



Cornell University
Cooperative Extension

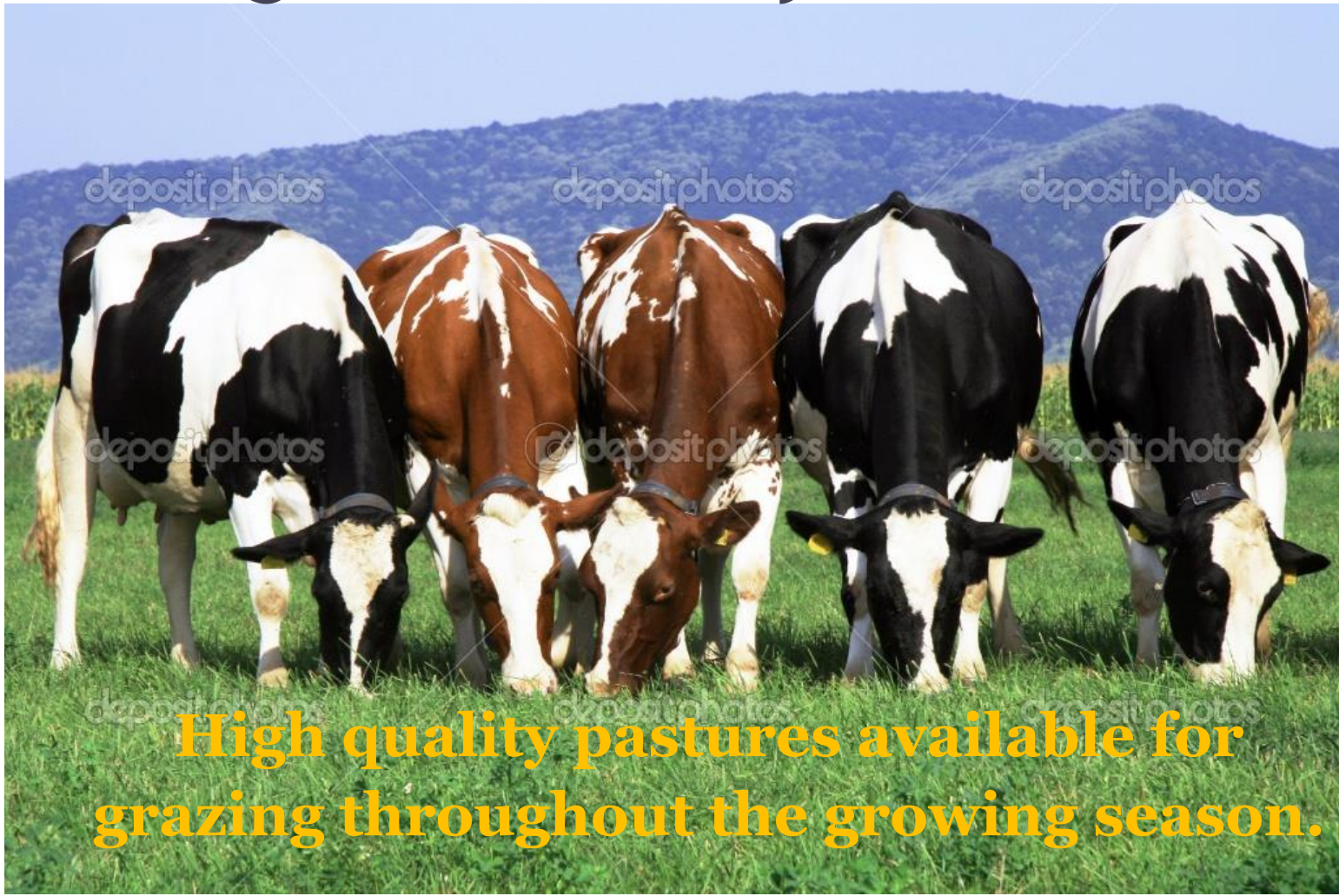
Pasture Plant Selection

Bill Verbeten

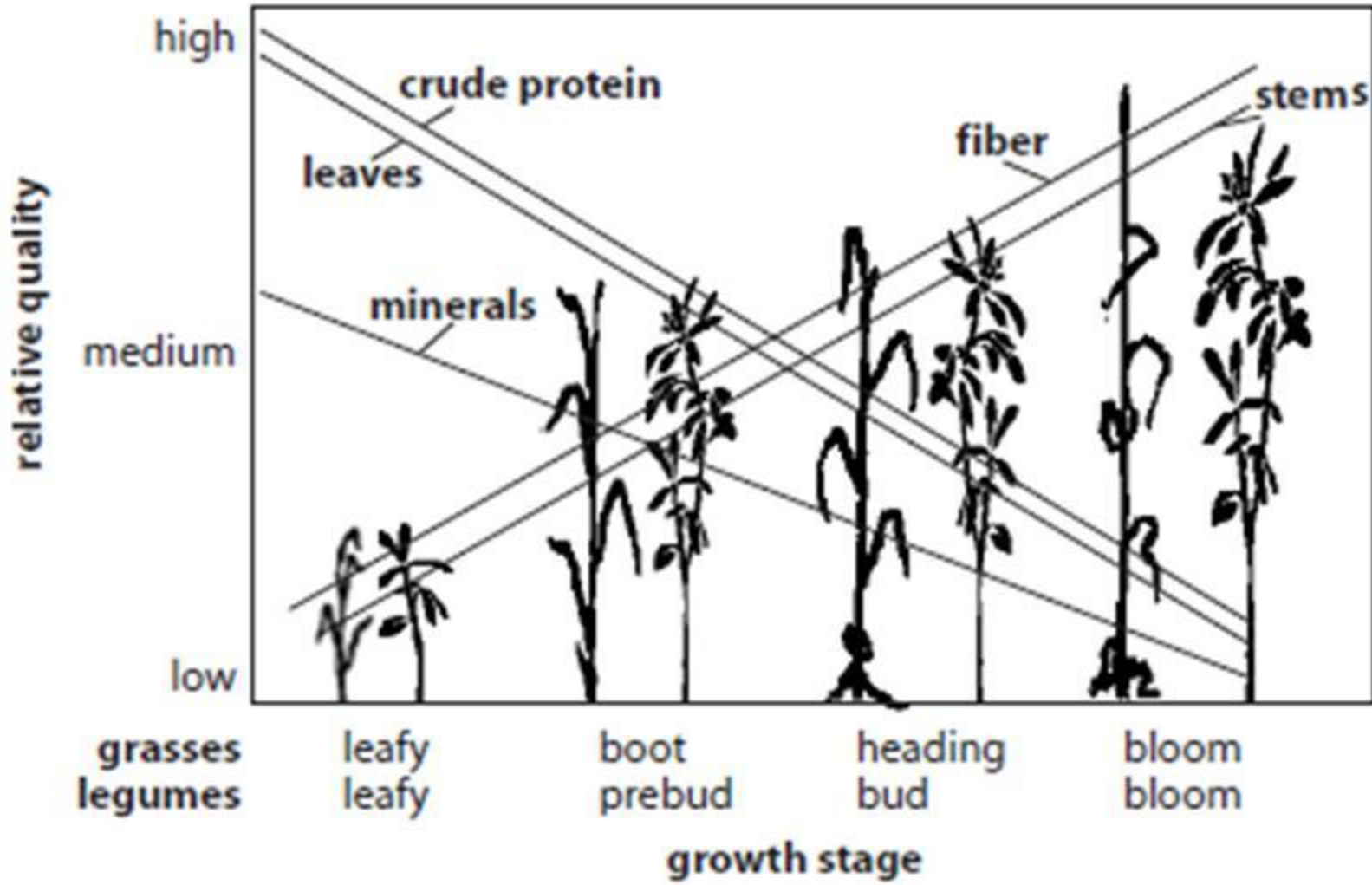
NWNY Dairy, Livestock, and Field
Crops Team

Cornell Cooperative Extension

Planning a Pasture System



High quality pastures available for grazing throughout the growing season.



Source: Understanding Forage Quality

Take Home Points

- *Different **grasses** should be planted in different **pastures**.*
- Plant maturity varies ***within*** grass species and ***between*** grass species.
- Planting grasses with ***different maturities*** increases the time when pastures have the highest forage quality.

