



## Glove Rules Eased for WPS Workers and Handlers (Including Pilots)

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On September 1, 2004, the EPA amended the Worker Protection Standard (WPS) for agricultural pesticides to make the following two changes:

1. WPS workers and handlers are permitted to wear separable glove liners beneath chemical-resistant gloves unless the pesticide product labeling specifically prohibits their use. Separable glove liners are defined as separate, glove-like hand coverings made of lightweight material, with or without fingers. Work gloves made from lightweight cotton or poly-type material are considered to be glove liners if worn beneath chemical-resistant gloves. Lined or flocked gloves, in which the lining is attached to the inside of the chemical-resistant outer glove, remain unacceptable. The liners may not be longer than the chemical-resistant glove, and they may not extend outside the glove. The liners must be disposed of after 10 hours of use or whenever the liners become contaminated.
2. Agricultural pilots do not have to wear chemical-resistant gloves when entering or exiting aircraft unless the pesticide product labeling specifically requires the use of such gloves. If gloves are brought into the cockpit of an aircraft that has been used to apply pesticides, the gloves shall be kept in an enclosed container to prevent contamination of the inside of the cockpit.

Regulatory action was taken to reduce the discomfort of unlined, chemical-resistant gloves, especially during hot or cold periods and because chemical-resistant gloves do not add any appreciable protection against minimal pesticide residues found around the cockpit of an aircraft. EPA believes that these changes will reduce the costs of compliance and increase regulatory flexibility without increasing potential risks.

All other aspects of the Worker Protection Standard are unaffected by this rule. The WPS applies to workers performing hand-labor activities in fields treated with pesticides; workers on farms, forests, nurseries, and greenhouses where pesticides are used; and pesticide handlers who mix, load, apply, or otherwise handle pesticides. For more information about the WPS rules, see <http://www.pesticidesafety.uiuc.edu/facts/facts.html>.

*(Source: "Pesticide Worker Protection Standard; Glove Liners, and Chemical-Resistant Glove Requirements for Agricultural Pilots." Federal Register Environmental Documents [Online]. September 1, 2004. <<http://www.epa.gov/fedrgstr/EPA-PEST/2004/September/Day-01/p19923.htm>>. Accessed 9/2/04; Bruce Paulsrud)*



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## EPA Proposes Streamlining Section 18 Process

The U.S. EPA is proposing several revisions to its regulations governing emergency exemptions that allow unregistered uses of pesticides to address emergency pest conditions for a limited time. The first significant change would allow applicants for certain repeat exemptions a simple way to recertify that the emergency conditions that initially qualified for an exemption continue to exist in the second and third years. The second significant proposal would redefine significant economic loss and adjust the data requirements for documenting the loss.

These proposed revisions would streamline and improve the application and review process by reducing the burden to both applicants and the EPA, allowing for quicker decisions by the agency, and providing for more consistently equitable determinations of "significant economic loss" as the basis for an emergency. These two proposals are currently being employed in limited pilot programs. In addition, EPA is proposing several minor revisions to the regulations to clarify that quarantine exemptions may be used for control of invasive species, and to update or revise certain administrative aspects of the regulations. All of these proposed revisions can be accomplished without compromising protections for human health and the environment.

Comments regarding the proposed regulatory changes must be submitted to the EPA on or before November 2, 2004. EPA contact information, as well as a detailed explanation of the proposed changes, can be found within the online EPA source document listed below. For more information about current supplemental labeling (for example, Section 18, 24c, and 2ee) regulations, read the May

2004 issue of *Illinois Pesticide Review* (<http://www.pesticidesafety.uiuc.edu/newsletter/html/200403d.html>).

(Source: "Pesticides; Emergency Exemption Process Revisions." Federal Register Environmental Documents [Online]. September 3, 2004. <<http://www.epa.gov/fedrgstr/EPA-PEST/2004/September/Day-03/p20038.htm>>. Accessed 9/7/04; Bruce E. Paulsrud.)

## Weather or Not to Spray

Of all the factors that can influence a pesticide application, one of the most important is entirely outside your realm of control: the weather. When it comes to weather and spraying, the only decision you have is if you can make an application safely and effectively. It is critical to make sure that you avoid spraying during conditions that increase the risk of drift. Understanding how weather affects spraying and how you can monitor the weather can improve your decision-making process.

