

Appendix 1B

Eradication Pest Plant Information Sheets

African Feather Grass

Botanical Name

Cenchrus macrourus

Family

Poaceae (grass)

Also known as

Pennisetum macrourum, bedding grass, veld grass, giant veld grass, pennisetum

Where is it originally from?

Africa



What does it look like?

Perennial, clump-forming grass (<2 m) with deep fibrous roots and rhizomes (7 mm diameter and <2 m long) that form new plants. Tough, harsh, strongly ribbed leaves (13 mm x 1.2 m) are light green on top and darker green underneath. Round erect purplish-white stems (up to 2m tall) have many fine hairs that break off when touched, causing skin irritations. Narrow, cylindrical, spike-like flowerheads (10-30cm long, 10-20mm diameter) contain many seeds, each with bristles (10 mm).

Are there any similar species?

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Why is it a pest?

Rhizomes create dense spreading masses in well-lit sites. Seeds prolifically from two years of age with a seed viability of over 80%. Long-lived, medium to fast growing, and tolerant of many soil types, hot or cold temperatures, drought, wind, salt, damage, and grazing.

How does it spread?

Rhizomes creep outwards and fragments are spread by soil movement and machinery. Seeds are spread via water and by wind for short distances, and also in clothing, animals, pelts.

What damage does it do?

Outcompetes native pioneer species in vulnerable habitats and also invades established plant communities. Has the potential to cause build up of sand and changes in habitat, leading to erosion or flooding elsewhere, and loss of dunelakes and wetlands. It is also a fire hazard and can harbour rats and mice.

Which habitats is it likely to invade?

Bare sand, dunelakes, estuaries, coastline, river systems, low shrubland, dry and disturbed forest, potentially throughout New Zealand.

What can I do to get rid of it?

Don't attempt to control it when mature seed is present as this increases the risk of seed being spread on clothing and so on.

1. Dig out small infestations. Dispose of at refuse transfer station or burn.
2. Weed wipe: glyphosate (200ml/L) or Gallant (200ml/L).
3. Spray (spring-autumn): glyphosate (15ml/L) + penetrant.
4. Slash and spray regrowth (spring-autumn): Gallant (150ml/10L).

What can I do to stop it coming back?

Rhizomes resprout and seeds germinate in bare sites. Unpalatable to livestock so do not graze to control.

Followup spraying will be needed at least 6-monthly until no further regrowth occurs, so replant the area only with groundcover species that will not be affected by Gallant spraying (that is, no grasses or flaxes).



Cape Ivy

Botanical Name

Senecio angulatus

Family

Asteraceae (daisy) family

Also known as

Where is it originally from?

South Africa



What does it look like?

Scrambling perennial, often forming a dense tangled shrub to 2-3 m tall, with wiry to woody stems that are sparingly branched. Very fleshy, leathery leaves have 1-3 coarse serrations on each side, and the uppermost leaves are smaller, narrower and occasionally smooth edged. Dense clusters of yellow, ragwort-like flowers (11 mm diameter) are produced from March to August, followed by fluffy seeds.

Are there any similar species?

German ivy (*Senecio mikanioides*) is similar, but its leaves are much thinner and more delicate.

Why is it a pest?

Produces many long-lived seeds that are dispersed a long way from parent plants. Moderate growth rate and layering stems, scrambles over shrubs and ground, forms dense, tall thickets. Tolerates salt, wind, drought, semi-shade and damage.

How does it spread?

Wind spreads the seed, and seed and fragments are spread in dumped vegetation and soil movement. Common sources include waste places, roadsides, bush edges and gardens.

What damage does it do?

Smothers ground and low-growing plants to 3 m tall, forming dense, long-lived mats that prevent the establishment of native plant seedlings.

Which habitats is it likely to invade?

Coastal, rocky areas, cliffs, bush edges, regenerating lowland forests and inshore islands.

What can I do to get rid of it?

Most easily controlled at flowering, when highly visible and before seed is produced.

1. Hand pull small plants, or dig out roots (all year round). Dispose of at a refuse transfer station, burn, or bury deeply.
2. Stump swab (all year round): glyphosate (100ml/L) or metsulfuron-methyl 600g/kg (1g /L).
3. Cut stems below waist height, spray below this point (spring-summer to actively growing plants): glyphosate (10ml/L knapsack or 2L/100L spraygun) or metsulfuron-methyl 600g/kg (2g/10L knapsack) or (20g/100L spraygun) or Tordon Brushkiller (60ml/10L) or Banvine (12ml/L) or Yates Woody Weedkiller (24ml/L) or amitrole (150ml/15L knapsack) or (2L/100L spraygun). Add penetrant to all mixes.

