

Identifying native pastures of Eastern Namoi



NSW DEPARTMENT OF
PRIMARY INDUSTRIES



Native pastures at Eastern Namoi

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Actions summary

Encouraging native perennial grasses in existing pastures will have the benefit of:

- ▶ **Lower input grazing systems**
- ▶ **Persistent pastures that are commonly drought hardy**
- ▶ **Improved ground cover and soil stabilisation (structure)**
- ▶ **Contributions of litter and organic matter which enhance soil micro-organisms**
- ▶ **Increased water use of available rainfall,**
- ▶ **Reduced soil acidification rates**
- ▶ **Improved species diversity and conservation value**
- ▶ **Better weed competition in well managed persistent pastures**

Native Grasses Guide

Within the Eastern Namoi district many pastures are dominated by native perennial grasses.

These pastures are highly regarded for their capacity to persist in variable and often unfavourable conditions (e.g. drought, shallow soils) and with varying and often low inputs.

Many native perennials are highly persistent due to their adaptability across varying soil types and often lower fertility soils.

They are deep rooted and efficient at using water where it falls, which reduces leakage and limits lateral runoff and soil erosion.

If recognised and correctly managed, many native grasses can be highly productive – especially when soil moisture and fertility are adequate.

The following guide provides an overview of 20 native pastures common to the Eastern Namoi district.

Presented are the key features for identification, grouped according to the seasonal growth habits of species and some basic information on the relative worth of these species to an agricultural grazing system.

Please note that both desirable and less desirable species have been included.



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Cool Season Perennials



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Native Wheatgrass

Elymus scaber

Habitat: grows on most soil types, particularly in moist and shaded areas of paddocks.

Growth Habit: a loosely tufted grass up to 100cm height; highly variable in appearance.

Seed Head: a narrow spike to 25cm long; spikelets with many awned florets; awns straight when young and curved at maturity.

Leaves: leaves often have a half twist; flag leaf (directly below seed head) sticks out at a right angle.

Other Distinctive Features: auricles present.

Forage Value: a palatable, high quality grass valued for winter and spring feed. Types on shallow soils tend to have harsher leaves. Often preferentially grazed, but is avoided after it runs to head in spring.

Management (response to fertility/grazing): responds positively to fertiliser; aid persistence by rotationally grazing to provide strategic rest periods.



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Plume Grass

Dichelachne micrantha

Habitat: common in native pastures and open woodlands. Good frost tolerance.

Growth Habit: a tufted relatively upright grass with few slender stems to 50cm height.

Seed Head: slender, up to 15cm long and have a horse tail-like appearance.

Leaves: are rough, slender and long.

Forage Value: high forage value with useful production in late winter and early spring.

Management (response to fertility/grazing): responds positively to grazing and increased soil fertility.

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Year-long Green Perennials



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Rough Speargrass

Austostipa scabra

Habitat: widespread and common occurring on rocky outcrops, westerly aspects and lighter textured shallow or well drained soils; common in low ground cover positions with limited soil depth.

Growth Habit: erect tufted grass to 80cm tall.

Seed Head: a moderately contracted to open panicle to 30cm long; spikelets are 10-15cm long, sharply pointed with a long sickle shaped awn.

Leaves: leaves are very fine, long and strongly rolled; leaves are rough to touch.

Forage Value: regarded as an important native perennial species; productive in spring and summer and offers green feed in winter; forage is palatable when young but limited by the coarse textured, rolled leaves and sharply pointed seeds at maturity.

Management (response to fertility/grazing): heavy grazing or slashing at early flowering will reduce seed contamination, but may reduce the persistence of plant populations over time.

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Plains Grass

Austrostipa aristaglumis

Habitat: common to dominant in native/naturalised pastures on heavy clay (particularly black earth) soils of the north slopes and plains; prefers good moisture, high fertility and neutral to alkaline pH.

Growth Habit: coarse and densely tufted to 180cm height; tussocks up to 30cm in base diameter. If underutilised, plants are often a mixture of tall senesced older growth and fresh green shoots.

Seed Head: to 55cm long and loose whorled branches when mature; seed bases are sharply pointed with awns to 4cm long and twice bent.

Leaves: to 40cm long, ribbed, generally hairless and often rough to touch.

Forage Value: can be highly productive; although sensitive to frost, new growth (dominating in warmer months) can occur throughout the year in response to rainfall; fresh regrowth offers moderate quality feed, older material declines sharply in quality/palatability.

Management (response to fertility/grazing): provides a competitive perennial pasture, resilient to weed invasion; responds well to regular grazing or slashing during summer and autumn; resting at flowering will aid persistence.

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Year-long Green Perennials



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Slender Bamboo Grass

Austrostipa verticillata

Habitat: widespread and often common in moist and/or more fertile areas e.g. sheep camps around trees and drainage lines/river flats; highly drought tolerant.

