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# Insects, Mites, And Nematodes —

Asian Lady Beetle: Beneficial or Nuisance? – (*Tim Gibb, John Obermeyer and Christian Krupke*)

- Lady beetles will be quite noticeable this fall around buildings.
- Heated buildings are used only for over wintering, not reproduction.
- Preparations now may prevent massive home invasion later.
- Insecticides for treatment of building perimeters are listed.

The multicolored Asian lady beetle certainly has made a turnaround in numbers after very low populations a year ago. The most obvious reason for the rapid increase is that their major food source, the soybean aphid, was so plentiful this past season. Few argue their benefit after seeing these beetles and their larvae devouring aphids in soybean fields. At this late point in the season, the beetles are dispersing to wooded areas to seek out and devour soybean aphid adults and eggs that have migrated from soybean to buckthorn plants.

Unfortunately, however, the Asian lady beetle has the annoying habit of congregating in large numbers on and



Don't let lady beetles drive you crazy!

in buildings during the late fall. These beetles are most attracted to buildings where abrupt color contrasts occur in a longitudinal fashion. For example black shutters on a white house, dark windows on a light colored house, or light colored gutter drain pipes on a dark house. For this reason,

http://www.entm.purdue.edu/Entomology/ext/targets/newslett.htm

beetles usually first appear on the southwest-facing sides of light-colored buildings, close to wooded areas.

Congregating begins in mid October and usually reaches its peak by the end of the month. Congregation is usually initiated by the first cold weather snap in October that is followed by warm temperatures. During this congregating activity, hundreds of thousands of beetles may appear around homes, creating a serious nuisance. When outside temperatures fall, the beetles move into tight cracks and crevices, such as under siding or in wall voids, or may cluster tightly into the corners of attics or garages. Once there the beetles eventually find their way into the home through small cracks or openings in window-sills, doorjambs or foundations. There the beetles essentially remain in a hibernation-like state for several months. Because the beetles are out of sight during the winter months, homeowners are often fooled into believing that the beetles are gone. That is, until the first warm days of late winter or early spring, when the beetles seem to come to life again and begin crawling about. At this time the nuisance factor intensifies because the beetles are attracted to the living areas of the home where temperatures are more moderate.



Lady beeltes "bulking up" on apple for their winter's nap

Clusters of several hundred to thousands in living rooms, bedrooms, or kitchens are not uncommon. It almost appears that there are more beetles at this time of year that there were in the fall although the beetles have not increased in number over the winter months. Beetles have merely concentrated and shifted indoors. They do not directly damage anything, e.g., food and furniture, in the home. Their presence is simply an annoying nuisance. Not only do Asian lady beetles become a nuisance by flying into living areas, dropping from light fixtures, and bumping into people but they also release a foul smelling material when handled or disturbed. Some homeowners have also complained that on very warm days, especially when a person is perspiring, that the beetles pinch when they land on bare skin. A more serious threat may be that if accumulations of dead beetles are not cleaned up, particles of dried and crushed beetle bodies may become airborne and complicate allergies or asthma if inhaled by occupants.

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Cluster of Asian lady beetles inside home

In most circumstances, a combination of several control methods is the best answer to Asian lady beetle problems. Preventing beetles from entering the home is the best and most effective control practice. Sealing them out by caulking cracks and around utility service openings, fixing broken window screens and doorjambs, plugging cracks in the foundation or roof, and any other similar physical barriers will help prevent the lady beetles from entering in the first place. Sweeping or vacuuming them up and disposing of them may be the best option for a few beetles.

A more drastic and costly measure involves using pesticides as a building perimeter treatment during late fall. Use materials that leave a long-lasting residue. Wettable powders, micro-encapsulated and suspended concentrate formulations seem to work best. On the outside of the home, pest control operators have used long-lasting/rapid knockdown chemicals such as Demand or Suspend with excellent success. Talstar, Tempo, or Demon may also be used. These materials may afford protection for up to 1 month, depending upon the site of application. Of these materials bifenthrin and deltamethrin are the longest lasting. In either case, the key to control is to apply the chemicals to the outside of the home in October while the beetles begin to congregate but before they enter the home.