There are two kinds of drift. Particle drift is the movement of the liquid spray particles, or droplets. Vapor drift is the movement of vapors, after evaporation (or volatilization) has occurred. Weather conditions strongly influence both types of drift but in somewhat different manners. Remember to always consult the pesticide label for specific instructions related to weather conditions. There are three main components of weather that directly affect spraying: temperature, humidity, and wind.

**Temperature** primarily affects the evaporation of a pesticide. The warmer it is, the quicker evaporation occurs and the greater the risk of vapor drift. Humidity also affects the evaporation of a pesticide formulation. **Humidity** refers to how much water vapor is in the air. Low humidity means the level of water vapor in the air is low, indicating that condi-

tions are dry. Low humidity increases evaporation, thus increasing the risk of vapor drift. Some pesticides, particularly ester or oil-based formulations, are especially volatile, and care must be taken to avoid spraying with these formulations on hot, dry days.

**Wind** has a strong influence on the risk of particle drift. High wind speeds carry spray particles longer distances, increasing the chance of off-target damage. It is generally recommended not to spray if wind speed is greater than 10 miles per hour (mph). A 100-micron droplet can drift 3 feet in a 2-mph wind when released 18 inches above the ground (see the January 2004 issue of *Illinois Pesticide Review*, available at <http://www.pesticidesafety.uiuc.edu/>, for a review of droplet measurement). In a 10-mph wind, that 100-micron droplet can travel more than 17 feet before reaching the ground. Wind speed increases as altitude increases, so the wind is usually blowing faster several feet above the ground. This is why releasing the spray as close to the target as possible is important, but remember to maintain proper nozzle overlap for spray uniformity. Wind direction is also important. Because drift occurs down wind, it is important to know which direction the wind is blowing and where areas that might be sensitive to the pesticide you are applying are located. Do not spray if the wind is blowing toward a sensitive area. Remember that even nozzles designed to reduce the number of small spray droplets, such as air-induction nozzles, still create some small droplets that can drift.

Very calm conditions can also cause problems. Under calm conditions, when the air is very still with little or no wind, small spray droplets can remain suspended in the air in a concentrated group. These droplets can then be blown off-target later in the day when the wind speed increases, or they can evaporate while suspended and lead to vapor drift. Also problematic are shifting winds, when wind speed, direction, or both are

changing during the application. The ideal time to spray is usually when the wind is blowing steadily between 3 and 10 mph and in a safe direction, away from sensitive areas.

**Inversions** are particular instances of very calm weather. Inversions occur when the temperature profile of the air becomes inverted, or turned upside down. In a normal temperature profile, the warmest air is at the earth's surface, and the air temperature decreases as altitude increases. Because warm air rises, the air at ground level rises and is replaced by cooler air, which in turn is warmed and rises. This creates a continuous vertical mixing of air, which disperses small spray droplets and prevents them from remaining suspended in the air and being blown off-target in a concentrated mass later during the day. During an inversion, the air at ground level is cooler than the air above it. Because it is warm air that rises, the cool air is essentially trapped below the layer of warm air above it. This prevents vertical air mixing, creating very calm conditions and allowing small spray droplets to remain suspended in the cooler air at ground level, like fog early in the morning. Inversions typically occur early in the morning or late in the evening. Spraying should be avoided when an inversion exists.

For small spray droplets, temperature, humidity, and wind speed can all interact to create situations involving both particle and vapor drift. Spray droplets begin to evaporate immediately after being released, and small droplets can be blown off-target as particle drift but evaporate completely downwind while still airborne. For instance, when droplets with a diameter of 50 microns are released from a height of 18 inches in a 10-mph wind, they can drift more than 50 feet before finally evaporating, never reaching the ground. In high temperatures and low humidity, the distance these particles travel is less because the droplets evaporate quicker. Lower temperatures and high humidity decrease the evaporation

rate and allow the particles to drift greater distances. As neither situation is ideal, it is important to reduce the number of small droplets created during an application.

How do you determine if weather conditions are suitable for spraying? For temperature, any accurate thermometer works fine. Measuring wind speed is critical not only for determining if an application should be made but also for maintaining accurate records of the application. Wind speed can be easily and accurately measured with a handheld wind meter. Wind meters are available that measure a variety of additional weather factors, such as temperature, humidity, heat index, and dew point. More expensive models store data for later recording. A benefit of wind meters is their small size and portability, which allow you to check and record wind speed and other weather factors throughout an application. Use a compass to precisely determine and record wind direction. Complete weather stations are also available but at a higher cost. For more information about the various types of products available for measuring weather conditions, visit <http://www.ambientweather.com>. To determine if an inversion exists, you can use a smoke bomb or other similar device to create a cloud of smoke. If the smoke hovers close to the ground and fails to disperse, there is an inversion and you should not spray.

