

Bluejoint reedgrass

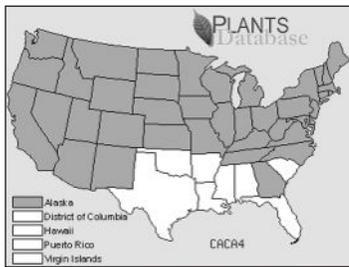
Calamagrostis canadensis, (Michx.) Beauv.

Genus *Calamagrostis*, Greek *Kalomos* meaning ‘reed’ and *agrostis* meaning ‘grass’; species *canadensis* Latin ‘of Canada’.

Family: Grass (Poaceae)

Other Common Name(s): Bluejoint, Canada bluejoint, Canada reedgrass, marsh reedgrass, meadow pinegrass

Description: Native perennial cool-season grass, highly rhizomatous. Flowering culms 3-5 feet tall, smooth stem. Leaf sheaths smooth with prominent veins. Leaf blades 3-8 mm (3/16-3/8 inch) wide, up to 30 cm (12 inches) long. Ligule is a membrane, about 3mm (1/8 inch) tall. Seedhead consists of a loosely branched spikelike panicle, 10-20 cm (4-8 inches) long. Flag leaf just below panicle is short and tends to stick out at a 90 degree angle from the stem.



Adaptation/Habitat:

Wet to wet-mesic soil conditions, bogs, marshes, wet swales, along rivers and streams. Full sun. Tolerates acid soils (up to pH 8), an low-oxygen (anaerobic) conditions. Prefers nutrient-rich, seasonally-inundated soils. Irrigation is essential for optimal seed production on upland sites.

Threatened/Endangered Status: A variety of this species (var. *macouniana* (Vasey) Stebbins) is listed as endangered in Kentucky.

General Comments: Bluejoint reedgrass is a highly rhizomatous species forming large colonies in preferred habitats, occupying sites even more wet than cordgrass (*Spartina pectinata*) seems to prefer. Like cordgrass, seed production occurs mostly on the outer edges of colonies, and is generally low. Bluejoint is best propagated in controlled conditions of the greenhouse, and transplanted into wide row spacings.

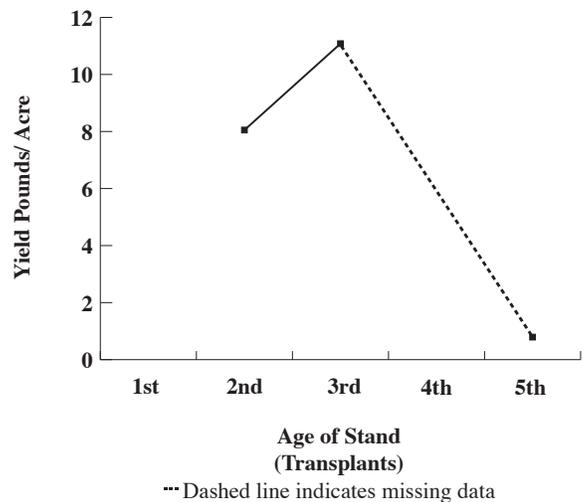
Establishment for Seed Production (Appendix A)

Direct seeding:

NOT RECOMMENDED FOR THIS SPECIES

Greenhouse:

Seed pre-treatment: No stratification necessary. Germination of grass seed usually improves with proper storage (cool, dry conditions) throughout the first year after harvest. Sow seed in greenhouse two months before last frost free date at ¼” depth. Transplant after all danger of frost. . Greenhouse grown plugs can be transplanted into wide row spacing, 6-8 feet between rows, and plants should be 1-2 feet apart within the rows. This gives the newly established plants adequate root-space for rhizome spread, and promotes more flowering and seed set after establishment. Irrigate during establishment and as needed for flowering and seed production.



Vegetative Production:

Bluejoint reedgrass can be vegetatively propagated from pieces of rhizome, as long as some roots and buds are present. The best time to transplant is early spring. Nursery beds can be established from greenhouse grown seedlings to capture more genetic diversity, and plugs of roots and rhizomes removed in subsequent years for transplanting into larger production fields.

Stand Management

Weed Control – Pre-emergent herbicides can be used after transplanting seedling plugs or pieces of rhizome. It’s critical to water-in transplants to seal soil around roots to prevent herbicide from coming into contact with and possibly damaging roots.

