

# Agronomy Notes

Edited by Jeff Graybill &amp; Tina Gross

Capital Region Extension Agronomy Team

 **Mar** 2007

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## Successful Establishment of Forage Crops

(Source - Agronomy Fact Sheet 49. Contact your Extension office for a copy.)

Forage producers know the key to successful forage production starts with proper stand establishment. Overseeding or interseeding any forage crop into a poor stand is usually not successful. Therefore, the goal of all forage producers should be to strive for optimum conditions at establishment.

In all operations, advanced planning is critical. Planning one year in advance of establishment will help to ensure a successful stand the first time. Weather can certainly influence the take of the crop, but proper planning ensures preparedness by the producer to take advantage of any narrow windows of opportunity for successful establishment.

### Soil Testing

6 months before sowing, a soil test should be done and if necessary, lime added to correct low pH conditions. Testing ensures sufficient levels of soil nutrients are available in the rooting profile. Adding nutrients to the surface to correct deficiencies after establishment is not good agronomic practice.

### Weed Control

Rotation and weed control in a previous crop can significantly reduce weed infestations during establishment. However, herbicide selection in the preceding crops must be considered so herbicide carryover will not injure new seedlings. The 6 months prior to establishment are an excellent time to control perennial weeds such as horse nettle, hemp dogbane, Canada thistle and quackgrass with an application of a systemic contact herbicide.

### Select Species and Order Varieties Early

Producers should select varieties of forage species to match their soil types. This will make stand establishment easier and will improve production over the life of the stand. Ordering seed early will ensure getting the best variety for their situation. Consult the 2006 Penn State Forage Trials Report for performance information.

### Seedbed Preparation

Spring seedings of forage crops are common throughout PA. Generally, late summer seedings are more successful due to less weed pressure, fall rains and cooler temperatures that provide better seedling growth. Nevertheless, spring sowings are common and can be just as successful. The chance for wet soil conditions that can delay fieldwork and summer droughts and increased weed pressure all increase the risk of spring seedlings. Frost seedings are more successful if completed when the ground is not snow covered but freezes at night and thaws during the day. Clovers are easiest to establish this way. Frost seeding success with grasses is more difficult.

### Seeding Depth

A general rule of thumb when planting any seed is that the seeding depth should be no more than 5 times its diameter. For small seeded forage crops, the maximum seeding depth is only 3/8 of an inch. Seeding deeper will drastically reduce the number of seedlings that establish. In fact, if you cannot find any seeds on top of the soil when you are planting, then you are planting too deep.

### Soil Contact

After being placed on or in the soil, the seed must absorb water from the soil in order to germinate. To do this quickly, the tiny seeds must be in immediate contact with the soil. A firm and fine seedbed helps to regulate seeding depth and improve soil contact. However, excessive tillage can destroy soil structure and increase crusting. No-tilling is an excellent method to sow forage crops, provided the soil is not too wet. The seed slit will not close in wet ground and poor seed to soil contact will result.

Take time now to prepare for your spring sowing. Advanced planning and preparation will improve your odds of good establishment.

**Paul H. Craig, CCA**  
**Forages - Dauphin Co.**



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Capital Region Extension  
Agronomy Team  
1451 Peters Mountain Road  
Dauphin PA 17018  
717-921-8803

March 2007

## **Know the Sulfur Content of Your Diesel Fuel**

*(The following article is adapted from a news release from Dr. Dennis Buffington, professor of agricultural engineering, Penn State University.)*

Sulfur content of diesel fuel is regulated by the federal government. Before 1993, the allowable sulfur level in diesel fuel was 5,000 parts per million (ppm). From 1993 until earlier this year, allowable sulfur was 500 ppm. However, in June 2006, the ultra-low sulfur requirement was implemented, which means that the sulfur content must be no higher than 15 ppm for 'on-road' transportation fuel. The government is requiring the use of the ultra-low sulfur fuels to reduce the concentrations of sulfur compounds in the environment.

When sulfur content is reduced in diesel fuel, one consequence is that lubricity is greatly reduced. Lubricity is the ability of the fuel to provide lubrication to reduce wear between moving parts of the diesel injector pump and the fuel injectors.

Fuel used for off-road functions, such as farm, construction and forestry operations is exempted from the ultra-low sulfur requirements, at least for the present time. You can still legally use the low sulfur fuel with 500 ppm sulfur. But the problem is that not all fuel suppliers carry both 'on-road' (15 ppm) and 'off-road' (500 ppm) diesel fuels.

How does a farmer know the sulfur content of the fuel being delivered to them? The only way is to ask the supplier. If the supplier doesn't know, insist they find out for you.

