



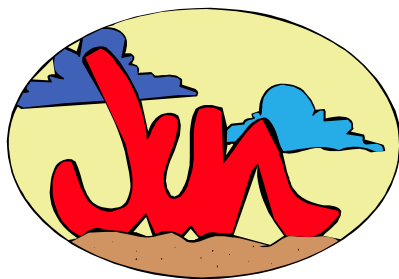
Agronomy Notes

Capital Region

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Capital Region Extension Agronomy Team

Mark Goodson, Editor



2005

Inside This Issue

- Vortex Hay And Forage Sample Dryer
- PA Crop Insurance Tips & Update
- Timing Sprays For Roundup Ready Soybeans
- Slugs Beginning to Feed
- Sprayer Tips

Vortex Hay and Forage Sample Dryer

Moisture measurement determination of hay and forage crops is vitally important to ensure proper harvest timing, optimum storage conditions and to ensure that proper dry matter feeding amounts are provided to all livestock. Only a few moisture percentage differences in hay crops can result in molds, excessive dry matter and quality losses, heat generation and even fire. In silages, inaccurate moisture levels can result in poor packing, dry matter and quality losses and poor fermentation. When formulating a feeding ration, accurate moisture levels are the key to properly balance a ration. Forage moisture levels can vary significantly over time and location within a storage structure. With all of these issues in mind it is clear that an accurate, rapid and inexpensive method to determine moisture levels is very important.

On farm methods to measure moisture levels can include: electronic meters, microwaves, Koster testers, and conventional ovens. Each has some drawbacks that lead to no clear optimum method to measure moisture levels. Microwaves are probably the most popular today; however, proper drying procedures are critical for an accurate result and microwaves require constant supervision during operation or burning can occur. Koster Testers do not require constant supervision but proper operation is critical to ensure accuracy and cost can be an

issue. Electronic meters are faster and can be consistent but frequent calibration is required to ensure optimum performance.

Enter the Vortex Dryer

Recent work in the Department of Agriculture and Biological Engineering at Penn State has lead to the development of a new alternative to forage moisture testing. It is called the "Vortex Dryer" and uses a simple hair dryer and common construction material to produce very accurate moisture determinations. It is called a vortex dryer because it uses air from the hair dryer blown into the drying chamber. This air creates a swirling funnel of air, a vortex, which rapidly and accurately dries the forage sample. The concept is simple. Drying time is estimated at 15 – 20 minutes for hay samples, 40 - 60 minutes for silage samples.



In addition to the vortex dryer, a scale that is accurate within 1 gram and can weigh up to 5 pounds is needed. The drying procedure starts with weighing the entire vortex dryer without any forage in it. After taring the scale, approximately 200 grams of forage is added and a blow dryer plugged into the dryer. After sufficient time, the dryer is disconnected and the entire unit with dried forage re-weighed. The difference between the wet (original) weight and the dry weight divided by the wet weight times 100 equals the percent moisture content.

The Vortex Dryer can be built using plans available from most extension offices or found on the World Wide Web at <http://www.abe.psu.edu/vortex/>. It is estimated that the total cost to build a vortex dryer is about \$40.00. Ag engineering students at Penn State are also building and selling these dryers at a cost of \$85.00, including a hair dryer. Order forms can also be found at the web site.

So what is your excuse for not knowing what your forage moistures are?

**Paul H. Craig, CCA
Forages**

June Tips to Maximize Crop Insurance Benefits

The PA Department of Agriculture announced that the crop insurance cost share on buy-up policies will be 8% of the premium (before federal cost share is applied). The credit will be reflected on premium bills for 2005 crops.

Initial Planting Deadlines:

<u>Crops</u>	<u>Planting Deadline</u>
Field corn	6/10*
Fresh tomatoes	6/20
Fresh market sweet corn	6/30
Grain sorghum	6/20*
Potatoes	6/10
Processing beans	7/25**
(7/10 Adams, Lancaster & York Co.)	
Soybeans	6/10* north PA 6/20*south PA
Processing sweet corn	6/30
Processing tomatoes	6/10 (6/5 in Erie Co.)
Winter squash	7/15

**** Multiple dates** are applicable. *** Late planting protection:** If weather delayed your planting beyond the planting deadline (i.e. 6/10 for corn, 6/20 southern PA soybeans or 6/20 for grain sorghum), report the acreage for crop insurance separately by date planting was completed for each field, for maximum coverage, as the coverage declines 1% per day for each day that planting was delayed after these dates. **Replanting protection applies** to many crops. Check with your agent for details before you destroy the evidence of the initially planted acreage. **Acreage reporting deadline** for most above crops is 7/15.

