



Cornell University
Cooperative Extension

Maximizing Forage Yields

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Maximizing Silage Yields

Set Realistic Yield
Goals

Optimize Fertility
Program

Varietal Selection

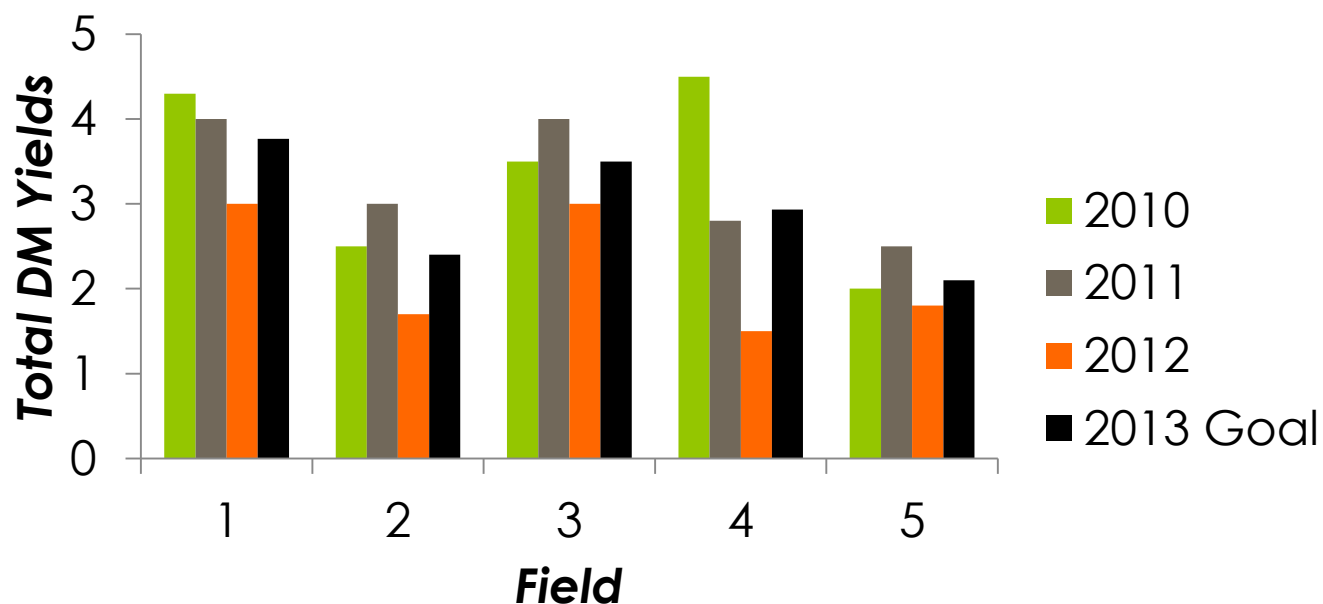
Planting

Early Pest Control

Harvest Management

Keep Records and
Re-evaluate Yearly

Set Realistic Yield Goals



Set **separate yield goals** for **each fields** based on multiple years of yield data.

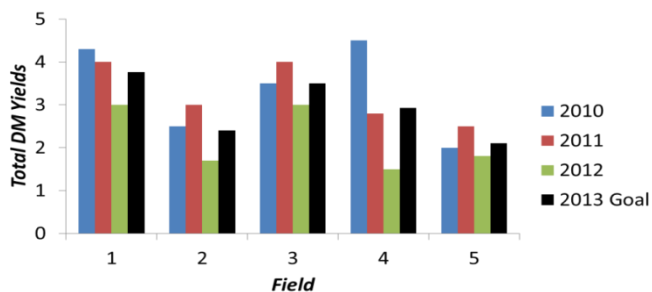
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Set Realistic Yield Goals

Crop	Tons DM/acre	Tons AF/acre
Haylage, seeding year	2-3	4-6
Haylage, 1 st through 3 rd production years	4-6	8-12
Corn Silage	6-10	18-30
Small Grain Silage	2-4	6-10
Rotational Pasture	3-5	15-25

