**Team Forage Plan of Work and Evaluation Plan**

**2014**

**PLAN OF WORK**

**Mission Statement:**
To develop and disseminate research-based information that will enhance profitable forage production and utilization while sustaining Wisconsin's natural resources.

**Intended Outcomes:**

1. Producers and ag professionals will gain knowledge and implement research-based management practices that increase forage or corn silage yields and/or feeding quality.

2. On-farm forage research trials will be used to verify or add to the current knowledge base and change production practices on Wisconsin farms.

3. Producers will be advised and/or make decisions on the economics of forage production, utilization and/or machinery investments.

4. Producers will select and properly manage equipment, storage structures, and use harvesting techniques that enhance forage enterprise profitability.

5. Dairy producers and ag professionals will gain knowledge and implement research-based management practices that improve stored forage utilization.

6. Dairy and livestock producers will gain knowledge and implement research-based management practices that improve pasture productivity, utilization, and benefit the environment.

7. Producers and ag professionals will access research-based forage production and utilization information on the Wisconsin Team Forage Web Site.

**General Resources:**

- **TEAM FORAGE WEB SITE** – [http://fyi.uwex.edu/forage/](http://fyi.uwex.edu/forage/)
  Located on these pages are numerous links to publications, papers, decision software, and Power Point presentations related to forage production and utilization.

- **UNIVERSITY OF WISCONSIN – EXTENSION WEB SITES:**
  - Forages - [http://www.uwex.edu/ces/forage/](http://www.uwex.edu/ces/forage/)
  - Corn - [http://corn.agronomy.wisc.edu/](http://corn.agronomy.wisc.edu/)
  - Dairy Nutrition - [http://www.uwex.edu/ces/dairynutrition/](http://www.uwex.edu/ces/dairynutrition/)
  - Wisconsin Crop Manager Newsletter - [http://ipcm.wisc.edu/wcm/](http://ipcm.wisc.edu/wcm/)

- **Plant and Life Sciences Publishing (PALS).** [http://palspublishing.cals.cornell.edu/nra_overview.html](http://palspublishing.cals.cornell.edu/nra_overview.html), Phone: (607) 255-7654
  “Silage for Dairy Farms” Conference Proceedings (NRAES-181)


- **WISCONSIN CUSTOM OPERATORS WEB SITE** [http://www.wiscustomoperators.org/](http://www.wiscustomoperators.org/)

- **PlantDOC:** Diagnostics, Observations, Comments - [http://www.uwex.edu/ces/ag/plantdoc/](http://www.uwex.edu/ces/ag/plantdoc/)
**Forage Production Work Group:**

**Action Plan:**
Research needs to enhance perennial forage and corn silage yields in Wisconsin have been and will continue to be identified. This research will be performed at both the experiment station and “on farm” level with joint cooperation between campus-based researchers, extension specialists, and county extension faculty. New and on-going research and educational emphasis will include:

- Corn silage hybrid evaluation. Ongoing (Lauer)
- Alfalfa scissors cut and PEAQ evaluations of first-cut forage quality; and corn silage dry down monitoring. Add projected harvest date feature to alfalfa scissors cut. Ongoing. Dan will add projected harvest feature
- Fungicides on alfalfa. Plot at Arlington comparing all modes of action. Just Headline at other field sites. (Damon Smith, Jensen, Blonde, Halfman) - ongoing
- Alfalfa yield and persistence. (Rankin) Ongoing
- Forage fertility research. Potassium-sulfur interactions, nitrogen forms on alfalfa. (Laboski) Ongoing.
  - How often should we apply S? Every year? Working on.
  - Sulfur study on alfalfa (Bay - Crawford, Green counties)
- Aphanomyces and sulfur interaction (Bay and Smith) ongoing
  - Discovery of a new Race 3 (Smith)
  - Is there an interaction of races? (Smith?)
- Corn-alfalfa rotations (Lauer) – ongoing – 2 location, Marshfield/ Arlington
- Economics of pure grass management (Reuss)
- Late-summer oats/peas after winter wheat and canning crops (Shelley)
  - Forage oats versus grain oats - Shelley
- Manure applications methods in corn silage (Jokela)
- Manure application methods for alfalfa (yield, nutrient cycling, nutrient runoff, gaseous N emissions) (Jokela)
- Nutrient Management Systems Trial (paired-watersheds with field-scale units to evaluate nutrient runoff, crop yields, and nutrient cycling from crop/tillage/manure systems): Silage corn phase completed in 2012, Alfalfa phase in progress (Jokela)

