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Insects, Mites, and Nematodes

Soybean Aphid Management Decisions for 2004 –
(John Obermeyer and Larry Bledsoe) –

- Soybean aphid was one of many soybean stresses last season.
- “Unified” university sampling and treatment guidelines are given below.
- Applying insecticide with post-emergence herbicides is not recommended.
- Future soybean aphid populations is anybody’s best guess.

Indiana, like most states in the Midwest, has been on a steep learning curve in understanding the soybean aphid and its potential impact on our soybean crop. Many, including ourselves, were frustrated last summer with confusing/conflicting scouting and treatment decisions prevalent from universities and the industry. Early this winter university scientists from throughout this region, including some Canadian Providences, converged and shared laboratory, replicated research, and farm trial results to establish unified scouting techniques and treatment thresholds.

Certainly 2003 was a year of stress for the soybean crop: moisture (too much, too little), cool temperatures, late planting, poor nodulation, numerous diseases, soybean aphid, etc. Quoting Purdue’s soybean specialist Ellsworth Christmas from “Why Were My Soybean Yields

Soooo Low??? (*Pest&Crop* #27, October 17, 2003), “...anything that could have gone wrong with soybeans occurred this year sometime during the growing season. Compound stresses always have a more pronounced impact on yields than a single stress.” Positive yield responses for those treating soybean aphid in a timely fashion last season certainly established that this pest contributed to those “compound” stresses.

It has been agreed by researchers that to best assess soybean aphid, whole plant counts will need to be taken. This means pulling up 20-30 plants/field and counting all the aphids, generally present on the underside of leaves. Identifying soybean growth stages is also imperative while you are scouting. Should you find an average of 250 or more aphids per plant during the early soybean reproductive stages (R1-R4), a treatment is justified. During the pod-fill stages (R5-R6) we feel that treatment becomes less effective. Unless soybean fields are under drought stress, aphid numbers/plant should be at least 500 before insecticides are applied. Treatments made in late August regardless of soybean growth stage are likely to have little value. Do NOT treat soybean beyond the R6 stage of growth. Foraging honeybees and nearby apiaries should be considered when treating at R2 growth stage (full flower).

Some sales representatives and producers have become “creative” in their pest management strategies.

The suggestion of adding insecticide to post-applied herbicide applications to control soybean aphid has serious flaws. The optimum timing for controlling weeds and aphids will not likely be the same. No matter what rumors exist about longevity of insecticides, products will give at best two weeks of efficacy. Post applied herbicides applied in mid May to late June will miss the critical timing for aphid colonization by two to five weeks. Waiting till aphids appear in mid summer to apply herbicides will result in poor weed control. A good herbicide application is dependent on good coverage of the plant canopy and reducing drift which means larger droplet size and lower pressures, however, insecticide application for aphids requires deep penetration into the foliage using higher volumes and pressures.

Will we have a repeat of the soybean aphid in future years? Certainly the soybean aphid is here to stay and it's probably safe to say that they will be present every year, problem is, nobody knows how many. In hindsight, we believe that the aphid numbers would not have been what they were, at such a critical soybean growth stage (due to generally late planting and delayed development), had we not gotten such a large migration into the state during the later part of July/early August from areas in the Midwest with high infestations (e.g., Minnesota). We also understand that soybean aphid is favored by cooler summer temperatures. These factors alone will have us monitoring soybean aphid populations in northern Midwestern states and weather fronts moving from those areas towards Indiana. This understanding, along with the unified sampling and treatment guidelines, should help us with future management decisions.

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Pre-Applied Insecticide Corn Seed Treatments –
(John Obermeyer and Larry Bledsoe) -

- Pesticides protect yield potential; they do not create yield.
- The brief systemic activity of some of these products may protect seed and seedling from some soil insect pests.
- Efficacy ratings given by product and insect
- If a soil insecticide for rootworm is being used at planting, seed-applied insecticides are not necessary.
- Treated seed should be handled with caution!

While visiting with producers during winter meetings, it's quite apparent that there's confusion about the pre-applied insecticide seed treatments...names, rates, and targeted insects. The most important understanding, regardless of product, is that these seed treatments ONLY protect potential yield, they DO NOT increase yield.

These pre-applied seed treatments are from the new insecticide chemistry, nicotinoids that have systemic activity during the early life of the corn seedling. Higher rates of Cruiser (1.125 mg/kernel) and Poncho 1250 (1.25 mg/kernel) are the only products labeled to "protect" seedlings against rootworm. Costs of these higher rates will be competitive with the granular insecticides (\$15-18/acre). Although performance of these products against rootworm were addressed in the 2003 November issue of the *Pest & Crop*, simplified ratings are given in the following table.