Growth Habit: tufted and erect grass up to 200cm tall.

Seed Head: contracted to open panicle 15-60cm long; small spikelets have short hairs and a single, long (3-5cm) awn that is weak when bent once or twice; seed is sharply pointed.

Leaves: few, sparse leaves particularly during flowering.

Other Distinctive Features: stems are often branched at the nodes (thickened stem joints); cane like stems (arising from rhizomes) are erect at first then bend and weep at maturity.

Forage Value: palatable and high quality when leafy, but becomes very stemmy and of low feed value when flowering.

Management (response to fertility/grazing): difficult species to manage for quality; maintain at leaf stage with moderate stocking or slashing; responds positively to increased fertility.

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Wallaby Grasses

Austrodanthonia spp.

Habitat: widespread and common with a number of species occurring in NSW; some species adapted to hard, shallow soils through to species on fertile clay soils;

Growth Habit: fine leaved tufted grass to 100cm tall.

Seed Head: a contracted to open panicle; spikelets green, with pink tinges in early flowering, becoming fluffy white with maturity.

Leaves: grey-green to dark green and often hairy; all species have hairy fringe at the junction of the leaf blade and leaf sheath.

Forage Value: feed values dependant on species and location (soil type); plants in fertile areas tend to respond to fertility and produce larger quantities of higher quality feed. Plants in shallow, poor soils show little response to fertiliser.

Management (response to fertility/grazing): will respond to increased soil fertility; spell in spring or summer to allow seeding; does not tolerate heavy shading in early spring by annual grasses/legumes hence maintain grazing to avoid being out-competed.

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Warm Season Perennials



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Native Millet

Panicum decompositum

Habitat: mainly occurring on heavy clay soils, in depressions and along floodplains.

Growth Habit: can form large, upright tussocks to 145cm in height; difficult to distinguish from other *Panicum* species including *P. queenslandicum* (Yabila grass).

Seed Head: becomes a large, open branched panicle at maturity, with spikelets commonly paired and hairless; pollen sacs are deep orange; ripe seeds are 1.5-2mm long.

Leaves: wide, mostly hairless, light blue-green (often with white mid-rib) to 50cm long and 12mm wide.

Other Distinctive Features: stems are relatively erect and often hollow.

Forage Value: a productive and palatable pasture species when soil fertility and moisture are adequate – pasture quality tests indicating high levels of crude protein and digestibility; high proportion of leaf material until flowering.

Management (response to fertility/grazing): can withstand heavy grazing but persists best when rotationally grazed; responds well to improvements in soil fertility with increased density and plant vigour; some dominant stands of *Panicum* species have been suspected of poisoning stock

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Three-awned Wiregrass

Aristida ramosa

Habitat: grows on poor, shallow and sandy soils of low fertility. May exist on better soils that are poorly managed.

Growth Habit: tufted up to 120cm high.

Seed Head: spikelets have a sharply pointed base and distinct three – branched awn.

Leaves: very few, coarse, narrow and often pale coloured.

Other Distinctive Features: stiff wiry stems that are often branched at the nodes (stem joint).

Forage Value: very low grazing value and often undesirable in most pastures.

Management (response to fertility/grazing): favours lightly stocked, continuously grazed paddocks where more palatable species are selectively grazed and wiregrass is avoided. To control wiregrass implement two summers of heavy grazing in combination with winter/spring rest to favour growth and succession of desirable cool season species.

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Warm Season Perennials



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Parramatta Grass / Slender Rat's Tail Grass *Sporobolus creber / elongatus*

Habitat: a common grass found on most soil types; very common on light soils in open areas of paddocks that are heavily grazed; widespread in many native pastures or sown pastures that have reverted back to native species; an opportunistic native grass that can quickly colonise bare areas; favours high summer rainfall years.

Growth Habit: tufted grass to 80cm height.

Seed Head: long and slender, consisting of short branches, pressed loosely against the main stem which is visible in places.

Leaves: pale green, largely hairless with a hard texture and waxy surface.

Other Distinctive Features: stems are rounded at the base; ligule has a hairy rim.

Forage Value: moderately palatable and digestible when young and leafy; declines rapidly during the growing season when it becomes stalky.

Management (response to fertility/grazing): found in heavily grazed pastures; favoured by continuous grazing; unresponsive to nitrogen with little response to phosphorus and sulphur fertiliser; may be out-competed by more desirable species if fertility is boosted.



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Common Windmill Grass *Chloris truncata*

Habitat: widespread on many soil types and is a useful coloniser of bare, eroded or disturbed areas following summer rain; relatively salt tolerant.

Growth Habit: tufted grass, usually less than 20cm height; contains stolons (runners) that can root down at the node (stem joint).