If your current fuel supplier can only deliver 'on-road' diesel fuel to your farm, you have three alternatives:

- Ask your supplier to verify that a lubricity agent has been added to your fuel.
- Add a lubricity agent yourself to the ultra-low sulfur fuel to provide the protection needed in your diesel engines.
- Find a supplier who will deliver 'off-road' fuel.

Many lubricity agents are available at the big-box stores, as well as at auto supply shops, but can be quite expensive. A more cost-effective approach is to use biodiesel. Biodiesel has virtually no sulfur content but has excellent lubricity properties. Using just a B1 blend (1 percent biodiesel with 99 percent regular diesel fuel) improves lubricity of ultra-low-sulfur diesel fuel by as much as 65 percent.

To get up-to-date information on where biodiesel is available in Pennsylvania, check the Web site for the

National Biodiesel Board at <http://www.biodiesel.org/> Click on "Guide to Buying Biodiesel." Under the heading of DISTRIBUTORS, click on "Click here for a national map of biodiesel distributors." Then click on "Pennsylvania" on the map. Make sure that you are buying biodiesel and not just crude, unprocessed vegetable oil. Ask the distributor to provide certification that the biodiesel meets ASTM D6751 standards.

**John Rowehl**  
**Grain Crops - Cumberland Co.**

## **Crop Insurance Update**

Corn and soybean crops are expected to have the highest value in a decade. Production and marketing risks are also very high, making 2007 a terrible year to experience a yield or price disaster...without adequate protection!

Crop insurance and crop marketing tools are a good combination to manage the risks associated with producing and marketing crops with potentially record values. USDA has announced aggressive price elections for APH yield coverage crop insurance (up to \$3.50/bu. on corn and \$7.00 for soybeans). This coverage works best for producers wishing to cover variable input costs in the event of low yield/quality. It does NOT provide revenue protection.

**Crop Revenue Coverage (CRC)** provides revenue protection against low yields, low prices or low yields with higher prices. With CRC, the price used to convert APH based yield guarantees that CRC revenue guarantees are the average daily closing prices for the months of Feb. or Oct. (which ever is higher) of the harvest time contract (corn-Dec., soybeans-Nov.) on the Chicago Board of Trade. Production is valued at the average price for Oct. Many producers find that CRC works best as a foundation to reduce the risk of pre-harvest pricing (for an amount similar to the bushels on which your CRC revenue guarantee is based), to be in a good position to replace bushels lost that are needed for livestock feed (with the crop insurance indemnity) and to minimize the loss of revenue in the event of a disaster.

The average February prices for corn and soybeans, on which CRC protection is initially based, will be announced by USDA during the first few days of March. It's suggested that you contact your crop insurance agent immediately after this announcement to review the different protection options available and to finalize your decisions for 2007. Be sure to get a printed quote for the options that you select to protect your valuable 2007 crops. **THE DEADLINE FOR CROP INSURANCE DECISIONS IS MARCH 15<sup>th</sup>!** Contact a crop insurance agent for details.

The increased amount of crop insurance protection that is available to protect your high crop values will cost somewhat more than lower coverage in the past. But it still only costs a modest amount per bushel of yield. Plus, it may be the only risk management tool that assures your crop revenue when a severe disaster occurs.

### Reminder to Report Your 2006 Crop Yields

It's time to report your 2006 crop yields to your crop insurance agent and your county FSA office. For crop insurance, remember to add pack factors (which increase the bushels) in your calculations of farm-stored grain. Also, remember that written records are required to back up the numbers that you report. Both pack factor charts and a detailed acceptable record keeping system, that meets RMA/USDA standards, are available at the website: [cropins.aers.psu.edu](http://cropins.aers.psu.edu).



Gene Gantz  
RMA/USDA  
717-497-6398

## pH, Limestone, Gypsum and Nutrient Availability

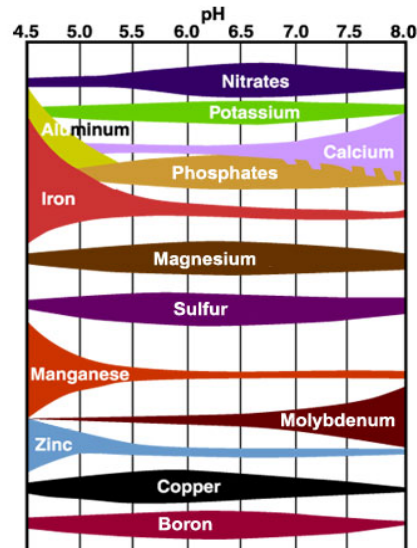
Limestone ( $\text{CaCO}_3$ ) and Gypsum ( $\text{CaSO}_4$ ) are both excellent sources of calcium for crop production. The difference between these materials is that limestone neutralizes acidity, while gypsum does not change soil pH. Pennsylvania soils are naturally acidic and thus require periodic liming to adjust soil pH for optimum crop production.

