

PLANT & PEST ADVISORY

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Scout For Alfalfa Weevils

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While Scouting alfalfa fields in the southern part of the state, alfalfa weevil larvae were encountered in fields in Burlington, Camden, and Salem counties. Of those fields scouted only one was observed to be above threshold. The larvae appear as small green worm-like insects that feed on alfalfa. There is only one generation per year. Generally, sampling for alfalfa weevil should begin in our area during mid to late April. However, during earlier warm springs it is often necessary to begin sampling sooner. Alfalfa weevil is primarily of concern prior to first cutting of alfalfa. Stubble and regrowth must be watched to ensure that damaging levels of larvae are not present.

The presence of parasitic wasp and insect species, as well as fungus diseases which attack alfalfa weevil have greatly reduced the need for insecticide controls throughout the state. The general rule of thumb for treatment is to treat the field when 50 percent or more of the tips show feeding injury prior to the full bud stage. The *1999 Pest Management Recommendations for Field Crops* provides a more detailed spray decision guide which addresses factors such as plant height, the cost of spray material, and crop value.

Management practices that will help maintain good weevil biological control and possibly reduce the need for insecticide sprays include:

- Harvesting early to avoid severe larval damage if the crop has achieved sufficient growth.
- Apply insecticides only when thresholds have been exceeded and early harvest is not an option.
- If spraying is required, consider leaving untreated areas to serve as a nursery for beneficial insects.

If weevil populations are above threshold at the first cutting, scout the field 4 to 5 days after harvest to insure regrowth is not inhibited. Spraying should be considered if carry over populations of weevil larvae of 2 or more per stem are encountered. Remember that if the decision is made to spray, the days to harvest interval may determine which insecticide can be used. Also, if the majority of weevil larvae are almost full-grown (1/4 to 3/8 inch long) feeding activity is nearly complete and little additional damage is likely. □

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Harvesting First-Cut Alfalfa

Jeremy W. Singer, Ph.D., Field and Forage Crops

Predicting alfalfa quality before cutting is tricky business.

Research aimed at accomplishing this task is geared toward animal livestock enterprises, where small quality changes can have serious ramifications in the feed bill. Nevertheless, there has been a considerable amount of time and resources expended on research to identify methods to predict or estimate alfalfa 1st cut quality before harvest.

Currently, there are three methods that are worth discussing, and they range from rudimentary to complex. The scissors cut method has been around for a number of years in the upper Midwest. Under this program, samples are cut 1 to 3 times per week during spring growth in the field(s) of choice and analyzed by wet chemistry or NIRS. Sampling is recommended in similar areas within the same field to provide more reliable results. Therefore, if you have a field with three distinct areas, three samples should be submitted for analysis. After lab analysis is complete, results are quickly forwarded to the producer so harvest schedules can be adjusted.

Another method of prediction relies on equations to estimate alfalfa quality (PEAQ) and was originally developed in 1991 to estimate neutral detergent fiber (NDF), acid detergent fiber (ADF), and crude protein (CP) based on plant height and maturity stage. Neutral detergent fiber provides a measure of animal intake, while ADF is an indicator of digestibility.

The first step using this method is to choose a representative 2 square foot area in the alfalfa field of choice. Then determine the growth stage of the most mature stem in the 2 square foot area using criteria provided. After this step, plant height of the tallest stem is determined. Using the maturity and height information, you look up the NDF value in a table. The table was

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Soybean Inoculant and Seed Treatment Interactions

Daniel Kluchinski, Mercer County Agricultural Agent

In the last issue of the *Plant and Pest Advisory*, we discussed soybean seed inoculants, how they work and how should they be used. To review, *Rhizobia* bacteria (*Rhizobium* and *Bradyrhizobium*) give legumes the ability to convert atmospheric nitrogen (N₂) to useable ammonia nitrogen for plant growth. This symbiotic (mutually beneficial) relationship between the legume plant occurs in the root in specialized tissues called nodules. The plant provides the bacteria carbohydrates and sugars, and the bacteria provide the plant nitrogen. For legumes such as soybean, clover and alfalfa, this relationship allows the plants to fix enough atmospheric nitrogen so no nitrogen fertilization is needed.