However you choose to measure wind speed and other weather factors, remember that monitoring and recording them periodically throughout an application is important. Weather conditions can change during an application, requiring spraying operations to be halted. A written record of wind speed, direction, and other factors throughout an application, not just at the beginning, can be beneficial during a drift complaint. It also demonstrates your professionalism and dedication to making safe pesticide applications. (Scott Bretthauer)

## Pesticide Applicator Manuals Revised

**Field Crops (SP 39-2):** This manual is currently being revised and should be available by November 2004. It serves as a study manual for persons wishing to become certified as Commercial, Commercial Not-For-Hire, or Public Field Crop Pest Control Applicators. The 96-page, revised manual features five in-depth chapters that address (1) integrated pest management, (2) insect management, (3) weed management, (4) disease management, and (5) application equipment and calibration. In the supplemental section, you'll find grass and broadleaf weed keys, color images of common insects and diseases, and detailed information and illustrations regarding crop growth stages and herbicide classification.

**Rights-of-Way (SP 39-2):** This manual is currently being revised and should be available by mid October 2004. It serves as a study manual for persons wishing to become certified as Commercial, Commercial Not-For-Hire, or Public Right-of-Way Pest Control Applicators. The 63-page, revised manual features four in-depth chapters that address (1) rights-of-way areas, (2) weeds, (3) principles of rights-of-way weed control, and (4) application equipment and calibration. Significant changes from the previous manual include the omission of disease and insect pests and the addition of new types of application equipment.

To purchase these, or any other Pesticide Safety Education publications, contact your local University of Illinois Extension office, order online ([www.PublicationsPlus.uiuc.edu](http://www.PublicationsPlus.uiuc.edu)), or call (800)345-6087. (Bruce Paulsrud and Michelle Wiesbrook)

## Illinois Crop Protection Technology Conference

The 57<sup>th</sup> annual meeting of the Illinois Crop Protection Technology Conference will take place on January 5 and 6, 2005, at the Illini Union on the Urbana-Champaign campus of the University of Illinois. This year's conference will begin with a keynote session on climatological changes and their effects on crop production and crop protection practices.

Many of these changes include the more familiar trends we've all observed with respect to earlier planting and harvest dates. In addition, it seems as if we experience more extreme weather events such as droughts, floods, tornadoes, and hurricanes in the United States and elsewhere around the globe than in previous decades. Do scientific data support these perceptions? Are climatological changes real and more extreme? If so, are they part of the natural and cyclical changes that have occurred for eons?

In addition to the keynote session, the conference will offer 6 symposia and 15 specialized seminars that participants can choose from. In essence, each participant at the 2005 conference can "tailor-make" his or her own program and seek CCA credits of most importance personally.

Speakers at the symposia will address the following topics: (1) soybean rust, (2) management of natural resources and related regulatory issues, (3) corn root-worm management challenges, (4) disease management with foliar applications, (5) emerging crop protection issues, and (6) transgenic management of field crop pests. Each of these symposia will feature three to four speakers and last 1-1/2 hours. The specialized seminars are designed to be more interactive and also will last 1-1/2 hours. Topics included in these seminars cover a broad range of subjects,

including (1) ground versus aerial application methodologies, (2) emerging corn nematode issues, (3) forage management, (4) soybean aphids, (5) integrating electronic technologies with IPM, (6) designing on-farm research protocols, (7) soil testing and quality control, (8) wheat management, (9) fungicide modes of action, (10) troubleshooting difficult field crop pest problems, (11) sampling protocols for soybean rust, (12) management of secondary soil insects, (13) aquatic weed management, (14) issues related to water quality (herbicide/nitrogen), and (15) pesticide drift and sensitivity of different plant species. Specialized seminars and symposia will each be offered twice.

If you have any questions about the content of the 2005 program, please contact Suzanne Bissonnette (sbissonn@uiuc.edu) and/or Mike Gray (megray@uiuc.edu). Questions also may be directed to Sandy Osterbur, conference coordinator (saosterb@uiuc.edu); phone, (217)244-2124. Registration on or before December 17 is \$110, and \$140 thereafter. Please consult the following Web site for registration information ([https://www.conted.uiuc.edu/fmpro/cptc\\_reg\\_2005.html](https://www.conted.uiuc.edu/fmpro/cptc_reg_2005.html)). (Bruce Paulsrud)

## Journal of Pesticide Safety Education

Whether you're looking for pesticide safety education information or looking for a quality journal in which to publish your findings, look to the *Journal of Pesticide Safety Education* (JPSE; <http://jpse.org>).