Other Issues:

Notify your crop insurance agent immediately and ask what you are required to do if:

- You added cropland to your operation on which you will be growing insured crops in 2005,
- You have failed newly seeded acreage and need to replant to the same crop (you may be eligible for a replant payment),

- You have failed newly seeded acreage and intend to replant to different crop (second crop provisions may apply),
- You are prevented from planting an insured crop by the final planting date (you may be eligible for a prevented planting payment).
- You suffer damage to a growing crop.



**Gene Gantz
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Timing Sprays for RoundupReady™ Soybeans

Some growers ask about proper timing of glyphosate products on RoundupReady™ Soybeans. The range of application timing from the crop perspective is quite wide; from emergence to flowering. From a weed stage or crop competition standpoint, it's more complicated.

You should have started with a clean field at planting time which means that all the existing weeds have been killed by either tillage or a burn down herbicide. Weed competition should not be happening before the crop is even up. For a single application of glyphosate, studies have demonstrated that the odds of avoiding yield loss are best if weeds are controlled by the time they are three to six inches tall. That is for the weeds that glyphosate can control at that height. Certain weeds like Eastern black nightshade and annual morning glory are hard to control if they get too big. Then, a tank mix partner may be called for. Addition of AMS can help in hard water situations. Generally, if you began with that clean field, a spray application will probably have to be made four to five weeks after planting. With narrow row beans this is usually sufficient since the rows are closing up and block out light to later emerging weeds. In dry springs, sometimes the growth of the soybeans is reduced and weeds come up through the crop canopy. Wider rows increase the odds of needing a second application.

Double Cropping Soybeans?

The threat of soybean rust has made many growers reconsider growing double crop beans. A rough rule of thumb is that soybeans following barley average about seventy five percent of the yield of full season beans that are planted in mid May. After wheat, this average drops to fifty percent. Ohio State estimates that after wheat harvest, soybean yield potential drops an average of one bushel per day. If you're going to go for it, consider harvesting wheat at a higher moisture content and dry it for better test weight and get a jump on planting soybeans.

For soybeans planted in June, varieties up to late group III or early group IV can still be used. If planting in early July, back off to a mid group III. If planting even later, drop down to an early group III.

Soil moisture is critical to success with double cropping. Use a no-till planting system if possible to conserve as much moisture as you can. And don't forget; it is still recommended that you start out with a "clean" field, even when using a glyphosate herbicide system.

Narrow rows are much more important in double crop beans than full season beans. In order to get the most out of the shorter season, a higher plant population, up around 200,000, in narrow rows normally works best.

It's less likely with current nitrogen costs but sometimes questions arise about the benefit of applying nitrogen on soybeans, particularly for double crop. In a Penn State research trial, rates of nitrogen in fifty pound increments from zero up to two hundred pounds per acre were tested. Although the soybeans looked a little greener and slightly taller there was no yield advantage from adding nitrogen in both tilled and no-tilled tests.

**John Rowehl, CCA
Grain Crops**

Slugs Beginning to Feed

(May 23, 2005) Having experience egg hatch in most locations in the state, we are now getting reports of slug injury. Most slugs are still quite small, which suggests they are mostly juvenile gray garden slugs. However, in some fields, we are seeing numerous marsh slugs, the occasional small dusky or banded slugs, and even a few older adult gray garden slugs. In Fairfield County, we saw an early-planted corn field that had slug defoliation. In this field, juvenile slugs were getting large enough to cause leaf feeding. In Knox County, we saw significant feeding on soybean cotyledons, although the emerging unifoliate leaves were free of injury. Juvenile gray garden slugs were still relatively small, although numerous marsh slugs were also present. These observations suggest that most of this feeding was perhaps due to marsh slugs rather than the juvenile gray garden slugs. In Wayne County, injury to corn was just beginning.

Growers should expect feeding and defoliation to increase as the slugs grow in size over the next few weeks. Another factor to consider is the continuing cool and wet weather forecast for at least an additional week. Crops are growing very slow, and unless the weather turns warmer, crops will have difficulty outgrowing slug injury. If injury becomes severe and newer leaves are being defoliated, treatment may become warranted. The use of Deadline MPs or one of the newer molluscicide baits should be used at the recommended rate. At this time, the availability of the newer baits, Orcal Snail and Slug Bait and Metarex is not known. If these are not available, Deadline MPs is the choice of bait.

