Wisconsin Crop Manager

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UW Pest Management Field Day July 1

Chris Boerboom, Extension Weed Scientist

This is a pre-announcement of our third annual Pest Management Field Day so you can mark your calendars. The field day will be held on Tuesday, July 1st at the Arlington Ag Research Station. The field day will feature herbicide evaluation trials, weed management research, and herbicide demonstrations plus updates on the latest in UW plant pathology and entomology research. Wagon tours will start at 8:30 am at the Public Events Building and a lunch will be served at noon. You are invited review trials in the afternoon as well. A complete announcement will be made in a future issue of the Crop Manager.

How to price standing forage: Factsheet and Excel worksheet

byTed Bay, Rhonda Gildersleeve, Ken Barnett, and Dan Undersander

Sales of standing forage require agreement on price and a method of determining yield whether forage is sold by the bale or ton. This factsheet describes a method to help buyer and seller determine an appropriate price range for short term sales. This sheet is not intended to be used for long term contract purchases. The examples shown can be the basis for selling hay by the acre or by the ton.

How to Price Standing Forage (2 pages) (also attached)
Download >>> Pricing-stand-hay-FOF.pdf

Pricing Standing Forage: Excel worksheet
Download >>> Price-Standing-Forage-Worksheet.xls

UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Amy Gibbs, and Brooke Weber, Plant Disease Diagnostics Clinic

The PDDC receives samples of many plant samples from around the state. The following diseases/disorders have been identified at the PDDC since May 7, 2008:

PLANT	DISEASE/ DISORDER	PATHOGEN	COUNTY
VEGETABLES			
Pepper	Bacterial Canker	*Clavibacter michiganensis* subsp. *michiganensis*	Dane

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

Risk for Soybean Rust in Wisconsin Currently Low – May 2008

Paul Esker, Extension Plant Pathologist, Department of Plant Pathology

Recently, we received an email asking about the risk for soybean rust in Wisconsin in 2008, especially since growers are considering altering planting plans with the wet conditions found in parts of the state. In examining the situation in the southern U.S., the current risk of soybean rust in Wisconsin is low. Soybean sentinel plots are established across the southern U.S. and an extensive examination of kudzu continues. Also, with support of check-off dollars and the USDA, Wisconsin will have 15 soybean sentinel plots that we will use these to help in our monitoring efforts for soybean rust in the state.

Currently, the last documented soybean rust finds were in mid-April and weather conditions in Texas have been dry. We will continue to monitor progress in areas of Texas and Louisiana over the next few weeks, as these are the areas of greatest concern for the situation in Wisconsin. Also, we have received some questions regarding the situation in Mexico and to the best of our knowledge, the last documented finds there were in late-January/early-February. For further information regarding the current soybean rust situation, consult http://www.sbrusa.net. For general information regarding soybean rust, consult http://www.plantpath.wisc.edu/soyhealth/rust/rust.htm.

Will we have Significant Alfalfa Weevil Damage in 2008?

Bryan Jensen, IPM Program, UW-Madison

To be honest, I'm not sure if we will have wide spread alfalfa weevil damage in 2008. However, each year it seems that someone in the states does. Last year we saw a noticeable increase in weevil incidence and severity compared to previous years. That by itself doesn't mean weevil damage will be higher this year. But it does give us a reminder that we should continue to scout alfalfa fields in a timely manner. The accumulation of 300 weevil degree days (base 48 degrees) is normally considered the time to start weevil scouting and that event will start very soon in the southern part of the state.

There are several sources of degree day information including The Wisconsin Pest Bulletin (http://pestbulletin.wi.gov/) and the WI MN Cooperative Extension Weather website (http://www.soils.wisc.edu/wimnext/) which can be used to help schedule this event. If time permits, spot-checking sandy knolls and/or south facing slopes (areas which warm up quicker) prior to 300 weevil degree days can give you a "heads-up" on weevil activity in your area. Look closely at the terminal leaves for small pin-hole feeding and for larvae. Early instar larvae are commonly found in folded leaflets at the terminal portion of the stem and may not have the typical lime green coloration. Instead they may be a pale yellow color but will have a black head and a white stripe on their backs.