Pests – Nematode (*Subanguina calamagrostis*) invades leaf tissue and form galls, causing leaves to twist, and allowing subsequent infection by a fungus (Norton 1987); reportedly an insect invades the sheath of the flag leaf and severs the culm below the seedhead (Mitchell 1979a).

Diseases – No serious diseases known

Pollination: Wind pollinated

Canada wildrye

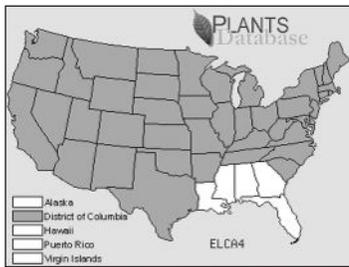
Elymus canadensis L.

Genus *Elymus*, Latin; species *canadensis* Latin ‘from Canada, i.e. northeastern North America’.

Family: Grass (Poaceae)

Other Common Name(s): Nodding wildrye. Western wildrye

Description: Native perennial cool-season grass, flowering culms 3-4 feet tall, smooth stem. Leaf sheaths are usually smooth, with well developed auricles clasping stem at juncture of leaf sheath and blade. Leaf blades up to 16 inches long, ¼ to ¾ inches wide. Ligule is a short truncated membrane. Seedhead consists of a thick spike, 3 – 10 inches long, nodding. Bunch grass growth habit.



Adaptation/Habitat:

Broadly adapted to a range of soil conditions, upland and lowland, open areas, disturbed areas. Prefers full sun. Preferred soils for production are well-drained loams.

Threatened/Endangered Status: Not listed

General Comments: Canada wildrye is a relatively short-lived perennial bunch grass which establishes readily from seed in mixed plantings. These two traits make it ideally suited as a nurse crop for prairie restorations. It can also be direct-seeded as a seed production field into a well-prepared, weed-free seed bed (i.e. following a glyphosate-resistant crop, for example).

Establishment for Seed Production (Appendix A)

Direct seeding:

- Row Spacing: 36” 24” 12” Solid Stand
- PLS lbs/acre: 7.0 10.5 21 21

Seeding Depth: 1/4-1/2”

Seeding Methods: native grass drill

Time of Seeding: Fall, or early spring preferred.

Weed Control: Prepare clean, firm, weed free seedbed prior to seeding

Greenhouse:

No stratification necessary. Germination of grass seed usually improves with proper storage (cool, dry conditions) throughout the first year after harvest. Sow seed in greenhouse two months before last frost free date at ¼” depth. Transplant after all danger of frost.

Stand Management

Weeds – Mow stand high (6–12 inches) first growing season to prevent weed canopy from shading seedlings. Broadleaf herbicides can be used to control broadleaf weeds in established stands.

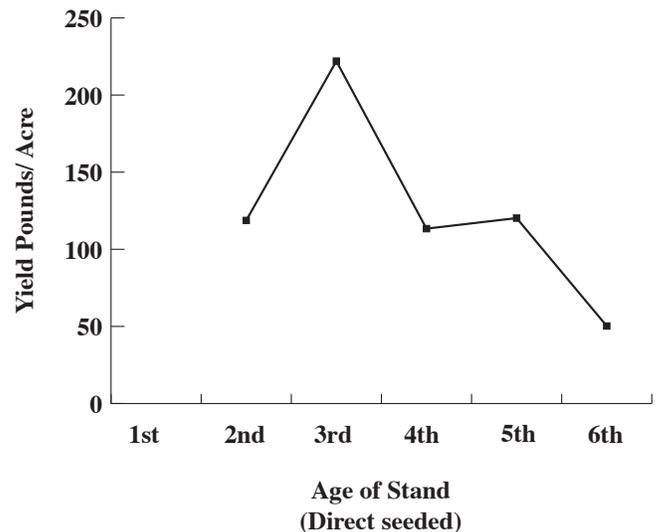
Pests – No serious pest known

Diseases – Susceptible to leaf and stem rust, also ergot.