Additionally, many fields that have not yet emerged or that will be planted over the coming few weeks will be very vulnerable to slug injury. Slugs will be even greater problems if the seeds are planted in less than ideal conditions, resulting in seed furrows that do not close

well. Slugs will crawl up and down the seed furrows eating to their heart's content. Growers who have had stand problems caused by slugs in the past should check their fields carefully. If a large number of slugs are present in a field with a history of stand problems, growers might consider an at-planting time molluscicide application.

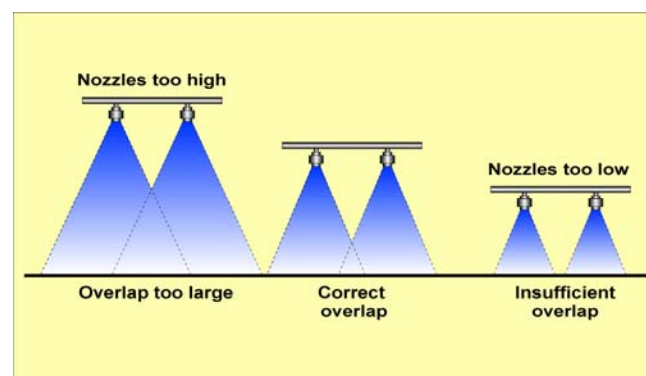
**Ron Hammond and Bruce Eisley
Ohio State University**

Sprayer TIPS

There are two commonly misunderstood principles that are critical to proper sprayer application.

1. Boom Height

Adjust the boom so that it is positioned at the proper height above the crop, weed, or soil. For example, the boom height is measured from the top of the weeds rather than from the soil surface for a post-emergence herbicide application. If I observe a sprayer with adjustments for height rusted fast to the sprayer, I know that chances are good that applications are being compromised at that farm. In most cases with a standard 80 degree nozzle (the first two or sometimes three numbers on the nozzle tip), should be run at an ideal height of 18 inches from the target.



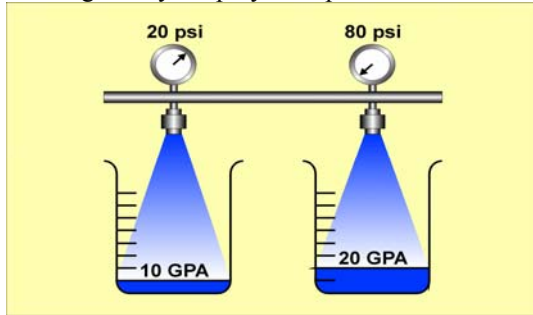
Here are the target heights first set indicating minimum and second set maximum for different spray angles.

Spray Angle Degrees	20 inch spacing Spray Height, inches
65	22-24 -NR-
73	20-22 -NR-
80	17-19 26-28
110	10-12 15-17
-NR- Not recommended if height is above 30 inches	

2. Adjusting Output

Adjusting output should be completed primarily through speed adjustments. As shown, sprayer output varies with the square root of sprayer pressure. Doubling the pressure does not double the flow rate. In order to double the output or spray rate, pressure must be increased 4 times. For example, a nozzle spraying at 20 psi will deliver twice the amount of liquid if the pressure is

increased to 80 psi. Therefore, adjust pressure to make minor changes only in sprayer output.



Larger changes in sprayer output can be made by altering travel speed. The spray rate varies inversely with the ground speed of the sprayer; that is, as speed increases, the volume of spray applied per acre decreases at an equal rate. Therefore, doubling the ground speed from 3 to 6 MPH reduces the gallons of spray applied by one half.

Any change in ground speed will require that the calibration procedure be repeated. Nozzle guides available through local suppliers will provide some starting points for nozzles and speed adjustments. Be sure to calibrate your sprayer this season to ensure accurate applications.

**Del Voight, CCA
Integrated Pest Management**

Websites of Interest:

Department of Crop And Soil, Penn State Cooperative Extension:
<http://cropsoil.psu.edu/Extension/extension.cfm>

USDA Soybean Rust Information Site:
<http://www.usda.gov/soybeanrust/>

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