



Field Green® program
 Western Lake Superior Sanitary District
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Clear Answers for Clean Water™

BIOSOLIDS DIGEST

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Contact us

Have a question or want information on Field Green® biosolids? Here is a guide to our staff members:

If you are an existing customer and would like to schedule a field or have questions on a recent application, contact:

*Paul Wilken, Lead Land Application Operator,
 (218) 740-4764 or paul.wilken@wlssd.com*

If you're interested in enrolling a field in the biosolids program, have general questions, are a member of the public or are a government official, contact:

*Craig Lincoln, Environmental Programs Coordinator,
 (218) 740-4808 or craig.lincoln@wlssd.com*

For general questions, contact:

*Todd MacMillan, Biosolids Supervisor,
 (218) 740-4767 or todd.macmillan@wlssd.com*



Strategies to cope with rain

Lots of rain has made it hard to bale hay the past few years. So we looked back in our archives and found a few articles with advice that can help you cope when you can't get in the field:

Bale grazing is the one option. Rather than hauling hay to the feedlot, move your cattle to the hay bales in the field:

- Place the bales to give the herd between one and three days of food in any one place.
- Make sure they move enough so they don't break through the sod, which prevents mud and the health problems it can cause.
- Keep track of how long the cattle are on the field and use soil tests to supplement nutrients from the manure the next year.

Graze your first cutting and put up hay later when weather is drier. Extension tests found this strategy increases overall yields:

- Plan ahead for fencing, water access and moving the cattle enough to avoid damage to the field.
- Think about doing about five days on each field.
- Grazing from about the third week of May through the first week of June has been successful.

*Contact Craig Lincoln for information or copies of these stories:
 (218) 740-4808 or craig.lincoln@wlssd.com*

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Choose the right forage and manage it well to get best results

By Tom Gervais
Soil Conservationist, USDA-NRCS

When choosing forage species for livestock, there are many considerations including yield, forage quality, palatability, longevity, drought, flood, and disease resistance.

To complicate things, each forage species has multiple varieties to promote different traits.

Then you must decide whether you want to plant species singly or in a mix, and what proportion of each species in that mix.

It can be daunting, considering we generally plant forage stands once every five to 10 years. This guide will help you.

Functional groups

Different types of forage have different applications. Here are some examples.

Cool-season perennial grasses: These are the most common forage types in most of Minnesota. Examples are timothy, orchardgrass, tall fescue, reed canarygrass, quackgrass and smooth brome. These grow best in cooler temperatures from 65 to 75 degrees.

Warm-season perennial grasses: Many grasses native to North America are in this category. Examples include big bluestem, switchgrass and indiangrass. These grasses generally are slow to grow until warm temperatures set in, from 75 to 90 degrees.

Legumes: Legumes are broad-leaved plants that “fix” nitrogen from the atmosphere. Alfalfa, birdsfoot trefoil, vetch and clover fall into this category. Legumes can be perennial or annual.

Annual and biennials: Several other functional groups exist, such as cool and warm season annual or biennial grasses, broadleaf plants, and legumes. Some examples of these include ryegrasses, cereal grains, corn, sorghums and sudangrasses, millets, turnips, radishes, annual clovers and more. These types of forages can be excellent for short-term forage needs such as in rotation with cash crops, as cover crops, or in sequence with long-term perennial stand renovations.

Adaptability

The species you select must be adapted to the soils, drainage class, climate and any other site variables that come into play.

If you plant a forage species in a site it is not adapted to, the stand may survive but it may not produce up to its potential.

The first step is to identify the soil type, using your county’s soil survey. Then you can determine drainage class, texture and other features that may help you select an adapted forage species.



Forage Quality

More important than trying to select species that have high forage quality is to calculate the nutrient requirements for the kind and class of livestock you are feeding. To do this, refer to the National Research Council’s “Nutrient Requirements for Beef Cattle”. The next step is to sample forages, either green or stored, to determine if the nutrients provided by the forage are adequate for the herd.

A few generalizations about forage quality for any functional group:

Forage quality is a moving target and the largest driver of forage quality is plant maturity. As a plant ages, cell walls thicken, reducing the amount of digestible fiber and therefore energy available to the livestock. Crude protein levels also drop. Plant maturity at harvest is far more important to forage quality than species-to-species variability.

Annual species tend to have higher digestibility and energy levels than perennial species.

Legumes tend to have higher protein levels than grasses, often from 15 to 30 percent.

A 2011 Digest story on a study on the impact of Field Green® into forage quality reported these results:

- Yields increased 1 to 1.5 tons per acre.
- Crude protein increased 2.5 percentage points.
- Relative feed value went up 8.17 percentage points.
- Tissue analysis found small increases in some micro-nutrients.

Crops grow best in an appropriate soil type. A 2013 Digest story included these recommendations:

- Clay: white clover, red clover, birdsfoot trefoil, orchard grass, oats, corn, annual rye grass, and canola.
- Loam: Nearly all types of forage, but pay attention to standing-water issues.
- Sand: alfalfa, orchard grass, smooth brome, sorghum/sudan grass, millet, barley, wheat and corn.

There are some newer varieties of alfalfa that work in different types of soil. Ask your supplier, an agronomist or Extension specialist for alternatives.

Balage or haylage is higher quality than dry hay, generally. Ultimately, it is up to you whether the added cost of equipment and plastic wrap and time offset the reduced cost of producing dry hay.

Yield

Yield is easier to gather data on. Yield is quite variable between species, and even between varieties within species. Yield per acre for most cool season grasses and legumes will range from 1.5 to 5 tons per acre, depending on soil fertility, soil drainage, temperature and rainfall.

Further detail is available by reviewing the full varietal trials by University of Wisconsin and

University of Minnesota.

Finally, in regards to yield, it is very important to monitor and optimize soil fertility in order to maximize yield. Adequate soil nutrient is critical to maximizing annual production and stand longevity. Use your soil test results and yield goal to determine nutrient needs for your planned seeding. Many sources of soil amendments are available including commercial fertilizer, manure, compost, biosolids, woodash, and lime.

Work with your local Extension Educator, crop consultant, NRCS/SWCD staff or other folks to determine the best sources and methods for applying soil amendments.

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Biosolids help hay crops as much as commercial fertilizer, especially when the farmer buys potassium to add to the field, according to a 2018 study by a retired soil scientist with the Wisconsin Extension.

The study also found that biosolids, especially with potassium, were profitable with a single cutting.

Adding a second cutting to a farm’s management plan would increase profitability more and make it possible to farm fewer acres while still supplying herd or market needs.

For more information, contact Craig Lincoln of WLSSD, (218) 740-4808



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