Pollination: Wind pollinated

Seed Production (Appendix B)

- First Harvest: Flowering and seed set will occur end of first growing season from previous fall seeding or early spring seeding, or late spring transplants.
- Yield/Acre: 100-250 bulk lbs/ac
- Stand Life: 4-6 years. Seed production declines significantly 5th year and after. Annual fall burning will prolong stand life and seed yield.
- Flowering Date: Flowering occurs mid-July to mid-August
- Seed Maturity: September
- Seed Retention: Shattering occurs early to mid-October
- Harvest date range at TPC (2002-2006): Sept.. 15 to Oct. 11
- Recommended Harvest Method: Combine at maturity (hard dough stage). Long awns make harvesting a challenge, causing seed to ball up and not flow. Additional de-awning bars or other modifications to the combine may be required for successful harvest of this species.



Seed Cleaning (Appendix C)

Cleaning Process: Debeard to remove long awns and to make the material flowable. Air-screen to clean. See Appendix C for settings.

Virginia wildrye

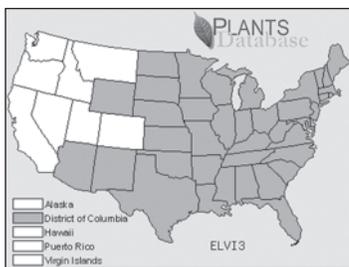
Elymus virginicus, L.

Genus *Elymus*.; species *virginicus* Latin 'of Virginia'.

Family: Grass (Poaceae)

Other Common Name(s): Terrell grass

Description: Native perennial, cool-season bunchgrass, flowering culms 2-3 feet tall, smooth stem. Leaf sheaths usually smooth, sometimes with fine hairs. Leaf blades are rough, about 12-35 cm (5-14 inches) long and .5-1.5cm (up to 5/8 inch) wide. Ligule is a short membrane. Seedhead consists of spike 5-17 cm (2-7 inches) long, the base of which is often partially enclosed by the uppermost, inflated leaf sheath.



Adaptation/Habitat:

Prefers wet-mesic to mesic soil conditions with high fertility, and is shade tolerant. Preferred soils for production are well-drained loams

Threatened/Endangered Status: Not listed

General Comments: Virginia wildrye is commonly found in open forest, savannas, and along woodland edges, and can be particularly abundant in open forests along creeks and rivers. It readily establishes from seed, and holds promise as a nurse crop for prairie and savanna reconstructions. Because of its shade tolerance, it will spread in open woodlands, but gives way to full-sun adapted prairie species in a prairie reconstruction.

Establishment for Seed Production (Appendix A)

Direct seeding:

- Row Spacing: 36" 24" 12" Solid Stand
- PLS lbs/acre: 8.6 11.5 23 20-35

Seeding Depth: 1/4-1/2"

Seeding Methods: native grass drill

Time of Seeding: Fall, or early spring

Weed Control: Prepare clean, firm, weed free seedbed prior to seeding (e.g. following a glyphosate-resistant crop, for example).

Greenhouse:

Seed pre-treatment: No moist stratification is necessary. Germination of grass seed usually improves with proper storage (cool, dry conditions) throughout the first year after harvest. Sow seed in greenhouse two months before last frost free date at 1/4-1/2" depth. Transplant after all danger of frost into rows spaced convenient for tillage equipment.

Stand Management

Weeds – Mow stand high (6–12 inches) first growing season to prevent weed canopy from shading seedlings. Broadleaf herbicides can be used to control broadleaf weeds in established stands. Cultivate between rows.

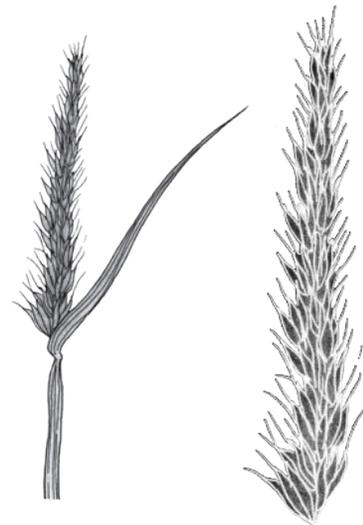
Pests – No serious pest known

Diseases – Grubworms are reportedly a problem in Texas. Ergot is known to occur on seedheads.

Pollination: Wind pollinated

Seed Production (Appendix B)

- First Harvest: Abundant flowering and seed set end of first growing season from greenhouse grown plugs transplanted into weed-barrier.
- Yield/Acre: Estimates range from 300-1500 bulk lbs/acre. Annual early spring burn will prolong the life of the stand.
- Stand Life: Estimated stand life 5-8 years.
- Flowering Date: Flowering occurs mid-July to mid-August
- Seed Maturity: Late August to early September
- Seed Retention: Shattering occurs mid- to late October
- Harvest date range at Elsberry, MO: Aug. 29 to Sept. 12
- Recommended Harvest Method: Combine at hard dough stage. See Appendix for combine settings.