However, one concern when using these products is the potential negative interaction with some fungicide and insecticide seed treatments. Note that there are advantages to using all of these products, but you must be aware that interactions can occur that will render the inoculant useless. Here are a few general rules to follow:

- Insecticides are generally most toxic to inoculants. If the seed treatment is very toxic, apply the treatment in-furrow rather than to the seed.
- Try to reduce the time that inoculants are in contact with the seed treatments.
- If using a humus/peat based inoculant, apply the fungicide to the seed first then wait until the seeds dry before applying the inoculant.
- Never mix any fungicide with a liquid inoculant.

The following chart (Urbana Laboratories, St. Joseph, MO) can be used to make management decisions based on the compatibility of some fungicide treatments and inoculant types. For specific questions about the products you may be using, read your inoculant and pesticide labels, or contact the seed treatment or inoculant manufacturer.

Fungicide	Fungicide Formulation	Inoculant Carrier/Type	Compatibility
Agrosol T	Wettable powder	Liquid	no
		Humus	no
		Granular	yes
Rival	Liquid	Liquid	no
Apron XL	Liquid	Liquid	yes, sow seed within 4 hours of treatment

Understanding Your Soil Test Report: “Available” vs. “Extractable” Nutrients

Brian Aldrich, Agricultural Outreach Specialist, North Jersey Resource Conservation & Development Council

When looking at their soil test results, producers frequently ask me, “Is that what’s available to the plant?” I always answer, “The test only tells you the amount of nutrients which were *extractable*.” Only the plant and the Good Lord know what nutrients are available to the plant, and they aren’t talking (at least not to me). It would be nice if we had an extracting solution which would tell us exactly what the plant sees.

Unfortunately, soils are so complex and variable, and there is still so much we don’t understand about them, that it is virtually impossible to make one extracting solution which will work in all situations. Each nutrient can exist in many different forms in the soil. We can’t see them directly — our laboratory instruments are our eyes and ears. But even then we are only guesstimating.

What soil tests *do* tell us is the *likelihood* of getting a *yield response* to fertilizer. These likelihoods range from “very likely” to “none”. The table below shows the ratings used by the Rutgers Soil Testing Lab, and their meanings.

Soil Test Rating	Probability of Response to Fertilizer
very low, low	very likely
medium	will sometimes respond, and sometimes not
high	not likely
very high	no likelihood

The likelihoods of response to fertilizer were determined by actually growing crops on plots with different levels of soil fertility, adding different amounts of fertilizer, and carefully harvesting and measuring the yields. This step, called “calibration”, is typically done by agricultural scientists on research farms. Because it is expensive and time-consuming, it is normally done by universities, not private labs. It took years to collect enough yield information to calibrate the soil tests. The researchers used this information to develop recommendations for the amount of fertilizer to add for soils testing low, medium, and high. So the recommendation you receive today is based upon years of collecting data on the research farms, followed by on-farm tests for verification.

Returning to our original question, I’ve explained why you don’t need to worry if a soil test tells you what’s “available” to the plant. All you need to know is whether the test predicts you will get an economic response to adding fertilizer — which after all, is why you took the sample in the first place. Recommendations based upon calibrations done in your state will give the most profitable results for your locality. □

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generated from research sampling over time, location, and year to provide the most accurate estimate possible. This procedure estimates the NDF content of the standing crop and therefore does not account for changes due to wilting, harvesting, and storage, factors that may increase NDF 3 to 6 units. This procedure is most accurate for pure stands of alfalfa. It was concluded that ADF and CP using PEAQ varied too much so only NDF can be estimated reliably.