Exterior Home Insecticides for Multicolored Asian Lady Beetle					
Active Ingredient	Some Trade Names				
Bifenthrin					
	Home Defense Indoor & Outdoor Insect Killer				
	Ortho Home Defense Indoor & Outdoor Insect Killer				
Deltamethrin					
	Bonide Household Insect Control RTU Termite & Carpenter Ant RTU Clipper Spider Kill II Marine & Household Insects ZEP Commercial RTU Pest Control III Enforcer Home Pest Control XII				
Cyfluthrin					
	Bayer Advanced Lawn & Garden Multi-Insecticide Raid Yard Guard Lawn Insecticide Cylence Pour-On Insecticide				
Tralomethrin*					
	Rid-A-Bug Home Insect Killer Ace Home Insect Control Do It Best Home Insect Control Rid Home Insect Killer Ready to Use No-Pest Home Insect Control Hot Shot Rid-a-Bug Home Insect Killer Spectracide Bug Stop Indoor & Outdoor Home Insecticide				
Esfenvalerate*	Green Hidrib KTO Home insect Killer				
	Ortho Roach, Ant & Spider Killer Evercide Intermediate 2527 Concentrate Bug-B-Gone Multi Purpose Insect Killer Yard Spray Concentrate				
*These pyrethroid ch	emicals were not included in the efficacy and residual effect tests.				

Black Light Trap Catch Report - (John Obermeyer)														
	8/23/05 - 8/29/05					8/30/05 - 9/5/05								
County/Cooperator	VC	BCW	ECB	SWCB	CEW	FAW	AW	VC	BCW	ECB	SWCB	CEW	FAW	AW
Dubois/SIPAC Ag Center	1	12	56	0	32	0	56							
Jennings/SEPAC Ag Center	0	0	148	0	14	0	7	0	0	88	0	2	0	1
Knox/SWPAC Ag Center	0	2	5	0	3	0	3	2	25	9	0	4	0	5
LaPorte/Pinney Ag Center	0	0	48	0	1	0	12	0	0	29	0	1	0	2
Lawrence/Feldun Ag Center	0	4	158	0	20	0	52	0	1	36	0	12	0	12
Randolph/Davis Ag Center	0	1	19	0	5	0	25	0	0	24	0	8	0	5
Tippecanoe/TPAC Ag Center	0	1	253	0	21	0	33	0	2	542	0	28	0	4
Whitley/NEPAC Ag Center	0	2	66	0	7	0	9							
VC = Variegated Cutworm, BCW = Black Cutworm, ECB = European Corn Borer, SWCB = Southwestern Corn Borer, CEW = Corn Earworm, FAW = Fall Armyworm, AW = Armyworm														

# Weeds

A Little Something About Harvest Aids – (*Glenn Nice* and *Bill Johnson*)

Harvest aids can be used to help in difficult situations.List of herbicides labeled to be used for harvest aids.

As the year moves on we can see harvest season on the horizon. If this growing season's weather didn't cooperate, you didn't experience stellar weed control, or you have been plagued with late season flushes, you may be thinking about the use of a harvest aid. If you have ever had the misfortune of having to harvest through a forest of giant ragweed, or burcucumber harvest aids may help.

Harvest aids are herbicides or compounds that can be applied to mature crops to either control or at the very least desiccate green vegetation that will interfere with harvest. There is no joy in having to stop every fifteen minutes to dig some vine out of the combine. In some cases, a harvest aid can be used to speed the dry down process in the crop also. These are generally applied once the grain has reached a specified moisture, often a week or two before harvest. For a list of harvest aids labeled in corn, soybean, sorghum, or wheat, see table 1.



Giant ragweed and a difficult harvest situation.

## Table 1. Harvest aids for corn, soybean, sorghum, and wheat.

Herbicid	Crop	Rate / A	Comments	
Glyphosate (various)			<ul> <li>Pre harvest applications can provide a good opportunity to control perennials.</li> <li>See specific label for details about rate, adjuvant, and rain fast intervals.</li> </ul>	
	Corn	up to 1.12 lbs ae (ground) up to 0.75 lb ae (aerial)	<ul> <li>Apply at 35% moisture or less, when corn is at black layer with maximum kernel fill is complete.</li> <li>Apply at least 7 days before harvest.</li> <li>Several labels recommend against apply to seed corn.</li> </ul>	
	Grain Sorghum	0.75 to 1.5 lb ae	<ul> <li>Apply at 30% moisture or less.</li> <li>Apply 7 days before harvest, but a 14 day period is recommended before harvest.</li> <li>Do not apply to grain sorghum grown for seed.</li> </ul>	
	Soybean	4.5 lb ae (ground) 0.75 lb ae (aerial)	<ul> <li>Apply after pods have set and lost all green color, and at least 7 to 14 days before harvest.</li> <li>Do not graze or harvest for feed (Roundup brand labels allow use of soybean for livestock feed when harvest is at least 25 days after application).</li> <li>Do not use for soybeans grown for seed.</li> </ul>	
	Wheat	0.38 to 0.6 lb ae	<ul> <li>Apply when wheat is in the hard dough stage.</li> <li>Do not apply to wheat grown for seed.</li> <li>Stubble can be grazed after harvest.</li> </ul>	
Clarity	Wheat	8 oz	<ul> <li>Apply when the wheat is in the hard dough stage and no longer green.</li> <li>Wait 10 to 14 days before harvest.</li> <li>Do not graze or use for feed</li> <li>Do not plant soybean for 14 days after application.</li> </ul>	