Low rates of Cruiser, Gaucho, and Poncho (0.125, 0.16, 0.25 mg/kernel respectively) have shown SOME seed/seedling protection from seedcorn maggot, wireworms, white grubs, and cutworms. The labels of these products state that they will "protect" or provide "protection" from these secondary insects. Because of lack of unbiased, replicated trial data for these secondary insects, our best "guess" ratings are given below. Producers need to consider whether this early seed/seedling protection is worth the \$4-6/acre (depending on seed drop) expense. If using a soil insecticide for rootworm control, these seed treatment are not necessary. Granular and liquid soil insecticides will do as good, if not better, job of protecting early corn growth from the soil secondary insects.

Insecticide Corn Seed Treatment Efficacy Ratings ^{1,2}						
	CRW	WG	WW	SCM	SCB	BCW
(thiamethoxam)						
Cruiser (0.125 mg)	P	F	G	E	E	F
Cruiser (1.125 mg)	F	G	G	E	E	F
(imidacloprid)						
Gaucho (0.16 mg)	P	P	G	E	E	P
(clothianidin)						
Poncho 250 (0.25 mg)	P	F	G	E	E	F
Poncho 1250 (1.25 mg)	G	G	G	E	E	G
¹ E=Excellent, G=Good, F=Fair, P=Poor ² CRW=corn rootworm, WG=white grub, WW=wireworm, SCM=seedcorn maggot, SCB=seedcorn beetle, BCW=black cutworm						

In some situations plant stand reduction may occur regardless of the presence of pests. Labels warn that mechanically damaged seed or seed with low vigor may experience poor germination and reduced stands.

Undoubtedly, there will be some hybrid interactions as well.

Another consideration with these insecticide seed coatings that seems to be misunderstood or disregarded is that these products need to be handled with care...they are insecticides! Even though the pre-treated seed is not a restricted use product, small amounts of active and inert ingredients will wear off the seed through friction and dusts will be created. Be cautious around air planters, as "plumes" of accumulated product dust and contaminated graphite/talc may be released. Treat the seed with caution. Wear personal protective equipment per the label instructions included with the seed bag and avoid breathing the materials. Spilled seed should be treated as a chemical spill and should be cleaned up to protect non-target organisms, especially aquatic

invertebrates and birds. Dispose of the empty bags according to the directions on the label.

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Rootworm Insecticide Classifications and Consistency of Performance - (*John Obermeyer and Larry Bledsoe*) -

- The following table lists registered rootworm soil insecticides by chemical class
- Follow label uses and restrictions
- Many factors should be considered before selecting a product

See Table 3 on the following page.

Weeds

New Weed Management Tools from the Purdue Extension Weed Science Team - (*Bill Johnson, Glenn Nice, and Tom Bauman*) - 2004 Weed Control Guide for Ohio and Indiana (WS16) – **This year we collaborated with Extension Weed Scientists at Ohio State University to produce a single guide for both states. Available on the web at <<http://www.btny.purdue.edu/Pubs/WS/WS-16/>>.** Printed version is available for \$6.50 from the Ohio State Publications Distribution Office (ph. 614 292-1868)

Purdue Weed Science Website - <<http://www.btny.purdue.edu/weedscience/>>. Contains frequently updated newsworthy articles for agronomic crops, horticulture crops, turf and lawn, and other general items of interest. Also contains links to sites on weed identification, herbicide injury, weed science faculty, staff and students at Purdue, and weed management tools from Purdue and other Universities.

Indiana Select-A-Herb Website - <<http://btny.agriculture.purdue.edu/herbsel/index.cfm>>. This web-based tool provides herbicide response ratings for weeds in various cropping systems. The database is an accumulation of weed control ratings from several Midwest sources and allows the user to use drop down menu's to find herbicides that provide good to excellent control of weeds in crops.

WeedSOFT 2004 for Indiana - <<http://weedsoft.unl.edu/>>. WeedSOFT® is a decision support system designed to assist growers, consultants, and extension agents in making both proactive and reactive weed management decisions. This comprehensive tool will help farmers in every step of their weed management decision. WeedSOFT® provides you with the treatment information you need according to your specific field conditions while factoring in economic and environmental principles. Whether you are considering early season soil applied treatments, control of mid-season infestations, or comparing treatments requiring additional costs for herbicide resistant crops, WeedSOFT® provides a powerful tool for your weed management decisions. The price of the software has been reduced 75% to \$50 per copy. Bulk discounts are also available.

