), Nortron (ethofumesate), Betanal (phenmedipham + desmedipham), and Goltix (metamiton) are also recommended. Avoid sowing into paddocks which may have had a recent history of the following residual chemicals: Aminopyralid; Picloram; Oxyfluren; Chlorsulfuron; or Atrazine.

Cultivar	Sowing Rate in seeds/ha		Days to Maturity	Bulb Dry Matter %	Type: G = grazing L = lifting	Breeding Origin	COMMENTS
	Precision	Conventional					
Lactimo	90,000	125,000	200+	11-13	G, L	France	A monogerm, yellow to orange bulb cultivar with a tankard bulb that sits +/- 45% above the ground. It's good disease and bolting tolerance maintains quality throughout the crop. Strong foliar growth producing large tops make Lactimo suitable for grazing in situ with sheep, cattle or deer; as well as for lifting.
Geronimo	90,000	125,000	200+	11-13	G, L	France	A new high yielding monogerm cultivar with an orange bulb that sits approx 45% above the ground. Strong foliar growth, with improved bolting resistance, good resistance to mildew, ramularia and rhizomania. Suited for grazing and lifting.
SF Brigadier	80,000	120,000	200+	11-13	G	German	Monogerm cultivar with distinctive long cylindrical orange bulbs, with low to medium dry matter content (11-13%). Bulb proportion above the soil is 65%, which enables easy access to the crop when strip feeding. This is a better option for grazing and it is a softer bite, which is more suitable for feeding younger stock.
Feldherr	90,000	125,000	200+	12-15	G, L	German	A high-yielding, low dry matter cultivar (more root above the soil - 50%) cultivar. Has a light orange bulb colour. It has a low bulb dry matter percentage, suited to animals breaking new teeth, or older animals with fewer teeth, and species such as deer.
Monro	90,000	125,000	200+	12-15	G	France	Monogerm hybrid cultivar with a red ovoid bulb of large size but low to medium dry matter content (12-15%). Bulb proportion above the soil is 50-60%. Ideal for stock classes with a preference for softer bulbs, such as young stock and deer. Resistant to bolting.
Summo	90,000	125,000	200+	14-16	L	France	A high yielding monogerm cultivar with a conical shaped red bulb of medium to high dry matter content, which sits approx 40% above ground, and with good bulb storage quality. Has good seedling vigour, strong foliar growth with good disease resistance, and good bolting resistance. Suited to lifting.
Rialto	90,000	125,000	200+	15	G, L	France	A high yielding medium dry matter, monogerm cultivar. It has a red, oval bulb which sits approximately 45% above the ground. Rialto has the added benefit of having strong tolerance to the disease Rhizoctonia, which is a bulb rot disease which can have significant impacts on the crop yield. Rialto can be grazed in-situ, or be lifted and fed whole or chopped.
SF Blaze	90,000	125,000	200+	15-18	G	United Kingdom	A new monogerm tetraploid cultivar with distinctive red bulbs of medium dry matter content (15-18%). Bulb proportion above the soil is 40-45%. Ovoid bulb shape enables easy access to the crop when strip feeding. The medium dry matter content bulbs allow a high potential yield while still being a soft bite to grazing animals.
Kyros	90,000	125,000	200+	15-18	G, L	Denmark	High dry matter bulbs with a tankard shape. It has few root fangs, making it relatively easy to lift. A very consistent, high yielding cultivar producing a clean, highly palatable and easily digestible bulb at harvest. Kyros will provide a high energy feed, whether whole or chopped.
Tintinel	90,000	125,000	200+	16-18	G, L	Denmark	A true monogerm lifting or grazing cultivar allowing a lower sowing rate.
Bangor	90,000	125,000	200+	17-18	G, L	Denmark	Medium sized yellow bulbs, with smooth root providing low dirt tare. Good to lift. A true monogerm cultivar allowing a lower sowing rate.
Rivage	90,000	125,000	200+	16-21	G, L	France	Monogerm triploid hybrid with a tankard shaped orange/yellow bulb of high dry matter content (16-21%). Bulb proportion above the soil is 35-40%. Very high yields and excellent leaf holding ability. Tolerance to beet yellow vein virus.
Splendide	90,000	125,000	200+	18-22	G, L	France	Medium sized green to orange bulbs, with 40 to 50% above ground. Suitable for lifting. A true monogerm cultivar allowing a lower sowing rate. High resistance to bolting.
SF Lifta	110,000	125,000	200+	19-20	L	Europe	A late harvesting, medium to high dry matter type (19 - 20%). High leaf quality, very tolerant to leaf diseases. Genetic monogerm hybrid.
Enermax	90,000	125,000	200+	19-20	G, L	Denmark	Medium sized white bulbs, with smooth root providing low dirt tare. A true monogerm cultivar allowing a lower sowing rate. Bred for lifting.
Magnum	90,000	125,000	200+	20	L	Europe	Special-purpose beet for lifting and storing, with a high DM% bulb. Even height above soil. Clean roots give low dirt weights. Hybrid with a monogerm seed.
SF Suga	90,000	125,000	200+	23-26	L	United Kingdom	A sugar beet monogerm hybrid cultivar with high bulb dry matter content (23-26%).