JPSE is the official refereed e-journal of the American Association of Pesticide Safety Educators (AAPSE). JPSE provides clearly presented articles of instructional methods, training devices, research findings, empirical observations, assessment instruments, topic-specific perceptions,

literary notes, publication reviews, and similar material.

You do not need to be a member of AAPSE to publish within JPSE. However, all offerings accepted for publication must directly bear on matters that AAPSE deems of interest to pesticide safety educators and to others whose efforts substantially enhance pesticide safety education. (Bruce E. Paulsrud)

## 2005 North American Pesticide C & E Workshop

The North American Pesticide Applicator Certification and Safety Education Workshop will be in Madison, WI, from August 15 to 18, 2005. This workshop will focus on pesticide safety and health, program sustainability and marketing, and various hot topics. A report from the last workshop can be found at <http://www.pesticidesafety.uiuc.edu/newsletter/html/200305e.html>.

In addition to an optional tour on the 15<sup>th</sup>, the 2005 workshop will feature commercial vendor presentations and displays. If you have an idea as to a product or service that you'd like to see at the workshop, or if you know of a vendor who might be interested in attending, please contact Mark Shour (mshour@iastate.edu). Specific details on program content and registration will be forthcoming in 2005. Mark your calendar today. (Bruce E. Paulsrud)

## Illinois Professional Turf Conference

Formerly known as the North Central Turf Exposition, this conference geared toward midwestern turf professionals is under highly enthusiastic new management. Plan to attend November 29 to December 2, 2004, at Pheasant Run Resort, St. Charles, IL.

As in past years, the agenda includes a trade show, as well as high-quality educational programs. However, new this year will be topics on agronomics, business, and construction/renovation. Members of the Illinois Turfgrass Foundation (ITF) allied organizations will be eligible for educational credits.

Also new this year is the special-event stage, which will showcase a keynote address by Pat Hughes, "The voice of the Chicago Cubs," equipment demonstrations, and live music.

For more information, please contact Luke Cella at (630)243-9ITF or luke@cella.us. Check out their Web site at [www.illinoisturfgrassfoundation.org](http://www.illinoisturfgrassfoundation.org). (Adapted by Michelle Wiesbrook from an ITF press release.)

## Pesticide Update

The following information provides registration status of particular pesticides and should not be considered as pesticide recommendations by University of Illinois Extension.

### Agronomic

**ALFAMAX MP** (*hexazinoneldiuron*)—*DuPont*—A new combination herbicide for use on alfalfa, corn, and sugarcane.

**AMINOPYRALID**—*Dow AgroSciences*—A new herbicide, which is the amino analog of Clopyralid, that is being developed for use on corn, wheat, rice, and pastures.

**CONFIRM** (*tebufenozide*)—*Dow AgroSciences*—Added to their label the control of armyworms in canola.

**EVEREST** (*flucarbazone*)—*Bayer Crop Science*—The rate for use on wheat has been increased to 0.6 oz per acre. [herbicide]

**LUMAX** (*S-metolachlor/atrazinole/mesotrione*)—*Syngenta*—Added to their label the use on popcorn. [herbicide]

**MUSTANG MAX** (*zeta-cypermethrin*)—*FMC Corporation*—Approval has been granted for a Section 24(c), Special Local Need, request for use on seed corn and field corn for control of European corn borer and corn earworm. The preharvest interval was reduced to 7 days. The 24(c) expires 12-31-08 (SLN #IL040005). (Source: e-mail from Illinois Department of Agriculture, 7/30/04.)

**PYTHON** (*flumetsulam*)—*Dow AgroSciences*—Added to their label the control of prickly sida in soybeans.

**RAXIL MD-W** (*imidacloprid/tebuconazole/metalaxyl*)—*Gustafson*—A new seed treatment for use on wheat and barley to control both insects and diseases.

**RELDAN 4E** (*chlorpyrifos-methyl*)—*Dow AgroSciences*—The company has notified EPA they will cancel this insecticide. (FR, vol. 69, 7-7-04.)

**SONALAN** (*ethalfluralin*)—*Dow AgroSciences*—Added to their label the use on safflower, canola, and crambe. [herbicide]

**TILT** (*propiconazole*)—*Syngenta*—Approval has been granted for a Section 24(c), Special Local Need, request for use on corn for the control of *Helminthosporium* leaf blights, rusts, grey leaf spot, and eyespot. There is a 30-day preharvest interval. The 24(c) expires 12-31-08 (SLN # IL040004). (Source: e-mail from Illinois Department of Agriculture, 7/23/04.)