What can I do to stop it coming back?

Cut stumps and dropped stems resprout. Bared areas reseed.



Cathedral Bells

Botanical Name

Cobaea scandens

Family

Cobaeaceae (cobaea) family

Also known as

Cup and saucer vine, monastery bells, Mexican ivy



Where is it originally from?

Central and South America

What does it look like?

Evergreen, climbing vine to 6 m, with angled stems with hook like tips. Leaves are arranged alternately on stems, and are made up of 3 pairs of oval leaflets (including small basal pair) that are dark green above, whitish below, with branched tendrils that are purplish when young and woody at the base. Midrib has twining tendrils. Bell-shaped flowers (6-7 cm long) are produced from December to May that are green and smelly when young and become deep purple. These develop into green seed capsules (55-85 mm long) containing winged seeds (10-15 mm).

Are there any similar species?

Flowers and leaf tendrils are unique.

Why is it a pest?

Seeds are moderately to well-dispersed, moderate growth rate, scrambles over most species, grows to canopy, and forms dense, long-lived masses. Moderately tolerant of shade, drought or damp, wind, salt, differing soil types, and damage

How does it spread?

Seed is carried a short distance by wind, but most spread is through dumped vegetation, soil movement or scrambling habit. Gardens are a common source.

What damage does it do?

Smothers all plants up to medium to high canopy, preventing the establishment of native plant seedlings.

Which habitats is it likely to invade?

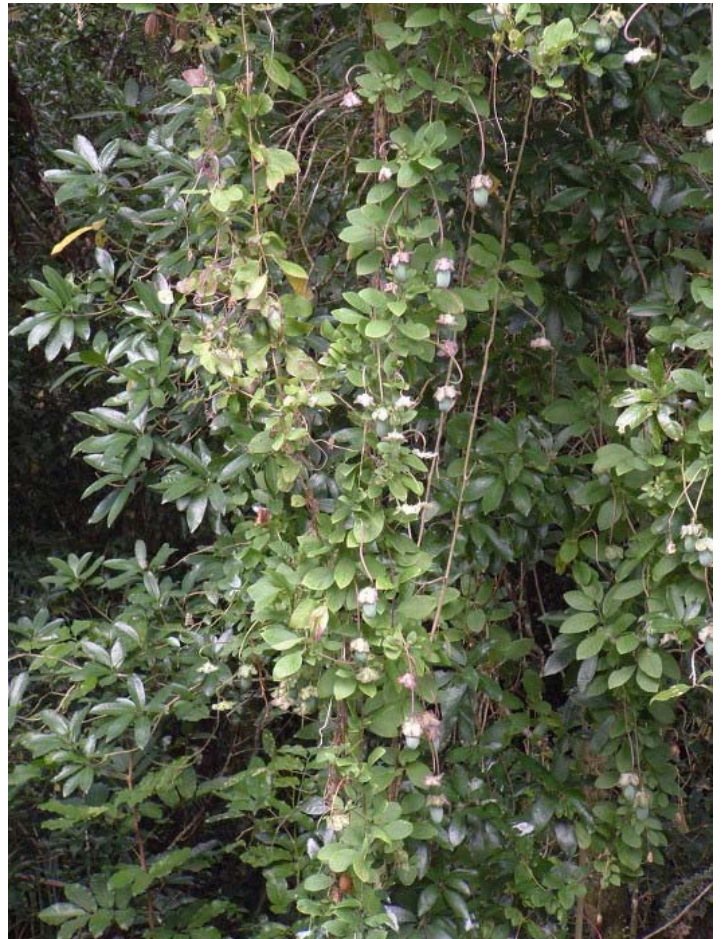
Open and intact forest and forest margins, coastline, and shrublands, especially in low-frost areas.

What can I do to get rid of it?