Additions to the “Focus on Forage” fact sheet series will be developed that address frequently asked forage production questions by clientele. Authors will be identified and the fact sheets will be placed on the Team Forage web site for viewing and printing by extension agents, ag professionals, and forage producers. Further outreach efforts will be made through presentations made at statewide meetings and conferences, county educational programs, media releases, publications, and state/local newsletter articles. Power Point presentations will also be developed and made available for downloading off the Team Forage web site.

**Resources to be Developed:**

**Focus on Forage Fact Sheets and Publications:**

- Earless / low starch corn silage (Lauer/Bertram) - ongoing
- NDF digestibility of grasses (Undersander)
- Roundup Ready alfalfa (Undersander and Renz) – coming after they compile data
- Fall planting after wheat – to avoid problems with volunteer wheat
- Focus on Forage fact sheets on Leafhopper Resistant Alfalfa and Fall Dormancy as a Variety Selection Criteria (Rankin)
- Update Focus on Forage fact sheet on planting corn after first crop alfalfa (Rankin, Renz and Lauer)
- Twin row corn silage (Lauer and Jarek)
- Maximizing yield and optimizing quality of Bmr corn (Lauer)

**Web site**
On-going updates to the Team Forage web site (Rankin with contributions by many)

**Budget Request:**
Forage Economics Work Group

**Action Plan:**
- Provide support for agents and ag professionals on how Excel crop budgets can be utilized – Ken Barnett, Jenny Vanderlin
- Post weekly hay market demand and price reports for the Upper Midwest on the Buying and Selling Hay and Straw web site during the hay selling season – Ken Barnett, Dan Undersander
- Update economic budgets for grazing in Wisconsin – Ken Barnett

**Resources to be Developed:**
- Update economic budgets for grazing in Wisconsin – Ken Barnett
- Update Excel formats for the field crop budgets on the FARM Team web site – Ken Barnett
- Create a crop budget cost of production calculator for 2014 - Ken Barnett
- Update the hay price calculator for 2014
Forage Harvesting and Storage Work Group

Action Plan:
Promote proper management techniques for common forage harvest and storage options by:

- Developing publications related to proper harvest and storage management
- Developing presentations related to proper harvest and storage management
- Collecting and disseminating on-farm and research station data from a variety of harvest and storage methods.
- Collaborate with other committees to develop professional development programs

Research

- The impact on silage density of tractor mounted forage packing equipment is being studied. – R. Muck and B. Holmes Two bunkers were filled at ARS-Arlington in fall 2012. Density sampling was done on one bunker. Sampling on the other bunker will occur in spring/summer 2013. Two bunkers were filled at Prairie du Sac in fall 2012. Density sampling was done on one bunker. Sampling on the other bunker in spring/summer 2013.
- In-vivo studies (animal trial) on digestion of inoculated forage - R. Muck, G. Broderick and P. Weimer Data analysis and poster/abstract will be completed in spring 2014; results will be reported in a paper by December 2014.
- Treatment of hay with silicone based preservative-K. Shinners. Research on-going
- Investigative work on developing an image processing tool for assessing kernel processing score in the field with the end goal being a smartphone app for custom harvesters and producers. – B. Luck (grant application submitted and waiting to hear results to set timeline)
- Identify inefficiencies within the forage harvesting process by looking at time-motion analysis of forage harvesting systems using GPS based cycle analysis with Controller Area Network (CAN) machine performance data. – B. Luck (grant application submitted and waiting to hear results to set timeline)
- Assessment of different forage products and moisture contents with hand held hay moisture probes with development of calibration equations for each grass type. – B. Luck (Spring 2015 depending on funding and/or availability of undergraduate student research project)