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Optimize Fertility Program



Yield Goals



Soil Tests



Legume Credits



Manure

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Optimize Fertility Program

- Apply fertilizers to *finish* reaching yield goals
- Split applications

Split Fertilizer Application Timing

N (manure) Corn

K, S Alfalfa K, S Alfalfa

K, S Alfalfa

N, P, K, S Pasture

N, P, K, S Pasture

N, S Small Grain

N Corn

N Corn

P, N Small Grain



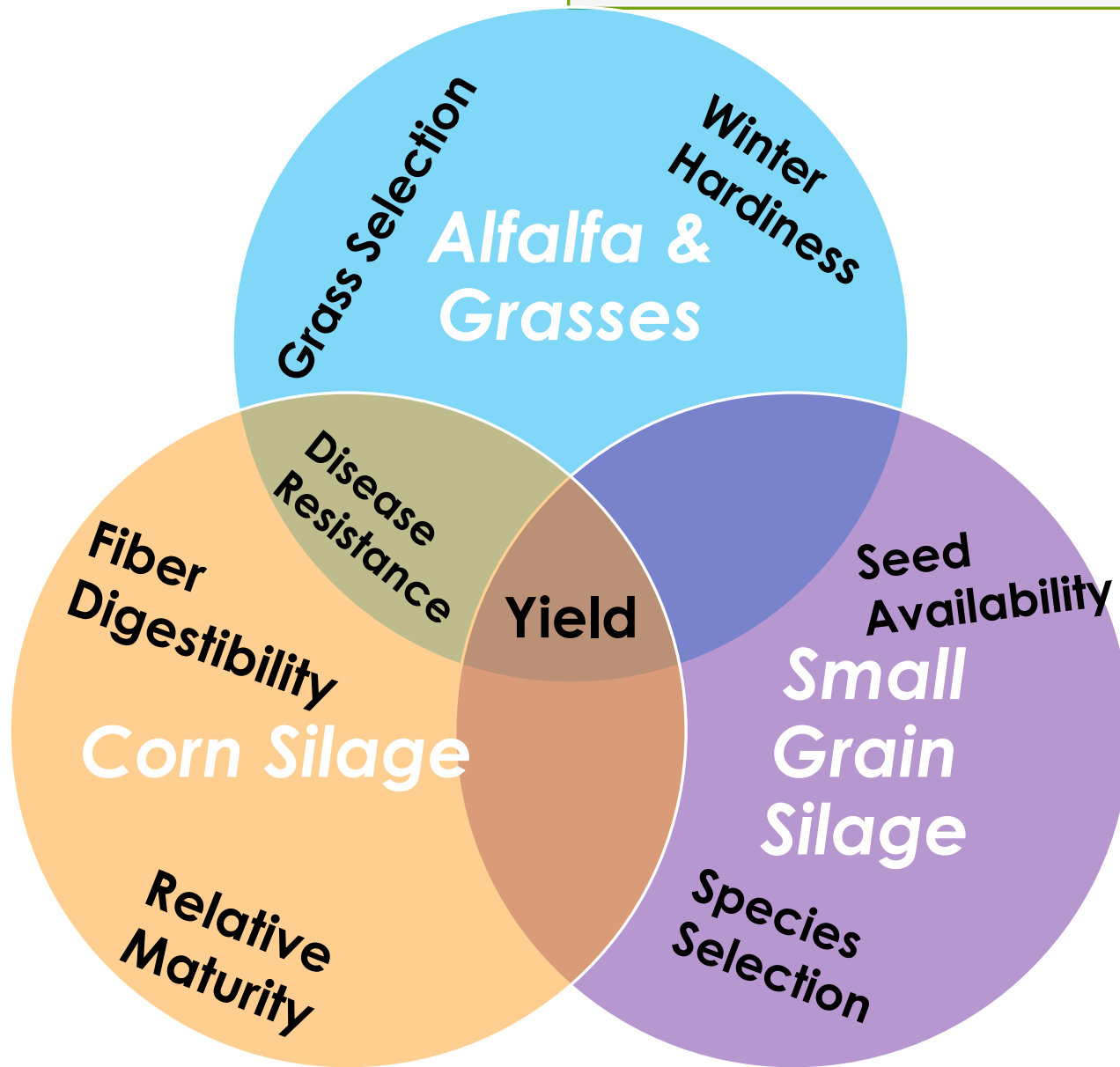
Optimize Fertility Program

- Enter yield goals, crop rotations, manure, and fertilizer into **Cropware Classic**: available for free at:

<http://farminfotech.com/CropwareDownloads/InstallCropwareClassic.1.0.18.exe>

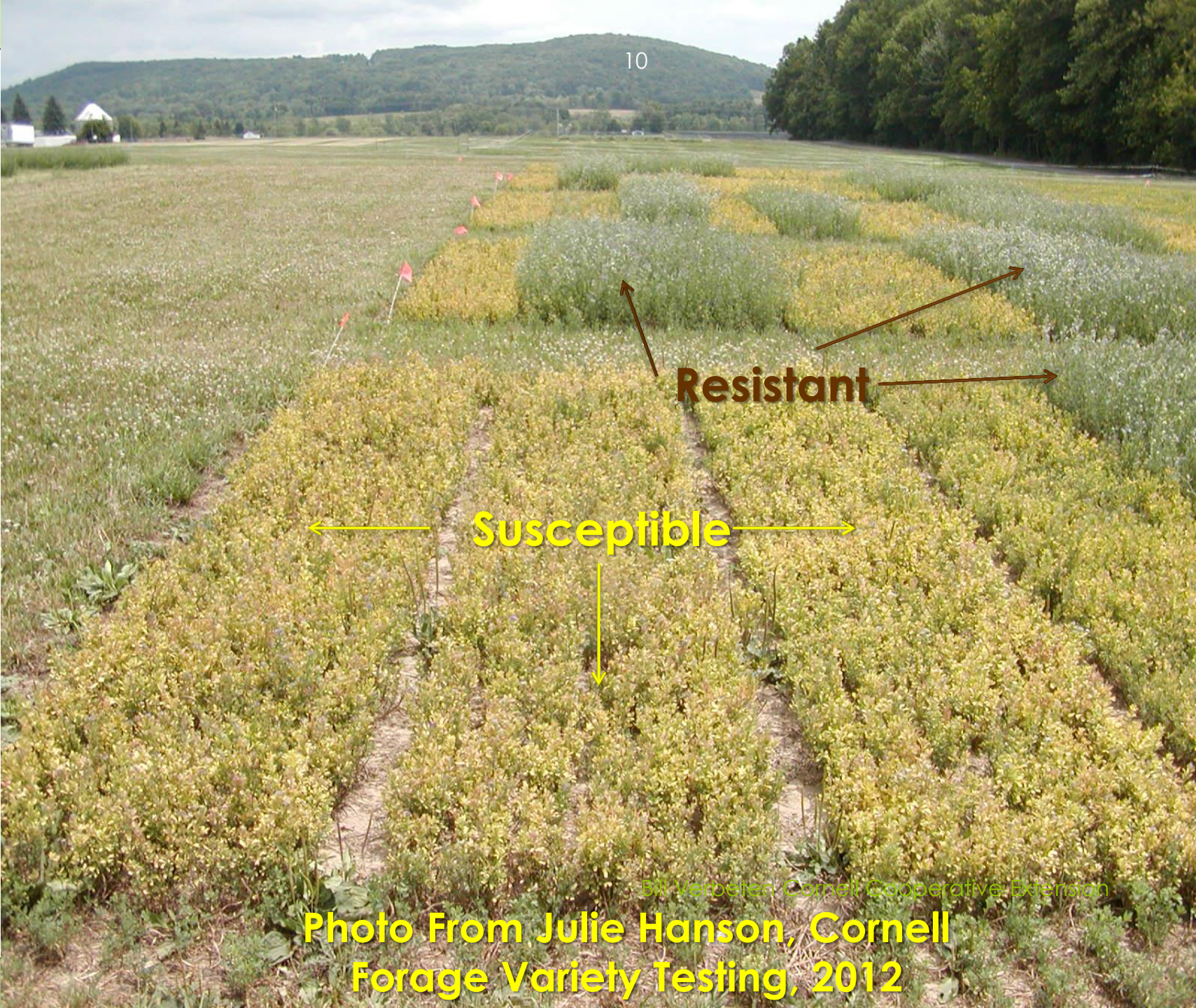
- Use Web Soil Survey for soil types and RUSLE loss (T value)