Weeds to Watch Poster – Weed communities continually shift in response to management practices. The weeds included on this poster pose an increasing threat to agronomic fields. The poster also contains maps that provide information regarding current distribution of each species in Indiana, Illinois, Iowa, Minnesota, Wisconsin and Michigan. A pdf version of the poster is available at this website <<http://weeds.cropsci.uiuc.edu/extension/Other/WeedstoWatch.pdf>>.

Insecticide Class	Organophosphates**	Pyrethroids	Fiproles	Nicotinoids				
Chemical Name	chlorpyrifos	terbufos	bifenthrin	fipronil				
Trade Name & Formulations(s)	Fortress 2.5 G Fortress 5G (SmartBox)	Lorsban 15G Lorsban 4E generics	Counter CR Capture 2E	Force 3G Regent 4SC	Poncho (treated seed)			
Factors:								
Performance: test plots - band application	Fortress 5G 2.2 78	Lorsban 15G 2.3 67	Aztec 2.1G 2.2 82	Counter CR 1.9 83	Capture 2E 2.2 61	Force 3G 2.1 78	n/a	n/a
Performance: test plots - infurrow application	Fortress 5G 2.1 71	Lorsban 15G 2.2 72	Aztec 2.1G 2.0 87	Counter CR 1.8 91	Capture 2E 2.3 66	Force 3G 2.1 75	Regent 4SC 2.5 57	n/a
Performance: test plots - treated seed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Poncho 1.9 87
Technical information	N PES D n/a Y	Y ES C W N	N PES W n/a Y	Y PES D n/a Y	N PE n/a W Y	N PES C n/a Y	N E n/a W Y	n/a PS n/a n/a N
Registered for use a cultivation								
Registered for popcorn/seed corn/sweet corn								
Human hazard (signal word)								
Granular formulation								
Liquid formulation								
Restricted-use pesticide								
Labeled for control of other soil pests at the rootworm rate ³								
billbugs	N	Y	N	Y	N	N	N	N
cutworms	Y	Y	Y	N	Y	Y	Y	Y
nematodes	N	N	N	Y	N	N	N	N
seedcorn beetle	N	Y	Y	Y	Y	Y	Y	N
seedcorn maggot	Y	Y	Y	Y	Y	Y	Y	N
white grubs	Y	Y	Y	Y	Y	Y	Y	N
wireworms	Y	Y	Y	Y	Y	Y	Y	N

*Key to symbols: -- = inadequate information, n/a = not applicable, D = danger, W = warning, C = caution, Y = yes, N = no, P = popcorn, E = seed corn, S = sweet corn.
 **See "Insecticide/Herbicide Plant Interaction" on page 5.
¹Average root damage rating (Hills and Peters 1-6 scale) in 9-17 tests over five years (1999, 2000, 2001, 2002, 2003), where damage in the untreated plots exceeded 3.0 or greater will likely predispose plants to significant yield losses. The untreated plots averaged 4.26.
²Percentage of root masses where damage rating was less than 3.0 when the untreated equaled or exceeded 3.0. Tests from 1999-2003.
³Insecticide not included if label states "for suppression," "reduction of," "aids in control," or "control of light to moderate infestations only."

PURDUE EXTENSION SPECIALISTS Telephone, E-mail Addresses and Specialty

Entomology

Yaninek, Steve	(765) 494-4554	yaninek@purdue.edu	Head, Dept. of Entomology
Bledsoe, Larry	(765) 494-8324	lbledsoe@purdue.edu	Field Crop Insects
Hunt, Greg	(765) 494-4605	greg_hunt@entm.purdue.edu	Bee Specialist
Lam, Frankie	(812) 886-0198	frankie_lam@entm.purdue.edu	Insect Pest Management Specialist, SWPAC
Loven, Judy	(765) 494-8721	judy_loven@entm.purdue.edu	USDA, APHIS, Animal Damage
Mason, Linda J.	(765) 494-4586	lmason@purdue.edu	Food Pest Mgmt. & Stored Grain
Obermeyer, John L.	(765) 494-4563	obe@purdue.edu	Field Crops Insects & IPM Specialist
<i>Tammy Luck</i>	<i>(765) 494-8761</i>	<i>luck@purdue.edu</i>	<i>Administrative Assistant</i>
FAX: (765) 494-2152		Dept. Ext. Web Site: http://www.entm.purdue.edu/entomology/ext/index.htm	