Cool Wet Weather May Increase Secondary Insect Injury to Corn

Bryan Jensen, IPM Program, UW-Madison

The cool, wet weather we've been experiencing has the potential to increase the amount of secondary insect injury to corn seed and/or emerging seedlings. The longer it takes corn to develop the longer it will be susceptible. The end results may be reduced stands and poor seedling vigor which are often mistakenly attributed to planter problems or poor seed quality. Furthermore, rescue treatments are not reliable or suggested. Building accurate field histories is an important IPM practice so we can accurately choose preventive practices in future years.

Seedcorn Maggot: Corn is not as susceptible to seedcorn maggot injury as soybeans. However, cool, wet growing conditions can increase injury potential to both crops as can livestock or green manure. Seedcorn maggots are often overlooked as a potential cause of poor stands. When emergence is uneven, dig up skips in the row to make sure the planter delivered a seed. Suspect seedcorn maggots if the seed has been partially fed on or if the white, legless larvae are present. Larvae have a very short life cycle and may not be present when you troubleshoot the field. Also, similar appearing saprophytic maggots may be found feeding on seed which is decomposing from other causes. Symptoms of seedcorn maggots may also show up as small holes in the first emerged leaf (cotyledon) and is a result of below ground maggot feeding. Leaf injury is not considered economic because the plant has recovered, but it may help confirm below ground symptoms of maggot feeding. Maggot injury is also more uniform across the field compared to wireworms.

Wireworms: Cool/wet conditions also increases the potential for wireworm damage that may also be more common in corn after pastures or other crops which had grassy weed problems the previous year. Like seedcorn maggots, wireworms can feed on ungerminated corn seed leaving skips in the row that result in similar misdiagnosis as seedcorn maggot (poor planter or seed health issues). Injured seed will appear hollowed out but the majority of the seed coat will be present. Larvae may be found nearby which are copper-colored and have 3 sets of jointed legs. Don't confuse with millipedes (non-pest) which are also abundant in cool/wet weather. Millipedes are also hard-shelled but are dark gray and have a fringe of hair-like legs the entire length of the body. Wireworms will also tunnel into the below ground portion of the shoot causing holes in the newest emerging leaves if feeding is concentrated above the growing point. If feeding is at the growing point, symptoms called "dead heart" or "wilted whorl" are evident.

True White Grubs: Don't injure seeds but feed on corn roots and underground shoots. Like wireworms, damage is more common in corn after pastures or other crops with a history of grassy weeds. Unlike wireworms or seedcorn maggots, white grubs will feed on corn roots. The above ground symptoms are stunted, discolored plants from lack of nutrient uptake. White grub injury also mimics wireworms when they feed on below ground shoots that result in wilting of newly emerged leaves or the entire plant. White grubs are relatively easy to find in the soil around damaged plants.

New pub- Moth Identification Guide for Blacklight Trap Catch in Wisconsin

Eileen Cullen, Field Crops Extension Entomologist

New UW Extension Publication A3855

If you are maintaining a blacklight trap, you'll appreciate being able to refer to this overview of moths you're likely to encounter. This concise guide highlights key wing markings to help you quickly identify specimens. Profiles 16 common moths*: European Corn Borer, Corn Earworm, Spotted Cutworm,* *Dingy Cutworm, Western Bean Cutworm, Black Cutworm, Variegated Cutworm, Forage Looper, Cabbage Looper, Alfalfa Looper, Celery Looper, True Armywork, Fall Armyworm, Yellow Striped Armyworm, Stalk Borer and Hop Vine Borer.*

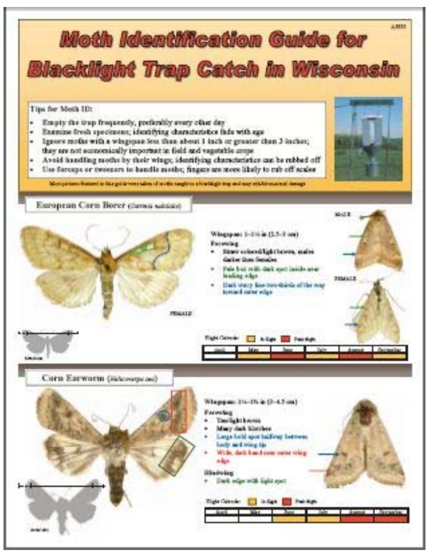
Blacklight trap captures provide information on regional activity of Lepidoptera ("caterpillar" pests) of economic concern in field and sweet corn, soybeans and small grains. Blacklight trap catch allows pest managers to keep ahead of developing insect pest populations by monitoring adult moth flights. UWEX Publication A3855 features photographs of 16 field crop Lepidoptera insect pests in the adult (moth) stage.