**VALOR SX** (*flumioxazin*)—*Valent*—This is a new formulation with smaller particles than the original Valor herbicide.

### Fruit/Vegetable

**ABOUND** (*azoxystrobin*)—*Syngenta*—Added to their label the use on canberries and cranberries. [fungicide]

**ACTIGARD** (*acibenzolar-S-methyl*)—*Syngenta*—Added to the label for this plant activator the suppression of black rot on cole crops.

**ALCO CITRUS FIX** (*2,4-D, isopropyl ester*)—*Amvac*—Added to the label for this growth regulator the use on tangerines and limes.

**ELEVATE** (*fenhexamid*)—*Arvesta*—Adding to their label the control of botrytis fruit rot on kiwi fruit.

**IMIDAN 70W** (*phosmet*)—*Gowan*—Approval has been granted for a Section 24(c), Special Local Need, request for use on blueberries for the control of blueberry maggot, cranberry fruitworm, and plum curculio. There is a 3-day preharvest interval. The 24(c) expires 12-31-05 (SLN #IL040003). (Source: e-mail from Illinois Department of Agriculture, 7/23/04.)

**NEXTER** (*pyridaben*)—*BASF*—This new formulation replaces Pyramite, which is being discontinued. It has the same label as Pyramite but can be used only once per season. [insecticide]

*PENBOTEC EC (pyrimethanil)*—*Janssen Pharmaceutica*—A new fungicide being developed to use as a postharvest treatment on pome fruits and citrus to control blue and gray mold.

*QUADRIS OPTI (azoxystrobin/chlorothalonil)*—*Syngenta*—A new combination fungicide for use on potatoes and vegetables.

*RIMON (novaluron)*—*Uniroyal/Crompton*—A new broad-spectrum insecticide for use on potatoes to control the Colorado potato beetle and many other insects. It has a re-entry of only 12 hours.

*ROVRAL (iprodione)*—*Bayer Crop Science*—The company has proposed to EPA to delete the use on blueberries from their label. (FR, vol. 69, 6-30-04.) [fungicide]

### Turf/Ornamental

*BONZI (paclobutrazole)*—*Syngenta*—Added to their label for this growth regulator are 40 new ornamental species.

*HURRICANE (fludioxonil/mefenoxam)*—*Syngenta*—A new combination fungicide that is being developed for use on ornamentals. It gives excellent Rhizoctonia control.

*PHYTON 27 (copper sulfate pentahydrate)*—*Source Tech Biologicals*—Added to their label the use on the ornamentals dracaena, ipomoea, and hawthorne. Also added the control of rust, *Pseudomonas*, and cedar apple rust.

### Structural

*KMG CHEMICALS*—The company has acquired from Boehringer Ingelheim its Revap L insecticide, which is used on poultry and livestock.

*OPTIGARD DW (thiamethoxam)*—*Syngenta*—A new product being developed to control termites, ants, and other pests. It is applied by injection or foaming.

*PREMISE FOAM (imidacloprid)*—*Bayer Environmental Sciences*—A new

formulation used as a crack-and-crevice treatment to control termites.

*SEVIN (carbaryl)*—*Bayer Crop Science*—The company has proposed to EPA to delete the use on poultry from their label. (FR, vol. 69, 6-30-04.) [insecticide]

*TALPIRID (bromethalin)*—*Bell Labs*—A new mole-control compound for use in lawns around homes and in ornamental gardens.

### Many

*ALLETHRIN*—EPA has proposed to revoke all residue tolerances for this insecticide. The comment period expired 9-7-04. (FR, vol. 69, 7-7-04.)

*ARMOR (cyromazine)*—*Syngenta*—Deleted from their label the statement “Do not apply Armor treated compost to land on which food crops are grown.” [insecticide]

*BENDIOCARB*—EPA has proposed to revoke all residue tolerances for this insecticide. The comment period expired 9-7-04. (FR, vol. 69, 7-7-04.)

*BIRD SHIELD (methyl anthranilate)*—*Bird Shield Repellent Corp*—Added to their label the use on apples, strawberries, and wild rice.

*DISTINCT (diflufenzopyr/dicamba)*—*BASF*—Added to their label the use on popcorn and the control of volunteer potatoes.