Grasses

- Kentucky bluegrass
- Orchardgrass
- Smooth bromegrass
- Meadow bromegrass
- Meadow fescue
- Tall fescue
- Reed Canarygrass
- Ryegrasses
- Festulolium
- Timothy

Orchardgrass

- One of the first grasses to mature (May 4- May 21)
- Higher yielding grass (5-7 ton DM/acre)
- Some varieties tolerate close grazing, others better for hay
- Very leaf and good summer regrowth



Source: extension.missouri.edu

Kentucky bluegrass

- Grows earlier than most other grasses, stops growing first in summer. (Matures May 12-17)
- Very common in lawns and unimproved pastures. Some varieties available.
- Lower yielding grass ~4-5 tons DM/acre
- Survives continuous grazing



Source: John M. Randall / The Nature Conservancy

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Smooth Bromegrass

- Mid maturity grass (May 18-26)
- Large range in yield potential (4-8 tons DM/acre)
- Vulnerable if grazed during stem elongation
- Forms a sod and can make a good long term pasture



Source: Grass Info
Sheet 10 Cornell



Source: extension.missouri.edu

Meadow Bromegrass

- New grass to NY
- Late maturity (May 23-June 1)
- Yields similar to smooth bromegrass
- Less vulnerable than smooth bromegrass during stem elongation.
- Widely grown in Great Plains & Canada



Source: ponderosaslaes.com

Meadow Fescue

- Medium maturity (May 18-22)
- Lower yielding in pure stands (4-5 tons DM/ac)
- Very high quality
- Very palatable to livestock
- Very popular with Midwestern grazing dairies.



Source: Bill Verbeten

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Tall Fescue

- Medium maturity (May 13 – May 30)
- Highest yielding cool-season grass (6-8 ton DM/acre)
- Endophyte-free and higher palatability varieties available
- Forms a dense sod and can handle high nutrient loads
- Adapted to drought, wet conditions, and low pH soils



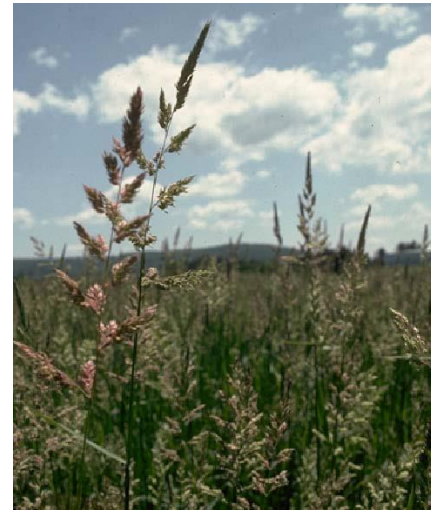
Source:
Grass Info Sheet
7 Cornell



Source: extension.missouri.edu

Reed Canarygrass

- Medium to late maturity (May 15- 30).
- High yielding (4-6 tons DM/acre)
- Most tolerant grass of wet and droughty soils, very winter hardy, and tolerates low pH
- Slow to establish



Source: Grass
Info Sheet 6
Cornell



Source: extension.missouri.edu

Ryegrasses

- Medium to late maturity (May 10 to June 3)
- Annual, perennial types
- Very short lived in NY
- High quality and palatable, but lower yielding (4-5 tons DM/acre)
- Best used as a nurse crop—very competitive growth



Perennial Ryegrass

Source: Grass Info Sheet 11 Cornell



Annual ryegrass

Source: extension.missouri.edu

Festulolium

- Hybrid between meadow fescue and a ryegrass
- Very well adapted to grazing systems
- Medium maturity and yield



Source: dlfis.com

Timothy

- Late maturity (May 25-June 10)
- Medium yields (4-6 tons/DM)
- Very palatable and easy to establish
- Doesn't regrow well alone in pastures, often planted with another grass



Source:
Grass Info Sheet 9
Cornell



Source: extension.missouri.edu

Legumes

- White clover
- Red clover
- Alsike clover
- Kura clover
- Sweet clover
- Birdsfoot trefoil
- Alfalfa
- Vetches

White Clover

- Well adapted to wet soils
- Not drought tolerant
- Ladino types higher yielding (2-3 tons DM/acre) than common types (~1 ton DM/acre)
- Generally will persist well in NY pastures



