Pasture Renovation and Improvement

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Evaluate your Pasture?
This can range from:
Simply observing that
"It's still green out there"
Sophisticated assessment of:
- plant species diversity
- plant / tiller density
- amount of DM / inch of pasture height

From USDA-NRCS
‘Pasture condition’ scoring focuses on:
Vegetation traits
Diversity, desirability, % legumes, 'vigor'
plant cover, uniformity of use, severity of
use, tree/shrub canopy cover
Site / Soil traits
active erosion ?, degree of plant residue
Management
compaction, fertility insects & diseases

10 factors 0-4 ranking for each - high score 40

Of what value is pasture condition scoring?
It’s a ‘snapshot in time’
It forces a detailed look at important pasture
and grazing factors
It gives guidance for immediate or future
management changes

A problem often associated with
non-uniform pasture production
is a mis-match between forage
needs and for availability.

Supply
Needs

Approximate ‘season-long’ pasture needs per
average sized beef cow, with pasture providing
most, if not all, of the nutrition:
1 - 2 Ac. Excellent, dense sod, permanent pasture
2 - 2 ½ Ac. ‘Average’ permanent pasture
(This will have spring excess OK summer forage in ave.
years.)
3+ Acres ‘thin’, poor sod, unmanaged
(Supplemental forage will likely be needed !!!)
Note! Supplement hay etc. when needed
We are often challenged with the ‘roller coaster’ growth pattern of our ‘cool-season’ grass-based pastures!

A more productive Cool-Season grass ‘Bromegrass’ ‘Orchardgrass’ doesn’t solve the problem

Adding Nitrogen to grass pastures?
Grass responds to N more than any other fertilizer nutrient!

Simply produces more grass when there is already a surplus!

Adding a ‘warm-season grass pasture’ to compliment the cool-season grass pastures?
Sudangrass, Millets, Switchgrass, Big bluestem Etc.

Other forages are productive during Other parts of the growing season

Annual or Perennial

Other pasture condition scenarios:
More pasture than animal power
‘Spot grazing’ – selective grazing
Animals in ‘good condition’
Significant areas avoided, mature grasses (headed)
Weeds invading

Another scenario; the other extreme:
More animals than pasture
Can ‘keep up’ with Spring growth (maybe)
Short pasture summer, fall (winter ?)
Need to feed supplement hay / feed
Weeds invading
Thin sod, and active erosion areas
Management ‘Fixes’ for the two scenarios.

1st Scenario (excess pasture)
- add animals
- reduce grazed area
- clip seedheads and weeds, keep a surplus situation
- harvest excess as hay

2nd Scenario (“over stocked”)
- reduce animal numbers !!!
- supplement some of daily needs as hay or feed
- manage weeds (animals will begin to ‘test’ less desirable plants)
- implement rest / rotation grazing
- boost production of the pasture

Guide for Year-Round Forage Supply

IOWA STATE UNIVERSITY
University Extension

Table 1. Leased Needs Annual Unit Factors

<table>
<thead>
<tr>
<th>Animal Unit Factor</th>
<th>Leased Needs</th>
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1 AUM [animal unit month] =
Forage energy needs of a 1000# beef cow & calf for 1 month
~ 28 lbs DM per day or ~ 850 lbs DM per month

Project forage needed & supplied – by month

Adjusting animal numbers gets a bit more tricky as pasture sizes get smaller.

+ 1 animal → overstocked situation

- 1 animal → less efficient use (but better for the animals and the pasture!)
What can fertilization do?

Reed Canarygrass
Tall Fescue
Smooth Bromegrass
Orchardgrass
Grundy
Clarinda
Weller
Keswick
Ky bluegrass

Early spring     60-80 lbs/A
Late spring (Optional) extra 30-40 lbs/A
& / or Late Summer (Optional) extra 30-40 lbs/A

Tall, Cool-Season Grasses

Early spring     80-120 lbs/A
Late Spring (Optional) extra 40-60 lbs/A
& / or L- Summer (Optional) extra 40-60 lbs/A

Orchardgrass

Legume-Grass Mixed Pastures
If more than 1/3 legume – no nitrogen is recommended
If less than 1/3 legume – treat as a grass pasture
These mixed pastures with will respond more to P and K.

*Note for Legume-Grass Mixed Pastures:
High & frequent Spring applications of nitrogen leads to grass dominance and less legumes.
Consider deferring N applications until late summer or fall

Phosphorus (P), Potassium (K) and Lime
Needs and rate are determined by a soil test !
Existing pasture
For P & K
Sample to a 6 inch depth
For Lime Rec
Sample to 2 to 3 inches
New seeding or re-seeding
Sample to ‘Tillage Depth’

Why is Lime recommended?
The soil ‘acidity’ (pH) influences the availability of fertilizer nutrients and soil microbial activity.