Seed Cleaning (Appendix C)

Cleaning Process: Pre-clean air-dried material by scalping thru 1/2' mesh to remove large particles. Debeard or brush gently to remove short awns and break up seedheads, airscreen to clean. See Appendix for settings.

Junegrass

Koeleria macrantha, (Ledeb.)

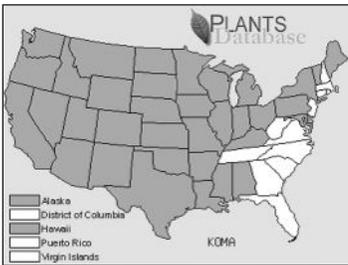
J.A. Schultes

Genus *Koeleria*, Latin from 'Koeler', a German botanist, George Wilhelm Koeler (1765-1807); species *macrantha* Latin *macanthus* meaning 'large flowered' referring to the dense spike-like panicle.

Family: Grass (Poaceae)

Other Common Name(s): Prairie Junegrass, Crested hairgrass, Koeler's grass

Description: Native perennial cool-season bunchgrass, flower culms 1- 2 feet tall. Fine hairs on stem at base of spike-like panicle and at nodes. Leaf sheaths smooth or hairy, with hairs on the margins of the collar. Leaf blades 3-25 cm long (1.25 – 10 inches), and 1-3mm wide (up to 3/16 inch) Ligule is a very short membrane. Seedhead consists of spike-like panicle, 3-18 cm long (1.25-7.25 inches) and 1-3 cm wide (0.5-1.25 inches).



Adaptation/Habitat: May be common on dry, upland rocky, or sandy prairies, becoming more abundant on northern prairies. Full sun. Very-well drained soils preferred for seed production.

Threatened/Endangered Status: Endangered (KY, OH); Extirpated (PA).

General Comments: Junegrass is an important cool-season grass component, particularly in prairies on drier, very-well drained sites. It is seemingly short-lived, and may rely on re-seeding itself to persist.

Establishment for Seed Production (Appendix A)

Direct seeding: NOT RECOMMENDED

- Row Spacing: 36" 24" 12" Solid Stand
- PLS lbs/acre: 0.25 0.4 0.75 0.75-1.0

Seeding Depth: 1/8"

(seeds require light to germinate)

Seeding Methods: native grass drill

Time of Seeding: Late spring

Weed Control: Good weed control before seeding is essential. Seedlings are small and slow growing.

Greenhouse:

Seed pre-treatment: No moist stratification is necessary. Germination of grass seed usually improves with proper storage (cool, dry conditions) throughout the first year after harvest. Sow seed in

greenhouse two months before last frost free date at 1/4-1/2" depth. Transplant after all danger of frost into rows spaced convenient for tillage equipment, or into weed barrier 8" apart.

Stand Management

Weeds – Mow stand high (6–12 inches) first growing season to prevent weed canopy from shading seedlings. Broadleaf herbicides can be used to control broadleaf weeds in established stands.

Cultivate between rows.

Pests – No serious pest known

Diseases – Grubworms are reportedly a problem in Texas. Ergot is known to occur on seedheads.

Pollination: Wind pollinated

Seed Production (Appendix B)

- First Harvest: Flowering and seed set end of second growing season from greenhouse grown transplants. Plants will remain vegetative the first growing season.
- Yield/Acre: 50-190 bulk lbs/ac (high-end yield when transplanted and grown in weed-barrier)
- Stand Life: Potentially 4-5 years. Peak harvests second and third year. Seed production declines significantly 4th year and after. Stands quickly invaded by other cool-season grasses (e.g. Kentucky bluegrass, *Poa pratensis*, and Smooth brome, *Bromus inermis*).
- Flowering Date: Flowering occurs early to late June.
- Seed Maturity: Late June to early July
- Seed Retention: Shattering occurs mid- to late July.
- Harvest date range at TPC (2002-2006): July 1 to July 8.
- Recommended Harvest Method: Combine harvesting is practical for larger plots. We've used a modified hedge-trimmer with attached collection tray for harvesting small plots.

