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REV 6/10

PURDUE AGRICULTURE

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**EXPERT
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Forage Field Guide

Second Edition

Purdue Extension

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Legumes



Alfalfa

Medicago sativa

Minimum Soil Requirements: Well-drained, high fertility, pH 6.6-7.2.

Plant Characteristics: Perennial legume. Commonly has purple flowers, but they can be blue, yellow, cream, or variegated. Has serrated leaflet margins on the tip and a long, deep taproot. Typically, there are three leaflets per leaf. Grows 15-36 inches tall. Has very high palatability, good winter hardiness, and good drought tolerance.



Seed Characteristics:

Seeds per pound: 227,000.

Emergence time: 7 days.

Optimal germination temperature: 68°F. Seeding

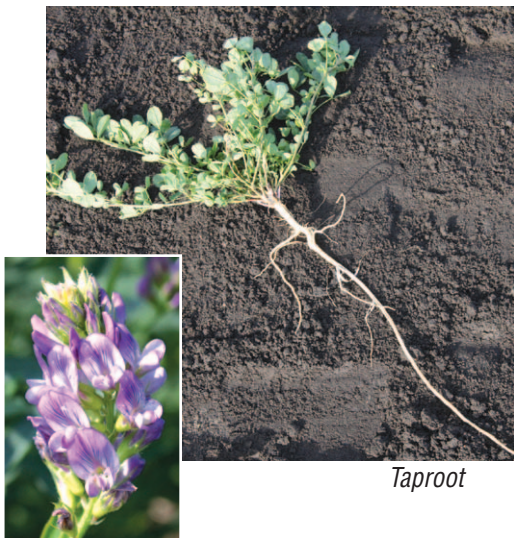
dates: March 1-May 1 *or* August 1-September 1.

Pure live seed per acre: 12-15 pounds.

Uses and Comments: Hay, silage, pasture, green-manure crop.

Distribution: Northern half of United States.

Cautions: Bloat hazard.



Taproot



Sweetclover

Melilotus species

Minimum Soil Requirements: Somewhat poorly drained, medium-high fertility, pH 6.8-7.2.

Plant Characteristics: Annual or biennial legume. Extensive taproot and white or yellow flowers. Leaflet edges are serrated. Has three leaflets per leaf. Grows 18-84 inches tall. Has medium palatability, fair to good winter hardiness, and good drought tolerance.



Seed Characteristics:

Seeds per pound: 299,600.

Emergence time: 7 days.

Optimal germination temperature: 68°F. Seeding dates: February 1-May 1.

Pure live seed per acre: 10-12 pounds.

Uses and Comments:

Green-manure crop and forage for bees.

Distribution: The Great Plains and Midwest.

Cautions: Bloat hazard. Moldy hay can cause bleeding disease in livestock. See Purdue Extension publication WS-9, *Indiana Plants Poisonous to Livestock and Pets*. Some consider sweetclover invasive.





Timothy

Phleum pratense

Minimum Soil Requirements: Somewhat poorly drained, medium fertility, pH 5.4-6.2.

Plant Characteristics: Cool-season perennial bunchgrass. The storage organ is a bulblike structure called a corm. Grows 20-40 inches tall. Has fair palatability, good winter hardiness, and fair drought tolerance.



Corm (bulb-like structure) with secondary tiller attached

Seed Characteristics:

1,164,500 seeds per pound. Emergence time: 10 days. Optimal germination temperature: 59-77°F. Seeding dates: February 1-May 1 *or* August 1-September 1. Pure live seed per acre: 3-6 pounds (use the higher rate in the spring).



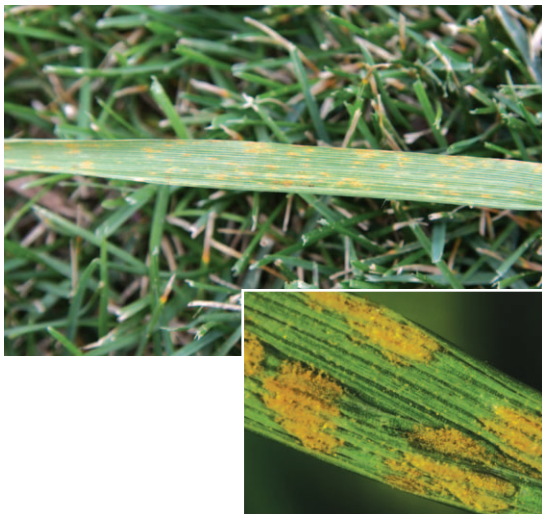
Uses and Comments:

Medium- to high-yielding pasture and hay.

Distribution: The Upper Midwest and Northeast.

Cautions: Maturity does not match legumes or other cool-season grasses when grown as a mixture; late.