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>



Varietal Selection

- Forage Variety Trial website
 - <http://plbrgen.cals.cornell.edu/programs/departamental/forage/foragetest.cfm>
- Alfalfa
 - Persistence (Winter Hardy and Disease Resistant)
 - High Yielding
 - PLH, Round-Up Ready, Low Lignin (*future*)



Resistant

Susceptible

Bill Verbeet, Cornell Cooperative Extension

**Photo From Julie Hanson, Cornell
Forage Variety Testing, 2012**

Varietal Selection

Grasses

Adapted to farm conditions & needs

[Forage Species Selection Tool](#)

<http://forages.org/page.php?pid=215>

- High Yielding
- Late Maturity
- Disease Resistance

Varietal Selection

- Corn Silage
 - Relative Maturity
 - High Yielding
 - Fiber Digestibility
- Cornell Variety Trial
 - <http://css.cals.cornell.edu/extension/publications.cfm>

Varietal Selection

- Small Grain Silage
 - Species Selection:
 - Winter Triticale, Winter Rye, Winter Wheat, Oats
 - Seed Availability
 - Plan ahead & buy early

Planting Management

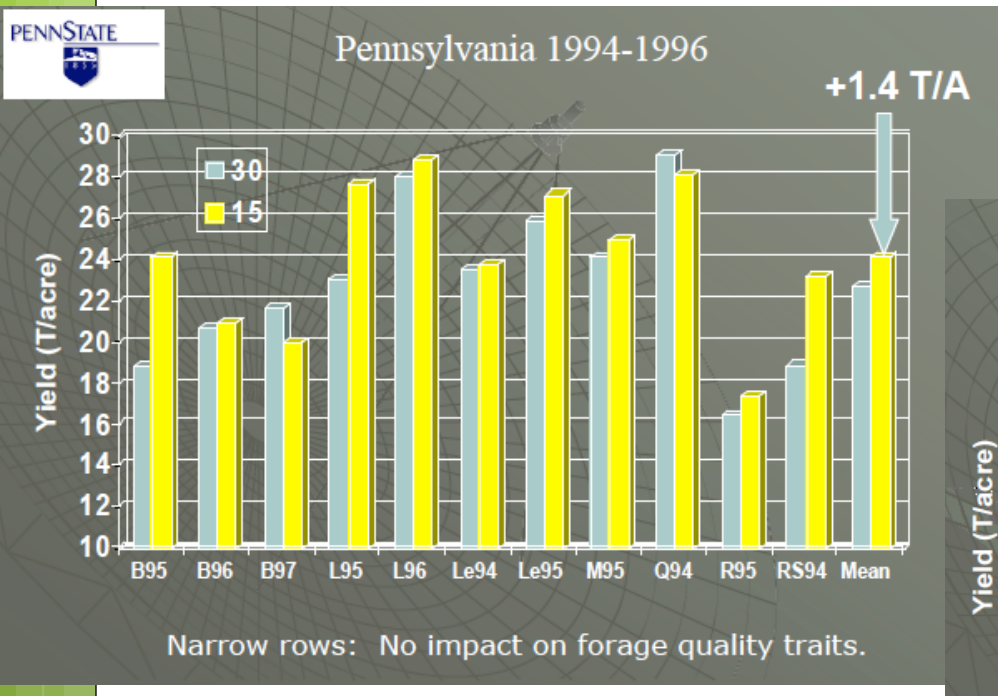
- Alfalfa & Grasses
 - Plant optimal seeding rates
 - www.uwex.edu/ces/forage/pubs/seeding_rate_calculator.xls
 - Timing
 - Grasses: After spring thaw to May 1st.
 - Alfalfa: After spring thaw to June 1st.
 - Firm seed to soil contact
 - 1/4-1/2 inch deep
 - Use drill or planter with packing wheels
 - For more info
 - For more info
 - <http://www.fieldcrops.org/Forages/Pages/default.aspx>