KALE Also known as Chou Moellier, kales are winter active and mainly used as a winter feed yielding up to 18t DM/ha. They are generally resistant to aphid, club root and dry rot. Kales require high soil fertility and good soil moisture for high yield although they can withstand moisture stress if sown early. Sow in spring for feeding over winter. Kales can be mixed with swedes in which case the sowing rate should be reduced to 2 kg/ha. Higher sowing rates lead to thinner and more palatable stems. Kales should be strip fed to reduce wastage, taking 150 to 220 days to reach maturity. Suitable for cattle, sheep, deer, but the taller cultivars are best used only for cattle. Grazing must be light in late summer if re-growth is required. Hay or pasture run-off will improve the nutritional balance of stock grazing kale. To reduce risk of SMCO toxicity avoid the use of sulphate fertiliser, particularly where soil sulphate levels are high.

Cultivar	Sowing Rate in kg/ha		Maturity (days from sowing to grazing)	COMMENTS
	Alone	Mixture		
Coleor	4-5	2	150-220	Coleor is a hybrid, medium stem, leafy purple coloured cultivar producing very large leaves and a very high leaf to stem yield ratio of around 60% leaf. Produces feed high in digestibility and Metabolisable Energy. Exhibits low levels of SMCO and nitrates. Has very good winter hardiness and snow loading ability.
Proteor	4-5	2	150-220	Proteor is an intermediate height, leafy kale with high yield potential. It has a thin stem with a high leaf proportion (often more than 50% leaf), ensuring high utilisation. Proteor has good tolerance to aphids, clubroot and other diseases.
Sovereign	4-5	2	150-220	A medium-tall cultivar, fine stemmed, high yielding, very late flowering cultivar (2 weeks later than Gruner). More leafy than the giant types but has less leaf than Coleor & Proteor.
Caledonian	4-5	2	150-220	An intermediate giant type kale with softer stems and good winter hardiness and club root tolerance. It has high quality and is a high yielding cultivar.
Regal	4-5	2	150-220	An intermediate height kale bred for high leaf percentage and winter hardiness. It is high yielding and has good tolerance to brassica diseases.
Gruner	4-5	2	150-220	A tall growing, single grazing, longer maturing, frost hardy cultivar with good resistance to lodging. It was bred as a winter feed for cattle. It is a marrow stem kale with good palatability. Out-yields Rawara.
Rawara Giant	3-5	2	150-220	A tall, early flowering cultivar. Should be used before early spring to prevent SMCO level build up.
Corka	4-5	2	150-220	A highly palatable, intermediate stem kale suitable for all livestock classes. High leaf to stem ratio.
Kestrel	4-5	2	140-210	Kestrel is a leafy hybrid cultivar with short stems which was bred for low stem fibre content and high digestibility. Exhibits lower levels of SMCO, glucosinolates, and nitrate production.
SF Voltage	4-5	2	140-210	A medium stem kale suitable for all classes of livestock. Has high utilisation, good disease resistance and tolerance to lodging under snow.
SF Inka	4-5	2	140-210	A giant kale developed for cattle grazing. It is high yielding with chunky stems and good lodging tolerance.
SF Fuel	4-5	2	140-210	An intermediate tall type kale with good resistance to brassica diseases. Is a deep green colour. Suitable for cattle and deer.

SWEDES Swedes are sown from mid November to late December, either ridged in wet cool areas, or conventionally drilled to provide specialist winter feed. Generally yellow fleshed swede cultivars are used for main crop and human consumption because of improved flavour and lower water content compared to white fleshed types. Newer cultivars are showing improved dry rot and clubroot resistance. Use only clubroot and dry rot tolerant cultivars for 2nd year crops.