A simple key features identifying characteristics, moth size, and a calendar timeline for each moth flight in Wisconsin. Tips on operating and sorting catch from blacklight traps are included.

To order print copies, or download a free PDF, please visit: UW Madison Entomology Department Field Crop Entomology http://www.entomology.wisc.edu/cullenlab/site%20pages/extension/ext_pubs.html

Or UW Extension Publications Division

http://learningstore.uwex.edu/Moth-Identification-Guide-for-Blacklight-Trap-Catch-in-Wisconsin-P1268C31.aspx



Herbicides Kill Weeds – Why not the Crop?

Chris Boerboom, Extension Weed Scientist

Herbicides are rather remarkable. We apply them at rates as low as a fraction of an ounce per acre and even at these low doses, they are capable of killing weeds. We generally take this for granted. At the same time, we take for granted the fact that herbicides do not kill the targeted crop. This characteristic of a herbicide to kill one species and not harm another is referred to as selectivity.

Why is it that crops are not harmed by herbicides? The simple explanation is that some plants are able to metabolize (or detoxify) the herbicide into non-toxic chemicals before they damage the plant. However, before the discussion continues about metabolism, a quick review about herbicide mode of action is justified. Herbicides kill weeds or damage crops through a four step process that is described as the herbicide's mode of action (i.e. how a herbicide works).

4 Steps in Herbicide Mode of Action

1. Contact or Retention - contact of the herbicide with the roots or retention of spray droplets on a leaf.

2. Absorption – uptake of the herbicide molecules into the leaf, shoot, or root.

3. Translocation – movement of the herbicide from the site of uptake to the location in the plant where it can cause damage such as translocation the roots to the leaves or from sprayed leaves to growing points or roots (contact herbicides don't need to translocate).

4. Inhibition at the site of action – typically, the herbicide molecule binds to a specific enzyme, blocking the production of essential products such as amino acids or blocking photosynthesis.

In most cases, the key to selectivity is a plant's ability to rapidly metabolize the herbicide before it causes damage at the site of action. In these cases, the plant has other enzymes that can cleave off a side chain from the herbicide molecule. This often reduces the toxicity of the herbicide molecule because herbicide molecule no longer has the right configuration or shape to bind tightly at the site of action. The next step in herbicide metabolism is often binding of sugars or amino acids to the molecule, which further detoxifies it. Safeners are added to some herbicides like Dual II Magnum, Harness, Option, and Laudis. These safeners trigger the crop to produce more enzymes to detoxify the herbicides, which increases crop safety. Under normal weather conditions, a crop plant may be able to metabolize a majority of the herbicide in several hours. On the other hand, a sensitive weed will only slowly metabolize the herbicide. During this time, the herbicide is able to bind to the site of action and kill the weed.

Herbicide selectivity is based on metabolism in most herbicide-crop combinations such as with Accent, Dual, Callisto, atrazine, or Banvel in corn or Valor, Pursuit, Cobra, or Sencor in soybeans. The exception to metabolism-based selectivity is when the crop has an "insensitive" site of action, which means the target enzyme in the crop has a slightly different shape so the herbicide does not bind to it. This is the case with Assure, Select, and Poast Plus on broadleaf crops like soybean and alfalfa. Since these herbicides cannot bind to the site of action, they do not damage these crops.