Source: extension.missouri.edu

Red Clover

- Higher yielding than white clover (up to 4-5 tons DM/acre)
- Not persistent, usually only lasts 2-3 years
- Can easily frost seed over existing pastures



Source: extension.missouri.edu

Alsike Clover

- Very well adapted to low, wet areas
- Best grown with low growing grasses (Kentucky bluegrass, meadow fescue)
- Does not persist more than 3-4 years
- Causes photo sensitivity in horses



Source: extension.missouri.edu

Kura Clover

- Most persistent legumes (stands 20+ years old)
- Grows well in wet areas, and survives drought
- Difficult to establish & expensive seed
- Excellent honey crop



Source: extension.missouri.edu

Sweet Clover

- Biennial legume
- Not often used for pasture
- Moldy silage led to the discovery of rat-poison (Warfarin)



Source: www.dnr.wi.edu

Birdsfoot Trefoil

- Non-bloating legume adapted to wet conditions
- Requires a long rest period (60 days) after first grazing to persist
- Improved varieties (Pardee) have improved disease resistance



Source: extension.missouri.edu

Alfalfa

- Highest yielding, most drought tolerant legume
- Branched root types available
- Typically grown for silage and hay, but can be pastured.
- Not suited for shallow, wet soils in parts of NY



Source: extension.missouri.edu

Vetches

- Non-traditional legumes in pastures
- Able to persist with rotational grazing
- Typically planted in soil conservation projects
- Most growth in the spring



Source: extension.missouri.edu

Other Pasture Species

- Forage Chicory
- Forage Plantain
- Forage Turnip, Kale, Swedes
- Small Grains
- Sudangrass
- Eastern gamagrass

Forage Chicory

- Drought tolerant forage broadleaf
- Very high forage quality
 - 20-30% CP
 - 90% Digestibility
- Will bolt if not grazed/cut in spring



Source: bestforage.com

Forage Plantain

- Forage broadleaf
- Similar to forage chicory
- Not currently winter-hardy for NY
- Can be grown alone or in mixtures with grasses and/or legumes



Source: bestforage.com

Forage Turnip, Kale, Swede

- Forage brassicas, annual crop
- Generally planted as emergency forage or prior to pasture renovation
- Plant when soil is at least 50 F
- Fed other forages with forage brassicas. Grazing dairy cattle taints the milk.



Source: ampacseeds.com

Small grains

- Oats, triticale, wheat, rye, barley
- Can be grazed fall or spring.
- High quality silage if harvested by flag leaf stage
- Many farmers growing after wheat or corn silage for supplemental feed



Winter Wheat



Winter Triticale

Source: Bill Verbeten

Sudangrass

- Warm season grass, plant in June
- Emergency crop
- Do not graze until plants are over 2 ft. tall (prussic acid poisoning)
- Sorghum crosses, BMR varieties available



Source: ag.ndsu.edu

Eastern gamagrass

- Warm season grass, tolerant of wet areas
- Perennial, stands 50+ years old
- Very palatable, plant pure stands, leave 8-10 inch stubble
- Very high quality forage