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Herbicide	Сгор	Rate / A	Comments
Gramoxone Max			<ul> <li>Mature cocklebur and lambsquarter are tolerant to Gramoxone Max and may not dry completely.</li> <li>Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.</li> </ul>
	Corn	1.3 pt	<ul> <li>Used for drying weeds in field, seed, and popcorn.</li> <li>Apply after black layer.</li> <li>Apply at least 7 days before harvest.</li> </ul>
	Soybean	10.7 oz	<ul> <li>Indeterminate – apply when 65% of the seed pods have reached a mature brown or when seed moisture is 30% or less.</li> <li>Determinate – apply when at least 50% of the leaves have dropped and the rest of the leaves are turning yellow.</li> <li>For aerial applications, use a spray volume of 5 GPA, for ground use 20 GPA.</li> </ul>
Reglone	Grain sorghum	1.5 to 2 pt	<ul> <li>Apply at 30% moisture or less.</li> <li>Apply 1 to 2 weeks before harvest.</li> <li>Do not use seed from treated plants for food, feed, or oil.</li> </ul>
Sodium chlorate	Grain sorghum	4 to 6 lb	<ul> <li>Apply 7 to 10 days before harvest.</li> <li>Use adjuvant as recommended by label.</li> <li>Can be applied with 28% UAN to increase foliar activity.</li> <li>Do not graze treated fields or feed treated fodder, forage, or seed within 14 days of application.</li> </ul>
2,4-D amine or ester (4 lb ai/gal)	1		<ul> <li>If the 1 pt/A rate is used do not plant soybean for 7 days (ester) and 15 days (amine). If greater than 2 pt is used, do not plant soybean for 30 days.</li> <li>See specific label for details about rate, adjuvant, and rain fast intervals.</li> </ul>
	Corn	1 to 2 pts/A	<ul> <li>Apply after silks are completely brown (denting stage).</li> <li>Do not feed or use for forage for 7 days after application.</li> </ul>
	Wheat	1 to 2 pts/A	<ul> <li>Apply when wheat is in the hard dough, 30% or less moisture.</li> <li>Do not graze for 2 weeks after application and do not use treated straw for feed.</li> </ul>

# Plant Diseases

#### Aflatoxins in Indiana Corn? - (Charles Woloshuk)

#### Dry, hot weather has producers asking about aflatoxins

There is a growing concern in Illinois about the potential for aflatoxin contamination in this year's corn harvest. Should Indiana producers be concerned about aflatoxin? The answer is yes, but currently there is no evidence that Indiana has a problem. The weather over the summer has been dry and hot. These conditions are conducive for kernel infection by Aspergillus flavus, the mold that produces aflatoxin. However, the occurrence of heat stress and drought does not automatically mean aflatoxin contamination will be a problem. Aflatoxin is a potent liver toxin and is known to cause cancer in animals. The Food and Drug Administration (FDA) has established action levels of 20 parts per billion (ppb) for grain and feed products, and 0.5 ppb for milk. Grain, feed, or milk containing aflatoxin at or above these levels cannot be sold for food or feed in interstate sales. Corn and other grain with less than 20 ppb aflatoxin can be sold as normal grain.

#### How to assess the situation

Right now (before harvest) is an ideal time to scout fields for Aspergillus ear rot. Managers of grain elevators should also be scouting fields in their areas. Once the grain is combined, it is more difficult to assess aflatoxin contamination.

#### Scouting a field

Navigating into a seven-foot high cornfield is difficult. However, the most likely place to find the disease is on hills and in areas where the soil is light. These areas will be the most stressed, and the corn may be stunted. Another approach would be to cut a swath across the field with the combine. Then, walk along the edge of the swath to examine the ears. When examining an area in the field, you should pull back the husks of 10 to 20 ears and look for Aspergillus ear rot.