Agronomy

Beyrouy, Craig	(765) 494-4774	beyrouy@purdue.edu	Head, Dept. of Agronomy
Brouder, Sylvie	(765) 496-1489	sbrouder@purdue.edu	Plant Nutrition, Soil Fertility, Water Quality
Christmas, Ellsworth	(765) 494-6373	echristmas@purdue.edu	Soybeans, Small Grains, Specialty Crops
Eck, Kenny	(812) 482-1171	keck@purdue.edu	Conservation Program Specialist
Gauck, Brian	(317) 392-1394	bgauk@purdue.edu	Conservation Program Specialist
Gerber, Corey	(765) 496-3755	gerberc@purdue.edu	Director, Diagnostic Training Center
Joern, Brad	(765) 494-9767	bjoern@purdue.edu	Soil Fertility, Waste Management
Johnson, Keith D.	(765) 494-4800	johnsonk@purdue.edu	Forages
Krejci, James	(765) 494-4795	jmkrejci@purdue.edu	Coordinator, Soil and Water Quality Program
Lake, James	(260) 426-4637	jlake@purdue.edu	Conservation Program Specialist
Lee, Brad	(765) 496-6884	bdlee@purdue.edu	Soils and Land Use, Septic Systems
Mansfield, Charles	(812) 888-4311	cmansfie@purdue.edu	Small Grains, Soybean, Corn
Matzat, Eugene	(219) 324-0838	ematzat@purdue.edu	Conservation Program Specialist
Nielsen, Robert L.	(765) 494-4802	rnielsen@purdue.edu	Corn, Sorghum, Precision Agriculture
Steinhardt, Gary	(765) 494-8063	gsteinha@purdue.edu	Soil Management, Tillage, Land Use
Vyn, Tony	(765) 496-3757	tvyn@purdue.edu	Cropping Systems & Tillage
West, Terry	(765) 494-4799	twest@purdue.edu	Soil Management & Tillage
<i>Carol Summers</i>	<i>(765) 494-4783</i>	<i>csummers@purdue.edu</i>	<i>Extension Secretary</i>
FAX: (765) 496-2926		Dept. Ext. Web Site: http://www.agry.purdue.edu/ext	

Botany and Plant Pathology

Martyn, Ray	(765) 494-4614	rmartyn@purdue.edu	Head, Dept. Botany & Plant Pathology
Bauman, Tom T.	(765) 494-4625	tbauman@purdue.edu	Weed Science
Johnson, William	(765) 494-4656	wjohnso@purdue.edu	Weed Science
Latin, Richard	(765) 494-4639	rlatin@purdue.edu	Diseases of Turfgrass
Lembi, Carole	(765) 494-7887	lembi@purdue.edu	Aquatic Plants
Pecknold, Paul	(765) 494-4628	pecknold@purdue.edu	Ornamental & Fruit Diseases
Nice, Glenn	(765) 496-2121	gnice@purdue.edu	Weed Science
Rane, Karen	(765) 494-5821	rane@purdue.edu	Plant & Pest Diagnostic Laboratory
Ruhl, Gail	(765) 494-4641	ruhlg@purdue.edu	Plant & Pest Diagnostic Laboratory
Shaner, Greg	(765) 494-4651	shanerg@purdue.edu	Diseases of Field Crops
Westphal, Andreas	(765) 496-2170	westphal@purdue.edu	Soil-borne Diseases
Whitford, Fred	(765) 494-4566	fwhitford@purdue.edu	Purdue Pesticide Programs
Woloshuk, Charles	(765) 494-3450	woloshuk@purdue.edu	Mycotoxins in Corn
<i>Amy Dietrich</i>	<i>(765) 494-9871</i>	<i>amymd@purdue.edu</i>	<i>Extension Secretary</i>
FAX: (765) 494-0363		Dept. Ext. Web Site: http://www.btny.purdue.edu/Extension/extension.html	

Agricultural & Biological Engineering

Bralts, Vincent	(765) 494-1162	bralts@purdue.edu	Head, Dept. of Ag. & Bio. Engineering
Ess, Daniel R.	(765) 496-3977	ess@purdue.edu	Precision Agriculture, Ag Systems Mgmt.
Field, Fill	(765) 494-1191	field@purdue.edu	Ag Safety & Health, Ext. Safety Specialist
Frankenberger, Jane	(765) 494-1194	frankenb@purdue.edu	GIS and Water Quality
Heber, Al	(765) 494-1214	heber@purdue.edu	Air Quality
Jones, Don	(765) 494-1178	jonesd@purdue.edu	Extension Coord., Bldg. Environ. Control
Maier, Dirk	(765) 494-1175	maier@purdue.edu	Post Harvest Engineering
Strickland R. Mack	(765) 494-1222	strick@purdue.edu	Precision Farming Appl.
<i>Denise Heath</i>	<i>(765) 494-6577</i>	<i>heathd@purdue.edu</i>	<i>Extension Secretary</i>
FAX: (765) 496-1356		Dept. Ext. Web Site: http://pasture.ecn.purdue.edu/ABE/Extension/	

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