Planting Management

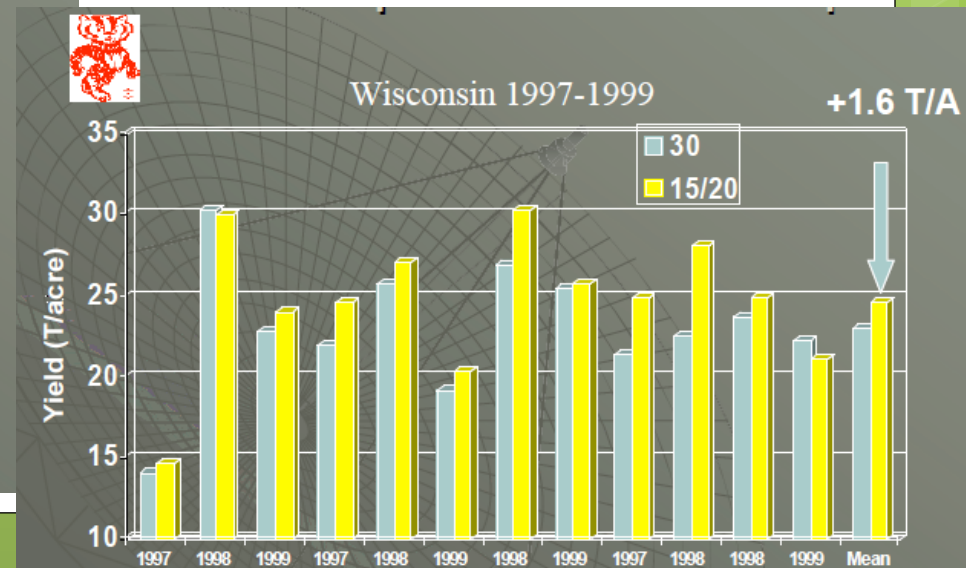
- Corn Silage
 - Plant 85-115 Day Relative Maturity hybrids based on growing season
- Seeding rates
 - Sands : 33,000 kernels/acre
 - Silt loams: 35,000 kernels/acre
 - Clays: 37,000 kernels/acre
- Planting Dates and Depth
 - Late April to Early June
 - 1.5-2 inches

Planting Management

- Corn Silage
 - 30 vs 15 inch rows
 - 0 to 1.5 tons increase in corn silage yields



Greg Roth, Penn State, Maximizing Forage Yield & Quality, 2003 Four State Forage Conference



Planting Management

- Small Grain Silage
 - Ideal to plant after corn silage
 - Drilling reduces damage from heaving



Drilled Triticale



**Air Seeded Broadcast
Triticale**

Planting Management

- Small Grain Silage
 - Wheat
 - Plant Sept 5 to Oct 1 @ 2 bu/acre
 - Rye & Triticale
 - Plant Aug 1 to Oct 15 @ 2 bu/acre
 - Oats
 - Plant early spring to Aug @ 2-3 bu/acre
- For more info see <http://www.fieldcrops.org/Forages/Pages/Annualcrops.aspx>

Planting Management

- Small Grain Silage
 - P fertilization very important on non-manure soils
 - Mix or band 50 lb/ac MAP (25 lb/ac P) with seed
 - Broadcasting 200 lb/ac MAP does not have the same effect

Early Pest Management

- Control Weeds Early!