Cultivar	Sowing Rate in kg/ha		Maturity Days approx.	Flesh	Dry Rot	Club Root	COMMENTS
	Ridges 60 cm	Drill rows 20 cm					
Major Plus	0.5	1.0	150-230	Yellow	Susceptible	Susceptible	An early maturing yellow fleshed cultivar, which produces a good proportion of top. A re-selection of Doon Major, but producing up to ten percent higher yields.
Winton	0.5	1.0	160-240	White	Resistant	Resistant	A new generation main crop swede, but can be used as a second crop cultivar. Bronze skin colour and high leaf and bulb yield.
Domain	0.5	1.0	170-210	Yellow	Resistant	Susceptible	An early maturing yellow fleshed first crop swede. Excellent dry rot tolerant. Very good table swede.
Triumph	0.5	1.0	170-210	Yellow	Resistant		An early maturing yellow fleshed first crop swede. Leafy type with good leaf retention in winter. Excellent dry rot tolerant.
Invitation	0.5	1.0	180-240	Yellow	Resistant	Resistant	A later maturing yellow fleshed cultivar with good clubroot and powdery mildew resistant. A high yielding cultivar producing high quality feed for sheep, cattle and deer.
HT Swede™	0.5	1.0	180-200	White	Tolerant	Resistant	Herbicide tolerant (HT) swede sold with Telar® herbicide. A high yielding, white fleshed, purple skin, medium maturity cultivar with similar clubroot and dry rot Tolerant to Aparima Gold and better Tolerant to powdery mildew.
Keystone	0.5	1.0	180-200	White	Resistant	Susceptible	A medium maturity white fleshed cultivar with high dry rot tolerant. Has excellent keeping ability.
Ceres Dominion	0.5	1.0	180-200	Yellow	Susceptible	Susceptible	An early maturing yellow fleshed cultivar with good dry matter yield. It is a traditional main-crop swede.
Aparima Gold	0.5	1.0	180-200	Yellow	Tolerant	Resistant	Has high leaf percentage and very good keeping ability. It is a high producing main crop cultivar.
Highlander	0.5	1.0	200-240	White	Susceptible	Susceptible	Produces higher leaf and bulb yields than the older varieties and is best used as a first crop swede. Pink skinned.

RAPE Forage rape may be sown alone or in mixtures as a specialist summer to winter feed. Rape is often included in pasture mixes and sown at 1- 2kg/ha. It can be sown from early spring to late summer and is generally ready to graze 12-16 weeks after sowing. Rape can be grown on lower soil fertility than most other brassicas and with good soil fertility and moisture, yields of 12t DM/ha can be achieved. Aphids need to be controlled if using susceptible cultivars. Do not grow in clubroot infected areas unless resistant cultivars are used. Some care is required when grazing rape and it is best to allow the crop to fully mature before grazing and also gradually increase rape as their diet. Do not allow hungry livestock that were previously on pasture to adlib feed on rape, as problems such as nitrate poisoning and rape scald can occur.

S = Susceptible, MS = Moderately Susceptible, MR = Moderate Resistance, R = Resistant, Mod = Moderate

Cultivar	Sowing Rate in kg/ha		Aphid Resistance	Clubroot Resistance	Re-growth Ability		Days to Grazing	COMMENTS
					Re-growth No. of	Grazings		
Winfred	3-4	1-2	MS	S	Mod.	2+	70-85	A very early maturing kale x turnip cross, with kale-soft stems and broad leaves, a high leaf to stem ratio, and good cold tolerance. High re-growth potential from multiple grazings.
SF Greenland	3-4	1-2	MS	S	Mod.	2+	70-90	Late flowering, medium height rape. Good palatability with multi-graze potential. Limited aphid tolerance.
Titan™	3-4	1-2	MR	S	Mod.	2+	70-90	An early maturing, high yielding rape x kale interspecies cross of intermediate height. Has good aphid and virus tolerance and has good palatability.
Pillar	3-4	1-2	MS	S	Mod	2+	90-110	A new fast establishing, high yielding multi-graze giant type rape with good aphid tolerance and disease resistance. Suitable for sowing in summer for late summer, autumn feed with re-growth potential and autumn sown for winter grazing.
Bonar	3-4	1-2	MS	S	Mod.	2+	90-110	A late maturing rape, with short stems and large paddle-like leaves. Bred for high protein, high digestibility and lower SMCO levels, Has good re-growth potential. Resistant to powdery mildew. Aphid resistance is better than Rangii or Winfred.
Interval	3-4	1-2	MR	S	Mod.	2+	90-110	A tall high producing rape x kale cross with good tolerance to dry conditions and frost. It has good palatability and good re-growth.
Spitfire	3-4	1-2	MR	S	Mod.	2+	90-110	A rape x kale cross with high dry matter yields and excellent tolerance to aphids. Its low DM stem gives it good palatability. If using cattle to graze spring-sown crops, plan for a single graze as the treading of cattle can reduce re-growth ability. With sheep, plan for at least two grazings
Goliath®	3-4	1-2	MR	S	Mod.	2+	90-110	A giant type rape (rape x kale interspecies cross) with high yield potential, very good winter keeping potential and very good palatability. Good aphid tolerance.
HT Rape™	3-4	1-2	MR	S	Mod.	2+	90-110	Similar to Goliath agronomically, maturing 90-110 days from sowing. Tolerant to the sulfonyl urea herbicide, DuPont® Telar® for use in areas with high weed burden. Good regrowth potential. Suitable for summer/autumn/early winter feed.

 **CROPMARK SEEDS**
only the best!

Cropmark Seeds Limited, PO Box 16-574, Christchurch, New Zealand.
Freephone: 0800 427 676 www.cropmark.co.nz