Seed Head: windmill-like (digitate) seed head consists of 6-9 spikes that radiate out like spokes of a bike wheel from main stem; truncate spikelets are arranged in two rows on the underside of branches; black seeds are blunt and awned.

Leaves: are hairless, pale green-blue green in colour, short and narrow with an abrupt taper at the tip (boat shaped); new leaves are folded lengthwise along the mid rib.

Other Distinctive Features: stem base is flattened; can root down at the stem joints (stolons); Short-lived warm season perennial; acts as an annual in dry years but can live as a biennial or perennial in more favourable years.

Forage Value: it is a valuable pasture component in drier areas; quality is limited under low fertility or as the grass matures; short growth habit may limit grazing potential.

Management (response to fertility/grazing): can persist across a range of soil fertility levels but responds well to increased fertility; responds well to grazing if seeding is delayed; increased abundance in overgrazed pastures that promote bare ground.

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Warm Season Perennials



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Queensland Bluegrass

Dichanthium sericeum

Habitat: a widespread species particularly common on heavier textured soils including black soil plains and cracking clays.

Growth Habit: a densely tufted grass with a concentration of leaves at the base; grows to 80cm tall.

Seed Head: consists of 2-4 branches at the top of stems and have a silky appearance due to white or silver hairs; seeds at maturity have black awns up to 3cm in length.

Leaves: leaf blades are flat and often blue-ish purple, typically hairless and folded along a white mid vein.

Other Distinctive Features: the nodes (joints) of stems are characterised by a distinct 'skirt' of spreading hairs.

Forage Value: provides highly productive and nutritious forage when young; considered a valuable species capable of producing good growth in grazing livestock.

Management (response to fertility/grazing): responds to increased soil fertility; may be damaged from selective and uncontrolled grazing, hence responds well to strategic rest periods and rotational grazing.



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Cotton Panic Grass

Digitaria brownii

Habitat: widespread in a variety of habits but common on light sandy loam soils and in lightly grazed pastures.

Growth Habit: a tufted, hairy grass up to 60cm height.

Seed Head: 6-11cm long with 1-7 (usually 3) erect or spreading branches that normally bear spikelets to their base; spikelets on stalks 4-8mm long and covered in silky, brown or purple hairs giving the spikelets an appearance of cotton wool.

Leaves: flat, soft leaves become twisted and crumpled with age; leaf edges are often wavy (crinkled).

Other Distinctive Features: numerous slender branched stems; hairy at the base.

Forage Value: a desirable summer active grass readily grazed by stock; moderate – high quality when young; grows rapidly after summer rains with moderate production potential.

Management (response to fertility/grazing): abundance declines with continuous grazing.

Warm Season Perennials



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Kangaroo Grass

Themeda australis

Habitat: grows on most soil types; a widespread species often found in non-arable areas and landscapes that have been protected from grazing or only lightly grazed (e.g. roadsides and travelling stock reserves); considered a widespread and dominant species prior to European settlement.

Growth Habit: an erect, densely tufted grass to 150cm height.

Seed Head: contains leaf like structures (spathes) and fertile spikelets have long black awns.

Leaves: blue-ish green in summer and rust purple after frosting; leaves are folded with long hairs at the leaf-sheath junction; sheath is hairy.

Forage Value: low – moderate feed value;

Management (response to fertility/grazing): does not respond well to increased fertility or soil disturbance; requires light and/or rotational grazing as heavy grazing depletes energy reserves located in above ground storage organs.

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Curly Windmill Grass

Enteropogon acicularis

Habitat: occurs across a range of soil types on lower slopes and plains of the Namoi; more common in conservatively grazed paddocks; good drought and flood tolerance, moderate frost tolerance.

Growth Habit: potentially long-lived perennial with a dense, tussock forming habit to 110cm height.

Seed Head: digitate, containing several and up to 15 branches that radiate out like spokes on a wheel across several planes. Spikelets are awned, light in colour and narrower than *Chloris truncata*.

Leaves: broad and flat, variably hairy and often a distinct blue-green; older leaves become crimped, curled or spiralled.

Forage Value: a valuable pasture species; matures rapidly but produces good growth after rain from spring and through autumn; young growth is moderately palatable; flowering plants become harsh - often left un-grazed.

Management (response to fertility/grazing): strongly perennial once established but often quickly eliminated with continuous heavy stocking; seedling recruitment is infrequent; can increase under light stocking when subject to significant summer rains.

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Warm Season Perennials



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Warrego Summer Grass

Paspalidium jubiflorum

Habitat: common in paddock depressions, swamps, floodplains and watercourse frontages; can exist on a range of soil types but is most productive on heavier, fertile soils; responds well to flooding and inundation.

Growth Habit: a leafy and slender tussock forming grass with erect stems growing from 30-120cm in height; may be relatively short lived, but will persist and often dominate in favoured moist environments.