1. Hand pull small plants and single vines: trace the vines back to the roots and then dig these out. Ensure no vines are trailing on the ground as these will take root. Dispose of any plant material at a refuse transfer station or bury deeply.
2. Stump swab (all year round): cut vines as close to the roots as possible, and treat rooted ends liberally with Tordon Brushkiller (100ml/L) or Banvine (200ml/L) or picloram gel or Yates Woody Weed killer (400ml/L). Can sucker from cut material, so treat cut material with herbicide, bury deeply, or dispose of at a refuse transfer station.
3. Spray (spring-summer): Banvine (120ml/10L) or Yates Woody Weedkiller (24ml/L).
4. Spray (spring-summer) from ground level to 2m high: Tordon Gold (120ml/10L) or Tordon Brushkiller (60ml/10L + penetrant) or triclopyr 600 EC (60ml/10L + penetrant) or triclopyr 120g/L (250ml/10L).

What can I do to stop it coming back?

Stumps resprout very quickly. Dispose of cut fragments on ground and leave other parts to die in air. Follow up 6-monthly on seedlings.



Madeira Vine

Botanical Name

Anredera cordifolia

Family

Basellaceae family

Also known as

Mignonette vine, Boussingaultia baselloides, Boussingaultia cordifolia

Where is it originally from?

South America



What does it look like?

Perennial, climbing, hairless, woody vine with fleshy rhizomes and slender, usually reddish stems with small irregular 'warty' aerial tubers. Fleshy to succulent heart-shaped leaves (2-11 x 2-10 cm) are glossy, clammy to the touch, and arranged alternately on the stems. Slender, drooping flowerheads (18 cm long) of small, numerous, fragrant cream flowers are produced from January to April, but no fruit is formed.

Are there any similar species?

Senecio angulatus and *S. mikanioides*.

Why is it a pest?

Tubers are very hard to kill and are saltwater-tolerant. Grows at a moderate rate but forms heavy, long-lived masses that dominate medium to high canopy. Tolerates drought and damp conditions, wind, salt, many soil types, moderate shade and damage.

How does it spread?

No seed is produced in New Zealand, with all spread by dumped or waterborne (fresh or sea water) tubers and rhizomes. Even tiny fragments of tuber resprout. Common sources are gardens.

What damage does it do?

Smothers all plants to medium to high canopy, preventing the establishment of native plant seedlings. Combined weight of aerial tubers can topple small trees.

Which habitats is it likely to invade?

Low and disturbed forest and margins, gullies, shrublands, coastline, river systems, and streamsides, especially in warmer areas.

What can I do to get rid of it?

1. Pull plant (all year round), burn all parts or place all parts in black plastic bags and leave to 'cook' in sun.
2. Cut down and paint stump (all year round): metsulfuron-methyl 600g/kg (1g /L) or glyphosate (100ml/L) or Tordon Brushkiller (100ml/L) or triclopyr 600 EC (100ml/L) or triclopyr 120g/L (500ml/L). Pull out and rake up all aerial tubers, burn on site or 'cook' in black plastic bags left in the sun.
3. Spray (spring to autumn): 3g metsulfuron-methyl 600g/kg + 100ml glyphosate + 10ml penetrant/10L (knapsack) or 30g metsulfuron-methyl 600g/kg + 1L glyphosate + 100ml penetrant/100L (spraygun).

What can I do to stop it coming back?

Resprouts continuously from fallen tubers and stumps, occasionally from stems. Do not dump aerial tubers in the sea, as they sprout wherever they wash up.



Nodding Thistle

Botanical Name

Carduus nutans

Family

Asteraceae

Where is it originally from?

Europe, North-West Africa and Asia



What does it look like?

Leaves are dark green, deeply divided into triangular lobes with spiny tips, and do not have large, distinct white markings, although the leaf margins are white at the base of the marginal spines

The flowering stems are up to 1.5m tall, stout and bear spiny wings to just below the flower heads. The plant is most easily identified at the flowering stage when it has drooping purple flower heads which nod in the wind.

Are there any similar species?

Scotch thistle, Californian thistle, Winged thistle.

Why is it a pest?

Nodding thistle is a large, invasive, biennial thistle which can significantly reduce stock carrying capacities. It can form dense clumps which smother the underlying pasture and make stock movement difficult. Plants form ideal hides for rabbits and hares and for further weed infestations

How does it spread?

A plant can produce up to 20,000 seeds of which at least a third will be viable. Seeds are heavy and fall close to the parent plant. Seeds can be spread by stock, birds and machinery.