Resources to be Developed:

- Focus on Forage Volume 2 # 8 Managing Forage in Piles will be revised– J. Clark (July, 2014)
- Focus on Forage on Managing Bunker and Bag Silos will be revised- C. Saxe (October 2014)
- US Dairy Forage Research Center web site and other sites (Crop Manager) articles will be identified for linking from the Team Forage web site-C. Saxe (Annually in summer)
- A review of existing materials on the Harvest and Storage and Decision Software pages with the objective of evaluating the further need for those materials will be conducted annually in summer-C. Saxe
- Focus on Forage on use of mergers for silage production. Research manuscript written by M. Digman to be sent to C. Saxe by R. Muck for review for possible Focus on Forage article (Dec 2014)
- Focus on Forage on Selecting and Managing Plastic to Protect Silage – R. Muck, B. Holmes (August 2014).
- Journal article Comparing a New Oxygen Barrier Plastic Film for Bunker Silo Cover to Conventional Plastic Cover placed on web site - R. Muck and B. Holmes (August 2014)
- Focus on Forage on results of research on dry matter losses from tower, bunker and bag silos. R. Muck, C. Saxe (August 2014). Consider this article to replace Jerry Clark’s article on similar subject.
- Focus on Forage on Yield Monitors on Forage Harvesters – K. Shinners and B. Luck (May 2014)
- Focus on Forage on Overlap Loss of Manually and Automatically Guided Mower Conditioners – B. Luck (Dec 2014)
- Crop Manager and Focus on Forage articles on energy depression (TDN) in heat-damaged forages.–D. Undersander, W. Coblenz, R. Shaver (May, 2014)
- Decision aide on silage production BMP’s based on conditions at harvest in a smart phone app format. – Muck, Holmes and Saxe (Fall 2014).
- Hay preservative project; K. Shinners and B. Luck running tests this summer, data will be available in the fall. Article to be written upon completion of data collection. – K. Shinners and B. Luck (Dec. 2014).
- Alfalfa leaf loss project was published in a scientific journal by M. Digman. Focus on Forage article to be written on this topic co-authored by M. Digman and B. Luck (July 2014)
- Chesser Moisture Probe Project (Mississippi State University) was published in a scientific journal by Dr. Jeremiah Davis. Focus on Forge article to be written on this topic co-authored by J. Davis and B. Luck. (June 2014). Also possible peer-reviewed Extension publication on related subject by J. Davis and B. Luck (2015)
- On-going efforts to: develop “Focus on Forage” fact sheets highlighting forage harvesting and storage methods and techniques
- On-going efforts to: create educational teaching materials in a PowerPoint format based on harvest and storage fact sheets.
Forage Feeding and Testing

Action Plan:

- Conduct approximately 10 county-based meetings for livestock and dairy producers and industry consultants. Meetings to focus on forage preservation and utilization by dairy cows. (Entire Subgroup to participate in conduct of two state-wide conferences for dairy producers and industry consultants with a portion of the program devoted to improvement of forage utilization. (4 –State Conference, Dubuque, IA; Mid-West Forage Association, Wisconsin Dells, WI). (Shaver)
- Conduct a Wisconsin dairy industry use survey regarding use and implementation of shredlage and other new corn silage processing on Wisconsin dairy farms (Matt Lippert and Shaver intern as the lead; Shaver)

Resources to be Developed:

Factsheets: (Focus on Forage)
- Corn shredlage for dairy cows updated (Shaver)
- Corn snaplage for dairy cows (Shaver)
- Understanding the role of ammonia in high moisture corn and corn silage (Shaver)
- tNDFD (Combs/Shaver)
- uNDF (Combs/Shaver)
- StarchD (Shaver)

Powerpoints:
- tNDFD (Combs/Shaver)
- uNDF (Combs/Shaver)
- StarchD (Shaver)
- Shredlage update (Shaver)

Computer Software:
Decision Tool for BMR corn silage, low lignin alfalfa, and other forages with increased milk yield potential but yield drag (Shaver, Lauer, Jones, and Undersander)
Grazing Systems Work Group

Work Group members:
Rhonda Gildersleeve, Gene Schriefer, Peg Reedy, Ken Barnett, Mark Renz, Carrie Laboski, Daniel Marzu, Geoff Brink, Stephanie Plaster, George Koepp, Mike Travis

Action Plan:

The pastures/grazing section of the Team Forage web site will be migrated to the Grazing Resources and Research site managed by Gildersleeve.

