Pasture Improvement, Species Selection and Establishment

Illinois TSP Online Training

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Common Scenarios

- Poor vigor, undesirable species, less desirable species in existing pasture
- Winter kill/ injury
- Cropland conversion

Infested with Unpalatable Broadleaves

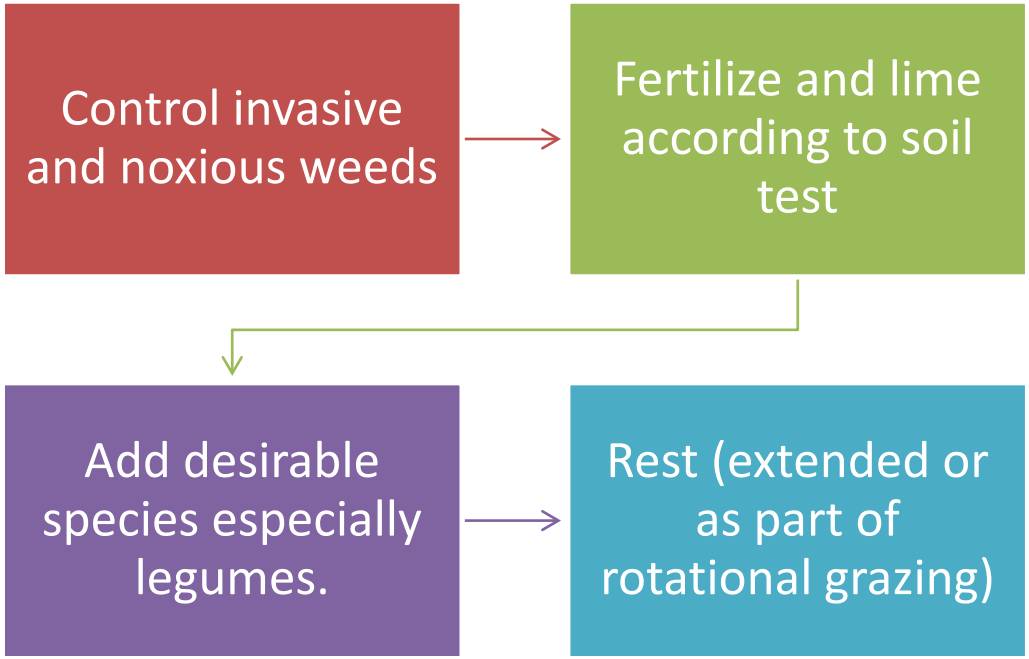
Existing Species

ID existing species during inventory.

Usually cool season introduced

Heavily stocked pastures will usually have a lot of Kentucky bluegrass and thistles, some white clover(smaller white Dutch).	Look at weeds, what kind, how many?	What does desirable forage density look like?	Pasture Condition Scoresheet

Steps to improve existing heavily used pasture



Undesirable Species

- Thistles, Multiflora rose
- Goldenrod, Tansy, Queen Anne's Lace, etc.
- Herbicides that control these species also kill legumes.
- Each herbicide has a specific period during which livestock may or may not be permitted on the treatment area.

Weed control in existing pasture

- May be essential because weeds are reducing utilization
- Consult agronomist for herbicide options
- Organic control methods include pulling, cutting and tillage
- **With a history of high stocking rates and continuous grazing, rotational management may not be enough to restore desirable plants**

Winterkill of Orchardgrass/Alfalfa

Strategies for Dealing With Winter Injury and Low Plant Vigor

- Frost Seeding
- Inter-seeding
- Soil Fertility and pH management

Frost Seeding

Typically use red clover due to ease of establishment

4-6 # per acre broadcast on top of freezing and thawing ground. No more than 1” of snow cover to avoid runoff

Other potential species; Ladino clover 2#/ac, Ryegrass (perennial, Italian, annual) 5-10# acre

No-till Seeding

Graze heavily before seeding.

Seed when first able to get on the ground in the spring

Depth of seed placement critical, must adjust to ¼-1/8 inch depth

One grazing after seeding when existing plants are 4-6” tall grazing down to 2” Seedlings must be short enough so that livestock don’t trample and pull out by the roots. Don’t graze if there is excess soil moisture

Cut for hay after if possible or wait until plants get headed out to graze.


pasture pleaser

Soil Fertility and pH

- Recent soil tests?
- Phosphorous
- Potassium
- pH
- Growth potential reached by having adequate levels of soil nutrients at a pH that makes them available.
- Greatest response to soil fertility on soils with higher AWHC

Pasture Response

Nitrogen applications prior to anticipated growth periods most efficient. UW recs 80-130 units N split applications. **(For <30 legumes only)**

Highest response on soils with > yield potential.