#### Aspergillus ear rot

Molds growing on ears will appear in a variety of colors. Aspergillus ear rot is easy to diagnose by its powdery texture and olive green color. You may find molds that are bright green or blue green on the ears — these are NOT Aspergillus flavus. An excellent picture of Aspergillus ear rot can be found at http://www.oardc.ohio-state.edu/ohiofieldcropdisease/ Mycotoxins/mycopagedefault.htm.



Aspergillus ear rot, source: <www.oardc.ohio-state.edu/ohiofieldcropdisease/Mycotoxins/mycopplantdi>

#### What to do?

If Aspergillus ear rot is found anywhere is a field, there is a potential for aflatoxin contamination in the harvested corn. Even if only one or two diseased ears are found, producers should be concerned because the amount of aflatoxin contamination in a single ear can be high. The next step would be to assess how much of the crop has the disease (Is it only in a specific area of the field?) and how severe (How many kernels on an ear appear moldy?). Fields with more diseased ears and greater severity will have the most potential for contamination. In any field with Aspergillus ear rot, the grain should be harvested as soon as possible and dried to 13 percent. Drying the grain will assure that the mold stops growing and producing aflatoxin. Corn left in the field to dry down has a risk for higher aflatoxin levels, especially if the crop experiences a major rainstorm. Ultimately, the grain needs to be analyzed with one of a variety of methods to determine contamination with aflatoxin. More information about mycotoxin test kits can be found at <www.ces.purdue. edu/extmedia/BP/BP-47.html> or the links at <www.btny. purdue.edu/NC129/>.

**Further questions** Contact Charles Woloshuk, Department of Botany and Plant Pathology, at woloshuk@purdue.edu

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# Agronomy Tips

# Grain Drydown, Stalk Lodging, and Harvest - (Bob Nielsen)

Indiana's corn crop is moving toward maturity with an estimated 19% of the acreage reported to be mature (USDA-NASS, 6 Sep 2005). The good news is that above-average temperatures forecast for the next several weeks will not only hasten final kernel development and maturity for the remainder of the state's crop, but will also encourage rapid drying of mature grain in the field (Nielsen, 2005a). Drydown of grain in the field may exceed one percentage point per day during the next several weeks if above normal temperatures occur as forecast.

The further good news is that rapid grain drying of the corn crop will facilitate earlier harvest of fields weakened by the development of stalk rots or insect damage to the stalks. Stalk rot development is especially likely in fields where severe drought stress prevailed during the grain filling period (Nielsen, 2005b).

The bad news is that some of these fields have already begun to lodge severely; especially in areas affected by the remnant rains and winds of Hurricane Katrina that moved through southern Indiana last week. The further bad news is that more fields with stalk rot or insect-damaged stalks will be at risk of severe lodging if another storm system moves through the state before harvest or if rainy weather sets in for an extended period.

Some of the severe lodging from last week's rain and wind occurred in fields not yet mature. Severely damaged immature corn will likely shut down prematurely (kernel black layer development). If silage is an option, obviously that would be a preferred choice for utilizing immature corn that is severely flattened.

Drydown of grain (mature or immature) will be slower where ears are literally lying near the soil surface simply because they are less exposed to sun and wind. Lessseverely lodged corn will dry at fairly normal rates.

Growers should recognize that possible development of ear molds resulting from direct or rain-splash contact with fungi and bacteria on ears lying near or at the soil surface obviously increases the risk of poor grain quality (personal communication w/ Charles Woloshuk, Purdue plant pathologist). That risk plus potential kernel sprouting in ears lying close to the soil surface could increase grain quality headaches for growers on the worst lodged fields or areas of fields.

Depending on the number of acres involved, some growers may want to check into specialized equipment for harvesting lodged corn. The following Web site from Penn State Univ. lists links to several manufacturers <a href="http://cornandsoybeans.psu.edu/lodgeequipment.cfm">http://cornandsoybeans.psu.edu/lodgeequipment.cfm</a>>. Dirk Maier, Purdue grain quality specialist, suggests that growers segregate storage of grain from severely lodged areas from the rest of their corn if possible to avoid grain quality discounts when marketing the grain later. The U.S. marketing standards for corn allow up to 5% total damaged corn kernels in U.S. No. 2 corn (USDA-GIPSA, 1996).