Grass Rusts

Crown rust (*Verticillium dahliae*)

Leaf rust (*Puccinia brachypodii*)

Stem rust (*Puccinia graminis*)

Symptoms: Small, powdery, orange to brick-red pustules (spore masses) develop on leaves.

Occurs in forage grasses.

Conditions Favoring Disease: Dew at night, mild weather, and dry, windy days.

Management: Resistant varieties are available for some species. Maintain fertility.



Black blister beetle



Gray blister beetle

Blister Beetles

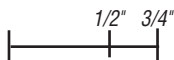
Epicauta sp.

Black, Gray, Margined, and Striped

Description: Elongate beetles with heads that are distinctly wider than the “shoulders.” Body color can be completely black, completely gray, gray with black stripes (margined), and yellow with black stripes (striped).

Time of Attack: June to September, or any time when feeding livestock hay that is infested with beetles (this includes dead beetles).

Damage: There is very little foliar damage; however, these beetles contain the chemical cantharidin, which is very toxic to horses





Common Lambsquarters

Chenopodium album

Leaves are slightly toothed and young leaves are coated with a white, mealy substance. As the leaves age, this becomes less evident. Annual.



Common Ragweed

Ambrosia artemisiifolia

True leaves are mostly deeply lobed, but can occasionally have no lobes, and may be hairy.



Cressleaf Groundsel

Senecio glabellus

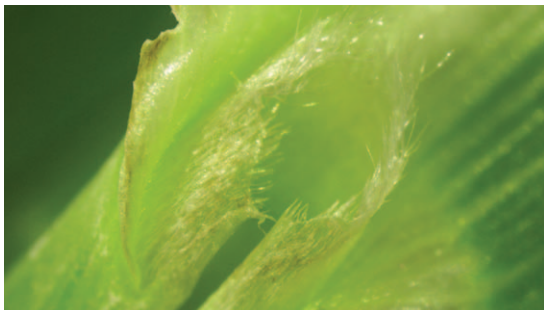
Grows 1-3 feet tall and has hollow stems. Leaves are 2-10 inches long and lobed. Lower leaves have slender petioles. Flowers are yellow with 6-12 petal-like ray flowers. Annual.



Curly Dock

Rumex crispus

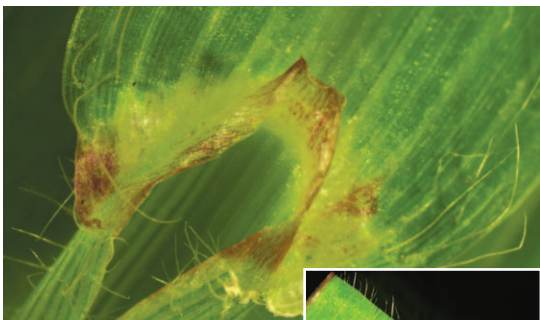
Leaves are arranged in a basal rosette, are 6-12 inches long, and have smooth, wavy edges. Stems are erect, smooth, and stand 1-4 feet tall. Leaf petioles have ocreas which grasp the stem. Perennial.



Johnsongrass

Sorghum halepense

- Sheath:** Somewhat round
Ligule: Membranous, tall, and jagged
Blade: Smooth, prominent midvein
Auricles: None



Large Crabgrass

Digitaria sanguinalis

- Sheath:** Compressed
Ligule: Membranous
Blade: Hairy
Auricles: None

Feeding Beef Cattle

Daily Nutrient Requirements of Beef Cows¹

Nutrient Category	Months Since Calving											
	1	2	3	4	5	6	7	8	9	10	11	12
Nutrient Requirement												
TDN, %DMI	58.7	59.9	57.6	56.2	54.7	53.7	44.9	45.8	47.1	49.3	52.3	56.2
NE _m , Mcal/lb.	0.59	0.61	0.57	0.55	0.53	0.51	0.37	0.38	0.41	0.44	0.49	0.55
DMI, lb.	26.8	27.8	28.4	27.4	26.5	25.7	24.2	24.1	24.0	23.9	24.1	24.6
CP, % DMI	10.1	10.7	9.9	9.3	8.5	7.9	6.0	6.2	6.5	7.0	7.7	8.8
Ca, % DMI	0.29	0.31	0.29	0.26	0.24	0.22	0.15	0.15	0.15	0.26	0.25	0.25
P, % DMI	0.19	0.21	0.19	0.18	0.17	0.15	0.12	0.12	0.12	0.16	0.16	0.16

TDN = total digestible nutrients. NE_m = net energy maintenance. DMI = dry matter intake — often interchangeable with DM (dry matter). CP = crude protein. Ca = calcium. P = phosphorus.

¹Requirements based on mature weight of 1,200 pounds and peak milk of 20 pounds per day.

Source: National Research Council, *Nutrient Requirements of Beef Cattle*.