Lime is used to raise a low soil pH (acid condition)

pH for Forage Crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Target pH</th>
<th>Don’t Worry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>6.8 - 7.0</td>
<td>6.5 - 7.5</td>
</tr>
<tr>
<td>Clover &amp; BFT</td>
<td>6.5 - 7.0</td>
<td>6.0 - 7.5</td>
</tr>
<tr>
<td>Forage Grass</td>
<td>6.0 - 7.0</td>
<td>5.7 - 7.5</td>
</tr>
</tbody>
</table>
Phosphorus (P), Potassium (K)

P & K needs and rate are determined by a soil test!

Yield responses to phosphorus (P) and potassium (K) are not dramatic nor consistent.

Forage plants will respond to added (P) and (K) when.

‘Optimum’ ‘Optimum’
Very Low Low

Manage Pasture Weeds

Livestock eat some of those pasture weeds!!

Pasture weed control –cont.

Cultural Weed Management

Establish & maintain thick grass stands of grasses and legumes that are adapted to your climate and site.

Use proper fertilization

Use proper grazing management

Pasture weed control –cont.

'Strategic' Management

Clip, mow or dig:

1) prevent new seed production
2) minimize effect of competition on pasture
(mowing is not very effective for low-growing weeds! — spray will be better for these.)

Spray Management

Most pasture herbicides are to control 'broadleaf' weeds and keep the grasses --!! Kills legumes!!

Timeliness is important
- weed become harder to kill when they are mature
**Biennial weeds** (bull thistle, plumeless thistle, musk thistle)

1st growing season
- Dig; or
- Spray in the fall while the weed is still in the ‘rosette’ stage

2nd growing season the biennial weed will ‘bolt’ (shoot a seed stem, and die)
- Spraying during this growth stage is less effective

**Perennial weeds** (Canada thistle, vervain, multiflora rose)

(can grow for many years, reproduce by seed & roots)

1) Mow
2) spray during vegetative growth stage;
   -- ‘more active’ herbicides are normally used
   -- systemic herbicides very useful
3) multiple treatments needed to “starve-out” the plant

Extreme situations - may have to kill the grass too

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**Grazing Management**

A successful way to maintain and improve pasture productivity is to improve grazing management.

- If given the choice, animals will return to a previously grazed area (spot grazing), ignoring taller, more mature forage.
  - This lead to ‘over grazing’ of some areas.

After a grazing (defoliation), a plant needs to ‘mobilize’ its stored sugars, proteins, and growing points to establish new leaf area.

**IT REQUIERS SOME REST FOR THE Plants !!!!**
Rest can be created by dividing the pasture into smaller grazing areas.

- This may not be very practical for small acreages!
- Includes issues associated with.... fencing, water, building access, feeding etc.

How much 'improvement' from rotational grazing?

- Depends upon where you start!
- Assumes appropriate stocking rates
- And good day to day management

‘Patching’, ‘Thickening’ and Replacing Pasture

Assess whether what you have now is worth keeping.

Add more or more productive grasses
Add legumes
Start over!

Frost Seeding

Simple – broadcast seed on pasture in late winter / very early spring (late-February through March)

Frost Seeding - continued

There are several other important steps that make frost seeding more consistently successful.

- Weeds should be under control
- Fertility – good enough for legumes?
- Grass sod should be short
- Graze seeding year to allow establishment
- Graze later years to keep new plants!!!

Sod-Seed or Inter-seed

Use no-till pasture drill to seed into existing pasture sod in early spring (March and April)

No-till drills provide:
- A disk-type or other sod/seedsbed opener
- A seed metering and placement mechanism
- A press wheel to provide For seed-to-soil contact
**Sod-Seed or Inter-seed**

Most interseeding is done in early spring (March and April)

Consider late summer (Aug thru very early Sept) IF soil moisture is adequate

Some county conservation agencies rent these

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**Sod-Seed or Inter-seed - continued**

As with frost seeding, some management practices improve interseeding success

- Weeds should be under control
- Fertility – good enough for legumes?
- Grass sod should be short

Consider sod suppression herbicides

Drill seed to a depth of ¼ to ½ in. and cover

Graze seeding year to allow establishment

Graze later years to keep new plants!!!!!

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**Types of ‘Seedbeds’**

- Reduced tillage
- Conventional tillage

**Tilled seedbed**

- Mostly fine, with some pea to marble sized clods
- Firm enough –
  - That you don’t sink in any deeper than the sole of your shoe, or the tread of a pick-up truck tire

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**Excellent Seeding Technique**

- Uniform distribution of seed across the seeded area
- Uniform final depth of placement 1/4-1/2 inch (after all equip. passes)
- Excellent seed – to – soil - contact
No-Till forage planting

Into  Killed sod  
Crop residues

Other establishment principles apply !!!

'Native' warm-season grasses
Truax (native grass drill)
appropriate 'seed metering' mechanism