What damage does it do?

It can form dense clumps which smother the underlying pasture and make stock movement difficult. Plants form ideal hides for rabbits and hares and for further weed infestations.

Which habitats is it likely to invade?

Pasture, particularly areas with disturbed soil, often invades and thrives following drought years.

What can I do to get rid of it?

Plants are best sprayed in the late autumn early winter when the plants are seedlings. Plants at about the six-leaf seedling stage are ideal. Spraying at this time of the year also has only a minimal effect on pasture clovers.

1. Escort knapsack spot spraying 3g per 10 litres of water + penetrant
2. Tordon Brushkiller knapsack spot spraying 60ml per 10 litres of water + boost
3. Mature plants can be controlled by mowing but for this to be successful, plants need to be flowering. Mowing before flowering will cause multi-crown plants which will continue to grow, but if cut during flowering, but before seed set plants will die. Multicrown plants are even more difficult to kill.

What can I do to stop it coming back?

Dense, vigorous pastures stop thistles from establishing and reduce their growth and survival.

Pasture cover is most important in autumn. Where new improved cocksfoot varieties perform well they may to keep thistles out.



Woolly Nightshade

Botanical Name

Solanum mauritianum

Family

Solanaceae family

Also known as

tobacco weed, flannel-leaf, kerosene plant, *Solanum auriculatum*

Where is it originally from?

South America



What does it look like?

Spreading, capsicum-smelling shrub or small tree to 10 m tall with all parts covered in dusty hairs, and whitish, branching, soft-woody stems. Velvety, oval, grey green leaves (10-35 x 3-15 cm) are whitish underneath with prominent 'ears' (25mm) at base which clasp the stem. Dense clusters of mauve to purple flowers (15-20 mm diameter) with yellow anthers appear from January to December, followed by clusters of round berries (1 cm diameter) that ripen from hard green to soft, dull yellow.

Are there any similar species?

White-edged nightshade (*Solanum marginatum*), has spiny leaves and stems. *Datura* or angels trumpet (*Brugmansia* species) have similar leaves but giant hanging white (occasionally mauve, red, orange) flowers with a sweet scent.

Why is it a pest?

Grows and matures rapidly, forming dense tall stands and producing many well-dispersed seeds most of year. Allelopathic (produces toxins that poison the soil), inhibits regeneration. Tolerates wet to dry conditions, salt, all well-drained soils, hot to cool temperatures, semi-shade, damage and grazing.

How does it spread?

Birds, especially native pigeon, spread the seeds. Common seed sources are gullies, roadsides, neglected farms, orchards, plantation forests, waste land, and shelter belts.

What damage does it do?

Forms dense, often pure stands. Inhibits or prevents establishment of native plant seedlings, and slows regeneration rate of native forests.

Which habitats is it likely to invade?

Heavily disturbed forest and light gaps, shrublands, coastal and estuarine margins, inshore islands, consolidated sand dunes, wetlands, some tussocklands, and places epiphytes would usually be found, especially in well-drained low-frost areas.

What can I do to get rid of it?

1. Pull up all small plants (easiest in winter). Leave on site to rot down.

2. Cut and squirt (all year round): make cuts at regular intervals around the trunk, apply undiluted Tordon Brushkiller (1.5ml per cut).
3. Cut and paint stumps (all year round): Tordon Brushkiller or triclopyr 600 EC (100ml/L) or Vigilant gel.
4. Frilling (all year round): Tordon Brushkiller (100ml /L) or triclopyr 600 g/L (100ml/L) or Yates Woody Weedkiller (200ml/L).
5. Injection method: use either 10 mm wide holes drilled at 45 degree angle down into trunk 50 mm deep spaced at 50 mm around trunk, or a series of 80 mm wide blazes cut to a depth of 15-20 mm, spaced at 20-40 mm. Fill each with Vigilant gel.
6. Spray: Tordon Brushkiller (25ml/10L) or triclopyr 600 EC (60ml/10L) or triclopyr 300 EC (12ml/L).

What can I do to stop it coming back?

Cut stems resprout quickly. Reseeds profusely in bared sites within 1-2 years. Rarely invades intact habitats. Maintain shade by planting dense cover. Usually short-lived seed, follow up three years. Maintain rolling front of control. Exclude livestock, maintain vertebrate pest control