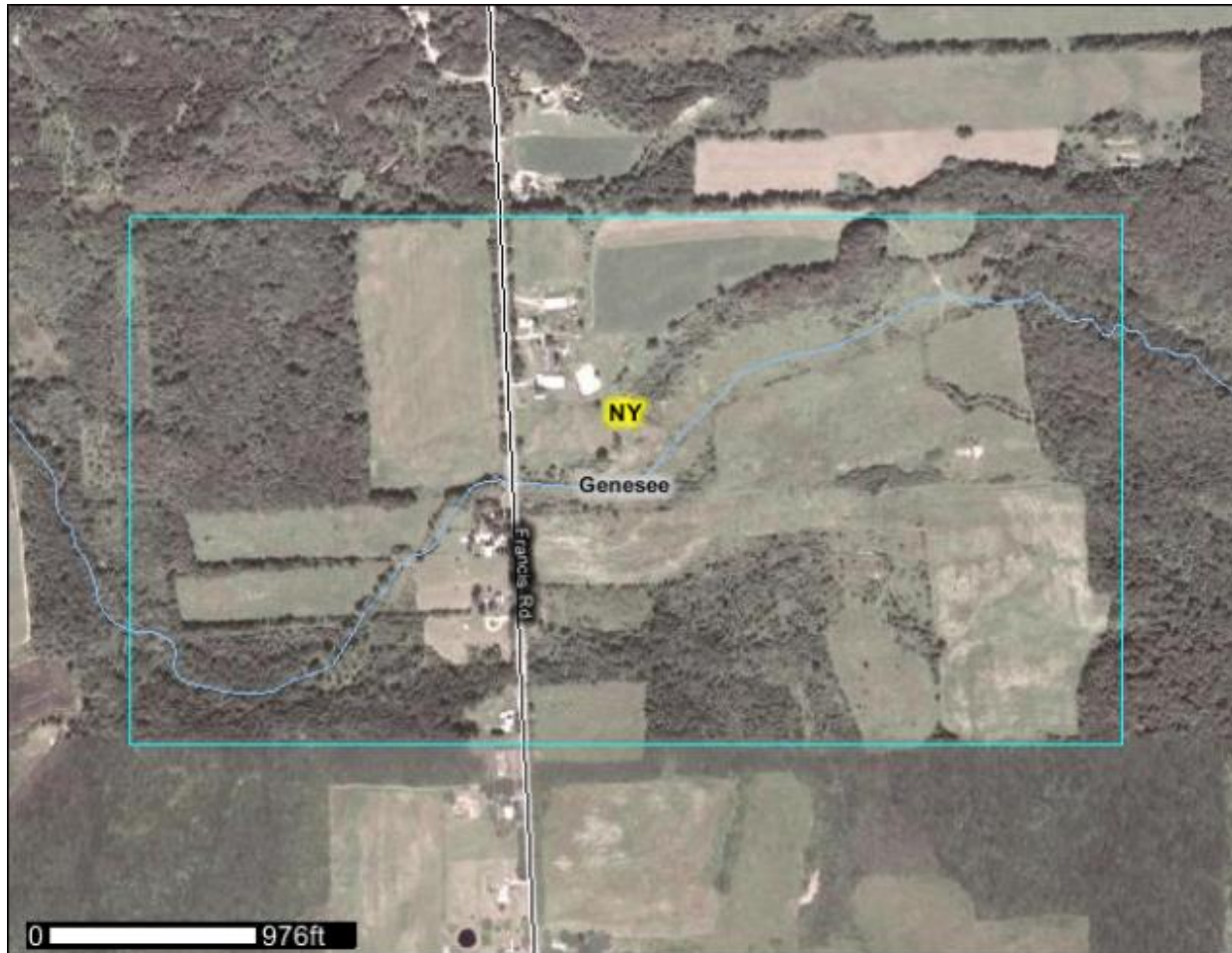
Source: Bill Verbeten

Methods of plant selection

Pasture plants adapted to
local farm conditions & needs

[Forage Species Selection Tool](http://forages.org/page.php?pid=215)
<http://forages.org/page.php?pid=215>

Example Farm



Soil types



Soil types

- Angola
- Darien
- Nunda
- Palmyra
- Remsen
- Wayland
- Madalin

Yield Potential by Soil Type

<i>Pasture</i>	Angola	Darien	Nunda	Madalin	Remsen	Palmyra	Wayland
Orchardgrass	2.6	2.8	4.6	N/A	N/A	4.1	N/A
Reed Canarygrass	3.1	3.3	4.6	2.6	3	4.1	2.4
Tall Fescue	3.4	3.5	5.3	2.6	3.2	4.6	2.4

How to chose pasture mixtures?

- Start with 3-4 grasses that have different maturities planted with 1 or 2 legumes
- Try specialty pasture plants on a small scale before adding to the whole pasture system
- Identify niches where specialty pasture plants are well suited

What seeding rates to plant?

- 50 to 75 seeds per ft² are enough to establish forage stands
- Most farmers seed more (100-200 seeds per ft²) “cheap insurance” and “quicker establishment”
- High seeding rates reduce the establishment of some species (often legumes)

What seeding rates to plant?

- Different species have different seed sizes
- Use [Pasture and Hay Seeding Rate Calculator](#)

www.uwex.edu/ces/forage/pubs/seeding_rate_calculator.xls

Take Home Points

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Questions?



Source: wallpaperdreams.com