Roundup Ready corn and soybean are also resistant to glyphosate based on an insensitive site of action. The gene that was added to these crops produces an altered or insensitive enzyme that glyphosate cannot bind to. Therefore, the enzyme is not blocked and it keeps producing amino acids for the corn or soybeans. The Optimum GAT corn and soybean being developed by Pioneer uses a metabolism-based glyphosate resistance. In this case, a gene (GAT) was added to the crops, which produces a special enzyme to rapidly detoxify glyphosate before it damages the crops. Liberty Link corn and soybean also use metabolism-based resistance where the PAT gene was inserted into the crops, which produces an enzyme to rapidly detoxify Liberty.

Focus on Forage

How to Price Standing Forage

by Ted Bay, Rhonda Gildersleeve, Ken Barnett, and Dan Undersander

Introduction

Sales of standing forage require agreement on price and a method of determining yield whether forage is sold by the bale or ton. This factsheet describes a method to help buyer and seller determine an appropriate price range for short term sales. This sheet is not intended to be used for long term contract purchases. The examples shown can be the basis for selling hay by the acre or by the ton.

What is a reasonable hay or haylage price?

Forage price reflects hay/haylage inventory, demand, and current season's yield potential and yield risk. Price also reflects cost of alternative feeds, including commercial hay purchases delivered in. Current hay prices can be found at: http://www.uwex.edu/ces/forage/pubs/hay_market_report.htm. Generally, prices show a seasonal decline at first cutting unless there has been significant loss of hay stands due to winterkill or other problems.

Haylage price is usually estimated by adjusting the hay price for the difference in moisture content between hay and haylage.

How do I estimate yield?

Yield can be estimated before harvest from historic records or from stand evaluations estimating yield potential. Actual yields will be less than this estimated potential depending on age of the stand, fertilizer program and weather. Sale based on actual yield is best, minimizing risk for both buyer and seller. Actual yield can be determined by weighing loads or estimated by weighing a few bales and counting total bales harvested. Table 1 can be used to estimate relative yield for individual cuttings.

Table 1. Approximate yield distribution for 3- and 4-cuttings systems

Cutting	% of Total Yield		Cutting	% of Total Yield
1	40		1	35
2	30		2	25
3	30		3	20
			4	20

For example, if total yield expectation is 4 tons per acre for three cuttings, first cutting would be estimated at 1.6 ton per acre (40% of total yield).

If chopped for haylage, the moisture content of the haylage would have to be determined to convert haylage yields to hay equivalent by the formula:

$$Hay\ Yield = \frac{Haylage\ Yield\ x\ Dry\ Matter\ (DM)}{\%\ Dry\ Matter\ of\ Hay}$$

For example, if 1st crop yield is 3 tons/a of haylage at 40% dry matter, this haylage could be converted to hay equivalent as follows:

$$Hay\ \ Yield\ = \frac{3\,tons\ \ x\,0.40\ \ (\%\,DM\ )}{0.87\ (\%\ DM\ \ of\ \ Hay\,)} = 1.38$$

What is the dry matter loss of forage in storage?

Dry matter loss in storage is loss attributed to respiration or the curing process after harvest and is approximately 2% for hay that is stored off the ground and covered and 10% for silage stored properly in a tube, bunker or upright silo.

What is the quality of the standing forage?

Timeliness of cutting and the percentage of alfalfa versus weeds in the stand will impact forage quality. A dense, clean stand of pure alfalfa or mixed with a high quality grass should be of higher value than an older stand with weeds and would deserve a premium in a competitive forage market. Forage sample analysis can better estimate harvested quality for ration balancing than visual inspection of the hay crop.

What are harvest costs of standing forage?

Approximate harvesting costs ($/cutting) (labor $12.00/hr., 3 cuttings, 4 to 4.5 ton hay/acre)				
Cut/Cond	$13.00/acre		Hauling	$8.00/ton
Raking	$13.00/acre		Chop, haul, fill	$48.00/acre
Baling	$25-30/ton		Wrapping	$6-7/bale

Harvesting costs are factored into the stand value when the seller does the harvesting, or should be a consideration when calculating forage value when a buyer harvests the forage. If forage needs to be transported some distance, hauling costs should also be factored into harvesting costs.

For contracts over an entire season, agreement may also be needed for other costs, such as insecticide or fertilizer applications.