Development of new publications and other materials related to managed grazing will require minimal input except the time and expertise of team members. A list has been developed in consultation with grazing networks and other team members.

Develop protocols and carry out research/demonstration projects. There may be moderate input needs for these projects, although several of those listed below have received some grant support. Trials will be conducted in cooperation with the grazing workgroup, farmers, grazing networks, other Extension, and partner agency personnel.

Trials/projects underway or completed during 2012 include:
- Grass Variety Testing (Undersander) – ongoing.
- Central WI pasture mixtures trial: 7 county cluster has a GLCI education grant to look at species mixtures across their region to begin in 2013 (Ken Williams, Craig Saxe)
- Poisonous plants fact sheet: Minnesota has a good equine-oriented version, this would cover other livestock interests (Mark Renz, Peg Reedy): working with CE Publications to finalize publication.
- Manure source and time of application effects on cool-season grass productivity, seasonal yield distribution, nutritive value, and persistence, pasture composition, and soil chemical and physical properties (USDFRC). Brink: research project will continue in 2014.
- Nitrogen source, application date and rate, and defoliation management effects on productivity and persistence of red clover grown with orchardgrass (USDFRC). Brink: research project will continue in 2014.
- Drying rates of some cool-season grasses in a hay production system (USDFRC). Published in Forage & Grazinglands 2013.
- Pilot grass finished beef production series, Jan. – March 2013; (Schriefer, Gildersleeve)
- 2013 Pasture management after drought: (Gildersleeve)
- 2013 Weed control after drought (Renz)
- A4034 Soil Fertility Guidelines for Pastures (Laboski)

In-service Opportunities and Grazing Schools in 2013:
- SARE Grazing Educators’ professional development workshops continue. Workshops are planned for March 4th (Mauston, topics will be pasture economics); June 18th, West Madison & on-farm location TBD; topics will be plant physiology, mixtures, pasture condition, weeds, plant ID, group dynamics in adult education), and mid-late fall. All SARE PD workshop materials are being posted to UW Grazing Resources & Research website for educators’ use. (Gildersleeve, Saxe on grant steering committee)
- Grazing Teaching & Technology will be held in fall TBA and co-offered as one of SARE PD workshops for 2014 (Gildersleeve,, Grazing workgroup members). Tour topic may be warm season grass breeding & management.
- WI Grazing Conference (GrassWorks’) was held in Wausau in January 2014 and the 2015 conference TBA.
- “How to Get Started Grazing” School will be held June 4 – 5, 2014 in Langlade County (Plaster)

Resources to be Developed:

Publications
- Weed Management of Rotationally Grazed Pastures Group discussed need for stand-alone publications for horse/rural landowners and commercial farms. Proposed for 2013. Integrated weed management concepts (Mark Renz and graduate students).
- Mob grazing factsheet (Gurda, Gildersleeve): Gurda is currently summarizing as part of thesis project.
- Water systems (hilly areas): Drafted, needs to be finished (Schriefer and Gildersleeve)
- Pasture Budgets (Barnett): updated and available at CDP website.
- Grazing cover crops—Gene Schriefer, draft
- Comparing methods of Canada thistle control (project started in 2012)—Renz and Gurda
- Materials on pastures/grazing for Team Forage will be migrated to Grazing Resources & Research website and linked with new Team Forage website (Rankin & Gildersleeve)

We also had a discussion regarding development of producer-friendly “apps” that might be developed for mobile communications uses, including the following ideas:
- Identification materials for grasses, legumes, pasture weeds
- Estimating percentage legumes in pastures
- Potentially invasive plants