Seed Head: a closed panicle; long and narrow with up to 16 branches (each up to 4cm long) pressed against the main stem; seeds are pale green to straw coloured, are round and have no awns (resembling millet).

Leaves: smooth, flat and narrow, up to 25cm long; tapering to a long fine point.

Other Distinctive Features: stem joints (nodes) and leaf sheaths are hairy and long hairs surround the ligule.

Forage Value: stems and leaves are quite palatable and well utilised – particularly by cattle when short and green.

Management (response to fertility/grazing): requires disciplined grazing management as Warrego can be preferentially grazed; readily regenerates from seed and stands will thicken if rested over summer.

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Hairy Panic

Panicum effusum

Habitat: most common in dry areas on sandy or shallow low fertility soils; found in low – moderate abundance in native pastures, woodlands or disturbed areas.

Growth Habit: a short, tufted grass to 50cm height.

Seed Head: is a wide open panicle with spikelets often paired at the end of branches.

Leaves: are flat and dull green–grey colour; leaf sheaths and nodes are hairy; there are distinctive long glandular hairs along leaf margins.

Forage Value: growth commences early in spring and provides useful and palatable herbage up until flowering; produces valuable forage even under dry conditions. Can cause photosensitisation in sheep.

Management (response to fertility/grazing): quickly responds to small rainfall events; tends to be out-competed when fertility is increased significantly; better suited to light or rotational grazing.

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Warm Season Perennials



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Paddock Lovegrass *Eragrostis leptostachya*

Habitat: found in woodlands, native pastures and naturalised pastures; widespread on low–moderate fertility soils.

Growth Habit: a slender, tufted grass to 90cm height; prostrate growth habit common in grazed pastures.

Seed Head: consist of open, spreading branches (panicle) that is more than twice as long as broad; branches and spikelets branching approximately at right angles; spikelets often lead pencil coloured with many divisions (toothed appearance).

Leaves: leaf blades are rolled in the bud and smooth along the margins; leaf sheaths are hairy.

Forage Value: a valuable grass of high quality that can produce reasonable amounts of green material.

Management (response to fertility/grazing): persists under heavy grazing and increases under improved fertility in native grass systems.



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Silky Browntop *Eulalia aurea*

Habitat: found in moist areas on flats and along creeks and drainage lines. Prolific growth after summer rains.

Growth Habit: dense, tussocky grass that can spread via short rhizomes – appears in clumps; up to 90cm height.

Seed Head: 3-6 erect, silky, chestnut to golden brown (sub/digitate) branches. Awned spikelets are paired, hairy and alike.

Leaves: smooth, blue-green with a white mid vein; turning purple-red at maturity.

Other Distinctive Features: tuft of long hairs directly below the seed head.

Forage Value: moderately palatable and nutritious when young, deteriorating with maturity.

Management (response to fertility/grazing): increases with improved fertility; persists well under rotational grazing as it may decline under set stocking.

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Warm Season Perennials



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Redgrass

Bothriochloa macra / decipiens

Habitat: occurs on most soil types but widespread and often dominant on poor, lower fertility soils; frequently invades overgrazed or bare pastures when fertility levels decline; does not occur on highly acidic soils.

Growth Habit: tufted grass with prostrate basal leaves and erect wiry stems; to 100cm height.

Seed Head: 3-4 erect branches usually pressed together; branch bases are bare; spikelets are awned and often pitted.

Leaves: leaf blades are rolled in the bud; sheath and blades have a prominent mid rib.

Other Distinctive Features: stems have red, hairless nodes turning dark red after seeds fall.

Forage Value: wiry stems are of low digestibility; leaves are of high quality and readily eaten. Quality declines rapidly after running to head; very frost sensitive.

Management (response to fertility/grazing): graze to minimise stem development; responsive to increased fertility but persists well in unfertilised paddocks; responds well to increased stocking rates; dominance in wet summers and autumns can reduce germination of annual clovers and grasses.



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Legume: Native Glycine

Glycine spp.

Habitat: widespread and often abundant in conservatively stocked native and naturalised open pastures, woodlands and roadsides.

Growth Habit: depending on species; trailing or twining legumes with stolons.

Seed Head: flower heads have few to many small, blue-purple pea-shaped flowers borne around upright stems; seed pods are narrow, straight or slightly curved and vary between species from 1-8cm in length.

Leaves: are trifoliate and hairless in some species; stalk of the central leaflet is distinctively longer than lateral leaves.

Other Distinctive Features: often seen twining around nearby grasses and leaf litter.

Forage Value: palatable perennial legume with moderate – high digestibility and crude protein; fixes nitrogen but not highly productive.

Management (response to fertility/grazing): is selectively grazed by stock and may decline under set stocking; responds to applied phosphorus but rarely sulphur; can complement the role of other legumes in the system.

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