Price determination can start with calculating the minimum price a seller would want to receive and the maximum price a buyer would be willing to pay. The first example is three cuttings sold to a buyer who also harvests the forage (total 3-cut yield estimated at 4 tons per acre).

What is the fertilizer cost associated with standing forage?

Fertilizer prices have soared in spring 2008. Before a seller makes a contract with a buyer, make sure that the fertilizer costs per acre are known. Otherwise, the seller may not be charging enough to cover the annual costs for the established alfalfa stand. At current fertilizer prices, each ton of hay removes about $45 to $50 worth of nutrients.

What is the seller's minimum price?

Seller's Minimum Price (annual costs in $ per acre):		
	Land charge	72.00
	Taxes & Insurance	5.00
	Stand establishment (seed, lime)	45.00
	Maintaining stand (fertilizer)	190.00
	Total Annual Cost of Established Alf.	**$312.00**

Note that land charge is less than a full season rental rate because these arrangements are assumed to be after normal planting season.

What is the buyer's maximum price?

Buyer's Maximum Price (est. 4 tons per acre yield) Market value of hay 4 tons x $120 per ton = $480 Subtracting harvesting expenses, risk and storage loss:		
	Cut, rake, bale, haul (3 cuttings)	212.00
	Weather risk (15% of hay value	71.82
	Dry matter loss (2% for hay value)	9.57
	Breakeven cost for standing hay/acre	**$186.61**

Finalizing the transaction

Both buyer and seller would like to gain in this transaction. In this example, however, the seller's annual cost is $312 per acre is higher than the breakeven price per acre for the buyer of $186 per acre.

The final sale value could be based on actual measured yield. With expected yield of 4 tons per acre, the seller has a minimum $78.00 per ton price and the buyer a maximum $46.65 per ton value. Total harvest expense is approximately $73 per ton.

If only one cutting is involved buyer and seller can use the examples in the following tables to calculate value with information from above tables.

Seller's expected minimum value for first cutting, based on total annual cost determined in the first example:		
Land Cost	$72.00 per acre x 0.40	$28.80
Taxes & Insurance	$5.00 per acre x 0.40	2.00
Stand establishment	$45.00 per acre x 0.40	18.00
Maintaining stand	$190.00 per acre x 0.40	76.00
Total annual cost of est. hay (1st crop)		**$124.80**

Buyer's maximum or breakeven price paid for silage would be calculated on a hay equivalent basis as follows:		
Market value of hay	1.6 ton x $120 per ton	$192.00
Cut, chop, haul, fill		74.00
Weather risk	(15% of hay value)	28.80
Dry matter loss	(10 % for silage value)	19.15
Breakeven price for standing (1st crop)		**$70.05**

The buyer's breakeven price would be $70 per ton. Total harvest expenses for haylage in this example are estimated at $76 per ton of hay equivalent.

Sale of the 2nd & 3rd crop can be based on the same approach with yield assumptions based on table 1. A simplified pricing arrangement could be a charge of $130 per acre for 1st cutting or $190 per acre for 2nd and 3rd cutting or $320 per acre for all three cuttings. These are net prices paid to the landowner. These prices may be acceptable to a buyer if expected yields are greater than 4 tons per acre and the agreement is made in time to allow harvest of 1st cutting at a RFV of 170 or greater. In this price range, yields greater than 4 tons per acre would have a value that would cover the purchase price above and harvest expenses.

Risk

Lower than expected yields or weather delays lowering forage quality can **greatly** reduce the net gain of purchasing standing hay. Producers need to adjust numbers in these examples to reflect current market conditions, yield and harvest timeliness. The value of risk is difficult to estimate, but can be based on a typical value of the desired hay quality. Contracts signed well before harvest and full season contracts should reflect a lower price due to greater risk the buyer is assuming. In contrast, an agreement made close to harvest would be much closer to the current hay price because the buyer knows the status of the crop being purchased. A rule of thumb is to value risk at 15 percent of hay value per cutting.

Final Consideration

A written agreement prior to start of harvest is recommended and should include price, when payment is due, who is paying insecticide expense, method of determining yield when selling by the ton, and other factors entered into. A written contract clarifies the sale agreement for all parties and provides a record to eliminate differing memories of what was agreed to.

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