Moechnig et al., 2000, University of Wisconsin

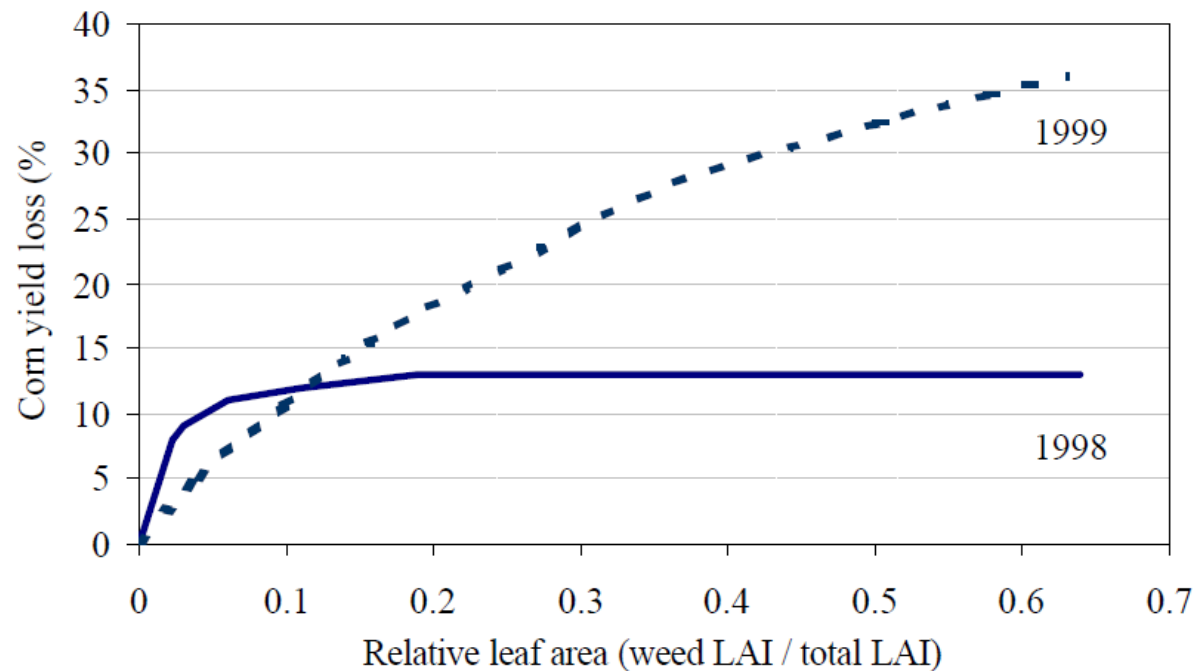


Figure 1. Percent corn yield loss as a function of early season relative leaf area equivalents in each year.

Early Pest Management

- Scouting
 - Ex. Potato Leaf Hopper: if above threshold **20-40% of yield** can be lost
 - Scout after 1st cut, see <http://nysipm.cornell.edu/factsheets/fieldcrops/plh.pdf>
 - Spray only if at or above economic threshold
 - If 10 days or less from harvest, cut early
- Or plant resistant varieties
 - PLH Alfalfa

Early Pest Management

- Applying fungicides to forages usually does not increase yield or quality.
- If yield or quality increases occur, the costs of application are not recovered.
- Possible benefit on corn silage, but only 1 of 4 fields usually benefit.

Harvest Management

- Lower cutting height increases yield.....
- But it reduces quality



Joe Lauer, University of Wisconsin, 1998, Corn Silage Yield & Quality Trade-offs When Changing Cutting Height

Harvest Management

- Lower cutting height reduces grass persistence
- Alfalfa-grass mixtures need to be harvested at 3-4 inches to maintain grass in mixture

Harvest Management

- Properly adjusted equipment and reasonable ground speeds minimize feed lost during harvest.
- Remove silage quickly from field.
- For in-depth discussion see Reducing Hay and Silage Harvesting Losses on my blog at <http://billsforagefiles.blogspot.com/>

Record keeping

- Wagon load weights-empty wagon weight
 - Calibrate scale regularly
- Multiple by dry matter %
- Keep yield records organized and use them!
- Good data leads to better management

Record keeping

- Be a part of the 2013 Cornell Yield Monitoring Study
 - Alfalfa Silage
 - Corn Silage
- Wagon weights, yield monitor, moisture, alfalfa percentage, BMR or not, etc.
- Contact Bill Verbeten if interested

Re-evaluating

- Were yield goals achieved?
- If not, what limited yield?
- What can be done differently next year?

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