Rotational grazing will return 80% of soil nutrients back to pasture.

Pasture Response

Some loss of K due to leaching

Legumes will show K deficiencies first and usually respond preferentially over grasses

Both grasses and legumes will show response to K if deficient

Later Season No- Till

Small grain/turnip/radish/canola

Summer annuals (6/1 or later)

- Forage sorghum, sorghum sudan, millets, teff grass
- Reduce competition before seeding
- Also applicable to sacrifice paddocks and winter feeding areas.

Oats and Turnips

Mature Sorghum Sudan

Establishing New Pasture

Soils Map and Forage Suitability Groups**

- In Section II Field Office Tech Guide

Also in Web Soil Survey

Helps answer question of what will grow there

512 Forage and Biomass Planting Standard Mixes

Seed tools

Forage Group Types

- Cool Season Introduced Perennials/biennials
  - Grasses
    - Bunch
    - Sod
  - Legumes
  - Forbs
- Annuals
  - Cool season
  - Warm season

Natives

Warm season natives

Cool season natives

Forbs

browse

Big Bluestem, Switchgrass, Indiangrass

Virginia and Canada wildrye

Common Introduced cool season

- Sod formers
  - Kentucky bluegrass
  - Reed canarygrass
  - Smooth bromegrass
  - Quackgrass
- Bunchgrasses
  - Orchardgrass
  - Tall fescue, meadow fescue

  Timothy, Ryegrasses, Festulolium

Tall Fescue

Orchard Grass

Kentucky Bluegrass

Meadow Fescue

Smooth Bromegrass Timothy

Common Legumes

- Perennial
  - Alfalfa
  - Birds Foot trefoil
  - Kura clover
- Biennial
  - Red clover
  - White clover
  - Alsike clover

Alfalfa

Red, White, and Alsike Clover,

Birds Foot Trefoil

Annual forages

- Cool season
  - Cereal grains; oats, wheat, barley triticale, rye
  - Forbs; peas, brassicas
- Warm season
  - Sorghum, millets, sorghum sudangrass hybrids, corn
  - Soybeans, sunflowers, sun hemp, cowpeas, etc

Warm season natives

- Grasses
  - Big and little bluestem
  - Indiangrass
  - Switchgrass
  - Sideoats gramma
- Forbs

Pasture Establishment in Cropland

- Select Seed Mix Based on Forage Suitability Group Adapted Species and Operator objectives, NRCS 512 Standard
- Control weeds prior to seeding.
- Soil fertility and pH at optimal levels
- Prepare firm seedbed (adult bootprint <1/4”) Ideal seedbed moist
- Sow within recommended seeding dates
- Seeding depth critical (1/4-1/8” depth typical)
- Mow for hay/balage/silage first year if possible

Species selection

- Seed mix recommendations in forage suitability groups also in WI 512 standard
- Most will buy a commercial premixed blend
- Avoid VNS (varieties not stated)
  - Use U of I or U of WI recommendations
  - Lots of variability in characteristics even within the same species

Seed mixes

- Diversity has long lasting benefits
- Useful to have mix of sod formers, bunch grasses, legumes, and forbs
- Many commercial mixes contain meadow fescue, festulolium, perennial ryegrass, improved white clover/red clover
- NRCS financial assistance- have mix checked out BEFORE sowing.

Characteristics of successful new seedings

Adequate coverage

- More than 65 pure live seeds per square foot

Species adapted to soils

No more than 50% legumes (bloat potential)

Firm, moist seedbed or well adjusted no till drill

Weeds under control before seeding

No grazing first year (hay or clip)

Seed math

- Pure Live Seed = % germination X % purity
- Seed tag states that Meadow Fescue is 92% germination and 99% purity. .92 X.99 = .91. If you sow 5 pounds of this seed per acre you will sow 5 X .91 = 4.55 pounds pure live seed (PLS)
- How many PLS per square foot was sown?

PLS calculations

- Meadow fescue has about 225,000 seeds per pound.
- 4.55#/acre X 225,000 seeds/pound = 1,023,750 PLS/ac
- To calculate seeds per square foot divide seeds per acre by square feet in an acre. 1,023,750/43560 = 23.5 PLS/sq ft

Summary

- Treat pastures like a crop..soil test, fertilize, control undesirable plants
- Managed grazing may help more desirable plants express themselves over time
- Add legumes if needed
- If undesirable plants> desirable reseeding may be necessary