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

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Set Realistic Yield Goals

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

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

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Optimize Fertility Program

Soil Tests

Yield Goals

Legume Credits

Manure

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Optimize Fertility Program

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

**Split Fertilizer Application Timing**

<table>
<thead>
<tr>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
</tr>
</thead>
</table>

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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

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Alfalfa & Grasses

- Grass Selection
- Winter Hardiness

Corn Silage
- Fiber Digestibility
- Relative Maturity

Small Grain Silage
- Seed Availability
- Species Selection

Yield
- Disease Resistance
Varietal Selection

- Forage Variety Trial website
  - http://plbrgen.cals.cornell.edu/programs/department/forage/foragetest.cfm

- Alfalfa
  - Persistence (Winter Hardy and Disease Resistant)
  - High Yielding
  - PLH, Round-Up Ready, Low Lignin (future)

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Photo From Julie Hanson, Cornell
Forage Variety Testing, 2012
Varietal Selection

Grasses
Adapted to farm conditions & needs

Forage Species Selection Tool

- High Yielding
- Late Maturity
- Disease Resistance

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Varietal Selection

- Corn Silage
  - Relative Maturity
  - High Yielding
  - Fiber Digestibility

- Cornell Variety Trial
  - [http://css.cals.cornell.edu/extension/publications.cfm](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

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Planting Management

- **Alfalfa & Grasses**
  - Plant optimal seeding rates
    - [www.uwex.edu/ces/forage/pubs/seeding_rate_calculator.xls](http://www.uwex.edu/ces/forage/pubs/seeding_rate_calculator.xls)

- **Timing**
  - Grasses: After spring thaw to May 1<sup>st</sup>.
  - Alfalfa: After spring thaw to June 1<sup>st</sup>.

- **Firm seed to soil contact**
  - ¼-½ inch deep
  - Use drill or planter with packing wheels

- **For more info**
  - [http://www.fieldcrops.org/Forages/Pages/default.aspx](http://www.fieldcrops.org/Forages/Pages/default.aspx)

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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
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](http://www.fieldcrops.org/Forages/Pages/Annualcrops.aspx)

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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

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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](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

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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.

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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

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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/

Bill Verbeten, Cornell Cooperative Extension
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

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Re-evaluating

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