*EVIK (ametryn)*—*Syngenta*—The company has proposed to EPA to delete the use on bananas and on noncrop areas from their label. (FR, vol. 69, 6-30-04.) [herbicide]

*HARPIN PROTEIN*—*Eden Bio Science*—EPA granted an experimental permit to use this biofungicide on 4,942 acres of citrus, cotton, corn, ornamentals, peanuts, rice, soybeans, sugarcane, and wheat to control postharvest diseases, enhance overall plant health, and improve quality and yield. Authorized for use in Illinois and 29 other states. Expires 4-26-06. (FR, vol. 69, 7-14-04.)

*NOVALURON*—*Makhteshim Agan*—This recently registered new insecticide will be sold exclusively in the United States by Uniroyal/Crompton. It will be sold in a 10% formulation as Rimon for use on potatoes, in a 10% formulation known as Diamond for use on cotton, in a 7.5 WDG formulation known as Diamond for use on pome fruits, and in a 10% formulation known as Pedestal for use on greenhouse ornamentals.

*PASTURE GARD (fluroxypyr/triclopyr)*—*Dow AgroSciences*—A new post-emergence herbicide combination being developed for use on pastures and rights-of-ways.

*PRISM (clethodim)*—*Valent*—Added to their label the use on mustard. [herbicide]

*PYGANIC (pyrethrin)*—*MGK*—Added to their label the use in food and nonfood areas, such as food-processing plants, industrial sites, homes, and storage facilities, and on livestock and poultry. Also added to the label the control of apple maggots and yellow jackets.

*SONATA ASO (Bacillus pumilus QST 2808)*—*Agra Quest*—A new biological fungicide to control downy mildew, powdery mildew, scab, and other diseases on cucurbits, pome fruits, and cereal grains.

*SURMOUNT (fluroxypyr/picloram)*—*Dow AgroSciences*—A new combination herbicide being developed for use on rangelands.

*ZERO TOL (hydrogen peroxide)*—*Bio Safe Systems*—Added to their label the use on greenhouse surfaces and turf to control algae, slime, and mold.

### Other

*DUPONT*—The company has acquired Maxygen's ag biotechnology company Verdia of Redwood City, CA. Verdia has glyphosate-resistant gene technology that will be in competition with Monsanto's technology.

*GOWAN*—The company has joined with Nissan Chemical to form a joint company, Canyon Group, to market

agrochemicals from each company in the United States, Canada, and Mexico. The new company will be based in Yuma, AZ, and Nissan will close its U.S. office in Michigan.

*MAKHTESHIM AGAN*—The company has purchased 45% of the Texas-based company Control Solutions. The company is mainly in lawn and garden chemicals, industrial vegetation control, and animal health, with sales of about \$45 million.

*SEPRO*—The company has recently acquired Griffin's turf, aquatic, ornamental, and nursery products. The products included are Avast (fluridone), Komeen (copper complex), K-Tea (copper complex), Junction (copper hydroxide/mancozeb), Pentathion (maneb), Camelot (copper hydroxide), and Spin-Out (copper hydroxide) for use in containers. Also

included are the turf and ornamental uses for Kocide 2000 (copper hydroxide) and the miticide Vendex (fenbutatin-oxide).

*SOYBEAN RUST*—Additional products have been given a specific exemption to control this new soybean disease: Propimax EC (propiconazole) from Dow AgroSciences, Bumper (propiconazole) from Makhteshim Agan, and Tilt (propiconazole) from Syngenta. Laredo (myclobutanil) from Dow AgroSciences had already been approved.

*SYNGENTA*—The company has purchased Astro Zeneca's Advanta Seeds, its North American corn and soybean seed business. Fox Paine, a U.S. investment company, will purchase the remainder of the North American non-corn-and-soybean business, as well as Advanta's seed business outside North America. Fox Paine already owns Seminis, a producer

of fruit and vegetable seeds. With this purchase, Syngenta doubles its share of the U.S. corn and soybean seed market. Syngenta also recently acquired a Bayer Crop Science glyphosate-tolerant corn variety and purchased Golden Harvest Seed Co., based in Bloomington, IL, for \$180 million. Syngenta will move its agricultural biotechnology research operation from England to its research facility in North Carolina.

*WHITMIRE MICRO GEN*—The company, which manufactures products for the pest-control market, has been purchased by Sorex Group, a European pestcontrol manufacturer.

*(Michelle Wiesbrook, unless otherwise noted, adapted from Agricultural Chemical News, July and August 2004.)*

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