Another method receiving a lot of attention uses growing degree days base 41°F (GDD) to predict when alfalfa will reach 40% NDF. Alfalfa usually breaks dormancy when the average temperature is 41°F or greater for 5 consecutive days. Data from New York suggest that there is variability across years, and that NDF values can differ by as much as 6 units from actual NDF using this method. Furthermore, it requires that weather data are available on each farm to maintain the necessary level of accuracy. Nevertheless, research on this method has generated another set of equations to predict when alfalfa will reach 40% NDF based on accumulated GDD. In New York, 700 GDD are currently required. But there are dramatic differences between hilltops and valleys, suggesting that temperature data are needed for specific sites. This presents a major limitation.

There are limitations to each method described above. Some researchers argue that the best approach is to use a combination of methods to ultimately provide the most reliable results. Undoubtedly, whichever method is selected must be user-friendly so it can be implemented in the field. Contact your County Agent to find out more about any of these methods. □

Field Crops Weed Control

Bradley A. Majek, Ph.D., Weed Science

Corn - Basis Tank-Mix Recommendations

Basis is a corn herbicide premix marketed by DuPont. It is a "jug-mix" of two ALS inhibitor herbicides, Matrix and Pinnacle. The label allows application to corn preemergence through the 4-leaf stage of growth.

Basis is not recommended in New Jersey for application preemergence. Test results have indicated the length of weed control obtained from preemergence applications may be inadequate.

Basis is recommended for use for application at the spike to 2-leaf stage of corn, before the weeds exceed 1 inch in height. Larger weeds may be more difficult to control. Always tank-mix with atrazine or Banvel to improve control of **annual broadleaf weeds** and for resistance management, or plan to apply a **broadleaf weed** herbicide late postemergence. Do not tank-mix Basis with other herbicides not listed on the label or adverse interactions may reduce weed control or increase crop injury.

Read and follow the new label restrictions. Consult the Commercial Production Recommendations for rates and additional information.

Soybeans

Canopy contains two herbicides, metribuzin and chlorimuron.

Metribuzin is also marketed alone as Lexone and Sencor. Both the Lexone and Sencor labels prohibit use on coarse-textured soils that are low in organic matter due to crop injury. Chlorimuron is marketed for postemergence use in soybeans as Classic, and as Synchrony STS, premixed with Pinnacle.

The premixes improve the spectrum of weeds controlled and significantly reduce the possibility of the development of resistance to chlorimuron. Resistance management is important for chlorimuron because the herbicide has one single site of action in susceptible weeds.

The labeled use rate of Canopy is 5 to 6 ounces of product per acre, with a label for 4 ounces only if followed by an additional postemergence application of Classic. The amount of metribuzin in 6 oz of Canopy is equal to the minimum labeled rate of Lexone and Sencor, which excludes use on coarse-textured soils. The use of Canopy or Lexone/Sencor in New Jersey on loamy sand or sandy loam soils with less than 2 percent organic matter may result in an increased risk of crop injury.

Certain factors increase the risk of crop injury when using Lexone or Sencor for weed control in soybeans. Coarse-textured soils that are low in organic matter increase injury risk. The herbicide leaches into the root zone more easily in sandy,

coarse-textured soil. Cool wet weather after application increases crop injury. Herbicide availability is increased by rainfall, and deactivation in the soybean is a biological reaction slowed by cool weather. The injury is a light activated reaction which progresses unaffected by temperature. High pH, above 7.0, increases herbicide availability and the risk of crop injury. Metribuzin is in the triazine herbicide family. Carryover of other triazine herbicides, including atrazine and simazine (Princep), may add to crop injury. In addition, triazine-resistant weeds are not controlled by metribuzin.

Canopy use is *not recommended* on coarse-textured soils classified as loamy sands with less than 1 percent organic matter. Where triazine resistance has been documented, Canopy use should also be avoided, since the metribuzin will not be an effective resistance management tool for the chlorimuron.