When we apply a ton of calcium carbonate limestone to correct soil pH, we are also applying 800 lb./A of Ca. Even a dolomitic limestone will contain over 400 lb. Ca/ton. Crop removal of calcium ranges from less than 5 lb. Ca/A for corn to over 100 lb. Ca/A for alfalfa hay. Regular liming to maintain soil pH in the optimum range will easily maintain calcium levels against crop removal. Thus, supplemental calcium fertilization is not normally necessary to meet crop demands. Gypsum is sometimes used as a Ca fertilizer for acid loving crops where Ca is needed but an increase in pH by using limestone is not desired.

Can I have too much calcium? If excessive amounts of lime are applied, the pH of the soil and the calcium levels will continue to rise. This can cause several problems for the growing crop. High pH and excessive Ca can react with phosphorus, creating calcium phosphates and reducing the phosphorus availability. All soil tests measure the "Cation Exchange Capacity" (CEC) of the soil. Calcium, potassium and magnesium ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^{1+}$ ) are all cations which are held by their positive charges to the negative soil particles. At very high levels, calcium will compete with

K and even Mg, (high Ca:K & Ca:Mg ratios) replacing them on the soil minerals or CEC. Thus, a deficiency of potassium and a lower availability of magnesium and micronutrients may occur.

The chart below illustrates the availability of the essential plant nutrients and how they are affected by pH. Extensive research has shown that, while a general balance (ratio) of cations is important, there is a wide range of cation ratios that will result in maximum crop yield and good soil physical properties. From a practical management point of view, *if K and Mg in the soil are adequate and if the soil pH is adjusted to near the optimum range for crops, there will be plenty of Ca and there is no reason to adjust the soil further to try to achieve elevated Ca levels or specific basic cation ratios.*



The other area where Gypsum is concerned is related to improving soil physical properties. It is true that having adequate Ca and Mg on the CEC is important for promoting and maintaining good soil structure, called aggregation. However, if soils have adequate K and Mg and are limed to an optimum pH, there will be plenty of these cations to maintain good soil structure and no further adjustments are necessary. In sodic soils, which we do not have in PA, gypsum can have dramatic effects on soil physical properties because it replaces the sodium ( $\text{Na}^+$  - 1/2 of table salt:  $\text{NaCl}$ ) on the CEC with calcium. The sodium is then leached out of the soil. *However, adding gypsum would have no effect on physically compacted soils in PA, as long as the soils have been limed to anywhere near optimum soil pH.*

Dr. Doug Beegle  
Penn State Soils Specialist  
Jeffrey Graybill, CCA  
Agronomy - Lancaster Co.

March 2007

***Calendar of Events and Recertification Opportunities***

**PA No-till Alliance Conference:** March 13-14 at the Ramada Inn, State College, PA. To register or for more information, contact Jeff McClellan at 814-863-4260 or jtm23@psu.edu

**Soil Quality Field Day:** March 16 from 10A-2:30P at the John Blank Farm, 5189 Amish Rd., Kinzers, PA. Program will include the benefits of no-till and minimum till; manure and no-till equipment for small farms; cover crops and more. Call the Lancaster County Conservation District at 717-299-5361 Ext. 5 to reserve a free lunch.

**Perry Pesticide Education:** March 19 from 7-9PM at the Perry Co. Extension Office. 2+2 points. Contact Dave Swartz at 717-582-5150.

**Field Crop Education Lab:** March 27 from 10A-noon at Penn State Landisville Research Farm. Topics include: Small Grain Mgmt.; Forage Establishment, and Cover Crops. Contact Del Voight at 717-270-4391 to register.

**Upper Dauphin Pesticide Education:** March 27 from 7-9PM at the Upper Dauphin Area High School. 2+2 points. Contact Paul Craig at 717-921-8803.

**Dauphin Pesticide Education:** March 28 from 7-9PM at the Ag & Natural Resource Center. 2+2 points. Contact Paul Craig at 717-921-8803.

**Lancaster Pesticide Education:** March 29 from 7-9PM at the Farm & Home Center. 2+2 points. Contact Jeff Graybill at 717-394-6851.

**Lebanon Pesticide Education:** March 29 from 2-4PM and 6:30-8:30PM at the Lebanon Valley Ag Center. 2+2 points. Contact Del Voight at 717-270-4391.

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