The bottom line is two-fold: First, the forecast high temperatures will be very conducive for rapid grain drying in corn fields and may enable an earlier than expected start to harvest. Second, growers should continue to monitor fields, identify those with severe stalk rot and lodging potential, and target those fields for as early a harvest as is feasible.

#### **Related References**

Nielsen, R.L. (Bob). 2005a. Field Drydown of Mature Corn Grain. Corny News Network, Purdue Univ. Online at <www.kingcorn.org/news/articles.05/GrainDrying-0815. html> [URL verified 9/7/05].

Nielsen, R.L. (Bob). 2005b. Monitor Corn Fields for Weakened or Diseased Stalks. Corny News Network, Purdue Univ. Online at <www.kingcorn.org/news/articles.05/ StalkMonitoring-0823.html> [URL verified 9/7/05].

Penn. State Univ. 2005. Corn Harvesting Equipment for Wind Damaged Corn. <a href="http://cornandsoybeans.psu.edu/lodgeequipment.cfm">http://cornandsoybeans.psu.edu/lodgeequipment.cfm</a> [URL verified 9/7/05].

Thomison, Peter. 2005. Minimizing Harvest Losses in Drought Damaged Corn Fields. C.O.R.N. Newsletter (2005-28), Ohio State Univ. Online at <a href="http://corn.osu.edu/index.php?setissuelD=100#C>">http://corn.osu.edu/index.php?setissuelD=100#C></a> [URL verified 9/7/05].

USDA-GIPSA. 1996. U.S. Standards for Corn. USDA-Grain Inspection, Packers and Stockyards Administration. Online at <www.gipsa.usda.gov/reference-library/standards/ 810corn.pdf> [URL verified 9/7/05].

USDA-NASS. 6 Sep 2005. Indiana Crop & Weather Report. USDA-Nat'l Ag. Statistics Service. Online at <www. nass.usda.gov/in/cropweat/2005/we3605.pdf> [URL verified 9/7/05].



**Corny Oddities:** Popped Kernels and Silk Cut - (*Bob Nielsen*)

Among a number of corny oddities reported this year throughout Indiana is one that falls into the "kernel disorder" category. A crop consultant from eastern Indiana recently reported on the occurrence of a symptom in a seed corn production field known as "popped kernels". In his words, "... the kernels appear diagonally sliced. Each sliced half is then folded back exposing the endosperm, which later receives the fungal attack."

The popped kernel symptom and the related "silk-cut" symptom are indeed corny oddities in that they rarely occur in commercial hybrids in Indiana and occasionally occur at significant levels in seed corn inbreds. Unfortunately, when the symptoms do occur, they predispose the affected kernels to attack by ear-rotting fungal organisms.

The causes are unknown, but are believed to be related to stressful conditions following pollination. A report from Texas, for example, suggests that the silk-cut symptom occurs quite frequently in areas of south Texas prone to lateseason drought stress (Odvody et al., 1997).

The Compendium of Corn Diseases (White, 1999) describes these two phenomenon quite well and I quote:

"Popped kernel and silk-cut, although common in breeders' nurseries, are rarely seen on commercial hybrids. It is assumed that this characteristic is inherited, and it is usually eliminated during the breeding and selection process. Popped kernel is an irregular break in the seed coat over the kernel crown. The kernel resembles a partially expanded popcorn kernel. This phenomenon is believed to result from irregular growth because it is most common during years with irregular rainfall, particularly when conditions are very hot and dry. Silk-cut is the embedment of silks in ruptured areas on tips of the kernel or occasionally in the sides of kernels between kernel rows. The exact cause of silk-cut is unknown, but it may be caused by irregular growth of the pericarp around unpollinated silks. Even on an ear that appears to be fully pollinated, as many as 10% of the ovules are not fertilized. Pollinated silks die and dry up, but silks attached to unpollinated ovules remain viable for an extended period of time. The viable silks push against the developing pericarp of kernels, causing the pericarp to rupture. Both popped kernel and silk-cut result in the rupture of the pericarp and allow infection by ear-rotting and saprophytic fungi."





#### **Related References**

Odvody, G.N., N. Spencer, and J. Remmers. 1997. A Description of Silk Cut, a Stress-Related Loss of Kernel Integrity in Preharvest Maize. Plant Disease 81 (5):439-444.

White, Donald G. (ed.). 1999. Noninfectious or Abiotic Diseases. in Compendium of Corn Diseases (3rd Edition). APS Press, The American Phytopathological Society.

Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the Web at <www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the Web at <www.kingcorn.org>.