Canopy is recommended for use on soybeans on soils classified as loams or silt loams with more than 2 percent organic matter, except if the pH is above 7.0, or unless atrazine or simazine (Princep) was used last year.

Do not confuse Canopy with **Canopy Excel** and **Authority Broadleaf** herbicides. Both contain the same amounts of chlorimuron (Classic) and Sulfentrazone (Authority). Canopy Excel is marketed by DuPont and Authority Broadleaf is marketed by FMC. Neither contain metribuzin, but will only be available in very limited quantities this year. □

Corn Insecticide-Herbicide Interactions

Bradley A. Majek, Ph.D., Weed Science

Certain corn insecticides can increase the risk of crop injury when particular herbicides are used. Herbicides in the imidazolinone and the sulfonyl urea chemical families kill weeds by the same mode of action. They attack one single site of action in susceptible plants. The use of **Counter** insecticide reduces the tolerance of corn that normally would not be injured by these herbicides. The first and most well known examples are the interactions between the insecticide **Counter** and the post-emergence **annual grass** herbicides Accent or Beacon.

The decision to use a postemergence grass herbicide often comes following a failure of the preemergence herbicide due to weather or other factors. The use of **Counter** at planting eliminates the option of using certain corn herbicides, including Accent or Beacon to control escaped **annual grasses**. Recently, additional corn herbicides in the same chemical families have been labeled to control weeds and grasses. The potential for interaction with insecti-

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icides varies with each product. See the Summary of Labeled Herbicide/Insecticide Uses Chart. Do not use herbicides prohibited on the chart in combination with **Counter** insecticide.

IR and IT corn varieties have improved genetic

tolerance to herbicides in the imidazolinone chemical family. IR corn tolerance also extends to sulfonyl urea herbicides. These genetically improved varieties may eliminate the potential for crop injury from the herbicide/insecticide interaction. See the Summary of Labeled Herbicide/Insecticide Uses Chart.

SUMMARY OF LABELED HERBICIDE/INSECTICIDE USES								
Herbicide	THIMET Broadcast	COUNTER 15G In Furrow	COUNTER 15G Broadcast	COUNTER CR In Furrow	COUNTER CR Broadcast	OTHER INSECTICIDES	DYFONATE All Methods	LORSBAN All Methods
Broadstrike/Python Field Corn	OK	NO	NO	NO	NO	OK-Banded	OK	OK
Permit Field Corn	OK	OK	OK	OK	OK	OK	OK	OK
Basis Field Corn	NO	NO	NO	NO	NO	OK	NO	NO
Basis IR Corn	OK	OK	OK	OK	OK	OK	OK	OK
Accent Regular/IT Corn	NO	NO	NO	NO	NO	OK	NO	NO
Accent IR Corn	OK	OK	OK	OK	OK	OK	OK	OK
Accent Gold Field Corn	NO	NO	NO	NO	NO	OK	NO	NO
Beacon Regular/IT Corn	NO	NO	NO	NO	NO	NO (organo- NO phosphates)		NO
Beacon IR Corn	OK	OK	OK	OK	OK	OK	OK	OK
RESOLVE & CONTOUR IT Corn	OK	NO	OK	OK	OK	OK	OK	OK
RESOLVE & CONTOUR IR Corn	OK	OK	OK	OK	OK	OK	OK	OK
BASIS GOLD Field corn	NO	NO	NO	NO	NO	OK	NO	NO
BASIS GOLD IR Corn	OK	OK	OK	OK	OK	OK	OK	OK
HORNET/SCORPION III Field Corn	NO	NO	NO	NO	NO	NO (organo- NO phosphates)		NO
EXCEED Field Corn	NO	NO	NO	NO	NO	NO (organo-NO phosphates)		NO
EXCEED IR Corn	OK	OK	OK	OK	OK	OK	OK	OK

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