



Wanted: Proper Home for Treated Seed

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What can you do with unwanted seed that has been treated with a pesticide? Plant it, of course! For a producer with a few bags of seed, this is the most practical option even if the germination rate is unacceptable. What options are there if you have several hundred bushels of unwanted treated seed? Few, if any. Despite the best planning and sales forecasts, untold thousands of bushels of unwanted treated seed await affordable and environmentally safe disposal options.

Seed-treatment pesticide labels and their material safety data sheets provide virtually no useful treated-seed disposal information. In addition, there are no useful seed bag/tag instructions relating to treated-seed disposal. As a result, proper and legal disposal of unwanted treated seed has been a contentious issue for many years. Certainly, seed-treatment pesticide labels prohibit the use of treated seed for food, feed, or oil. Thus, it is illegal to mix treated seed with food or feed products in an attempt to get rid of excess or otherwise unwanted treated seed. Obviously, treated seed may be disposed of by planting it at an agronomically acceptable seeding rate. However, for large volumes of treated seed, this option can be cost-prohibitive when you consider the necessary acreage and the time spent planting. Simply spreading the seed, without incorporation, may present a hazard to humans and animals and may be illegal.

In talking with a number of applicators, registrants, and regulators, I understand that the disposal issue has been addressed many times but never fully resolved. In my observation, this issue persists for two main reasons:

1. **Supply and demand.** The supply side (those who have unwanted treated seed; also referred to as "seed handlers") can be characterized as follows:

Fragmented: There are numerous small- and large-scale seed handlers scattered across the United States.

Inconsistent: The amount of unwanted seed available from an individual seed handler in any given year, let alone that from the entire industry, is unpredictable. Furthermore, the treatments used (active ingredients and rates) vary within and between seed types and growing regions.

Sensitive: Due to market competition and client perception, the issue of excess seed is a sensitive subject with seed handlers.

The "demand" side of the market (those who might have a use for treated seed; also referred to as "disposal agents") can be characterized as largely undeveloped, unidentified, uninterested, or unnerved. Some of this is due to the fragmentation and inconsistency already mentioned, but some of it is due to regulatory confusion (explained below).



Several large-scale treated-seed disposal options have been suggested, including: (1) fermentation in an alcohol-producing process, (2) fuel source for power plants or cement kilns, (3) composting, (4) seedlings to serve as wildlife habitat, (5) incineration by a waste-management facility, and (5) landfilling. Some of these options lack necessary research, present concerns regarding by-product safety, or are simply too costly and/or environmentally undesirable. The advantages and disadvantages for each of the above disposal options are well described in "Industry Guidelines for the Disposal of Seeds Treated with Crop Protection Products" (2000), written by the Seed Treatment and Environment Committee of the International Seed Federation (<http://www.worldseed.org>; click on the "Bookshop" link).

2. Regulatory confusion. It appears that neither side of this market has a clear and comfortable understanding of treated-seed disposal regulations or which agencies have regulatory authority. Federal and state regulations include a variety of terms such as "pesticide waste," "treated article," "hazardous waste," and "solid waste"; they are confusing to say the least. However, seed handlers and disposal agents operating within multiple states must know the appropriate regulations and regulators in each state.

Proposed solution. The information provided in the above-mentioned "Industry Guidelines for the Disposal of Seed Treated with Crop Protection Products" publication is very useful. However, the fact remains that there are still significant impediments to seed handlers' and disposal agents' finding and working with each other. I recently discussed this issue with Dennis Thompson and John McKinney (Illinois Crop Improvement Association) and several seed-industry representatives. We are interested in creating an Internet-based "Treated-Seed Disposal" forum that will

1. Identify and clarify federal and state-specific regulations pertaining to

various treated-seed disposal options.

2. Serve as an independent and confidential clearinghouse for seed handlers and disposal agents.
3. Identify disposal-agent seed and chemical specifications and match the seed handler(s) accordingly.
4. Facilitate development of a "treated seed disposal broker/haulers" industry, which will be necessary to provide disposal agents with consistent supply and seed handlers with a simple and cost-effective solution.

If you have comments, suggestions, or supporting documentation regarding this proposed solution, please contact me by phone, (217)244-9646, or e-mail, paulsrud@uiuc.edu. (*Bruce Paulsrud*)

Pesticides Initiative: Basic Training for Health-Care Providers

The U.S. Environmental Protection Agency (EPA) and the National Environmental Education and Training Foundation (NEETF), in collaboration with the Department of Health and Human Services, the Department of Agriculture, and the Department of Labor, developed the 10-year "Pesticides Initiative." Begun last summer, the initiative will help bring basic training in environmental health to medical and nursing education through curriculum development, faculty leadership, and incentives for teaching on the subjects of environmental health and pesticides.

According to the 2001 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System, pesticides are one of the substances most frequently involved in poisonings, with more than 90,000 incidents reported for 2001. Although fatal pesticide poisoning is rare among the general

population, with only 17 deaths reported in 2001, advocates contend that many exposures are not tracked. There is also the question of what the effects of low-level exposures might be, especially cumulatively. Children are of primary concern, as they are among the most vulnerable populations. There are theories that pesticides may contribute to increasing rates of asthma, obesity, autism, and other diseases, as well as to serious dysfunction and adult-onset conditions such as Parkinson disease.

The goal of the initiative is to improve the way primary health-care providers assess and respond to potential pesticide-exposure cases in their daily practice. The pesticides initiative calls for all primary health-care providers to acquire basic knowledge of the health effects of pesticides and the treatments and preventive strategies used to address those effects. Skills acquired to take medical histories from patients may be applied to diagnose and treat other environmentally induced health problems.

The first line of defense. General practitioners and nurses are the initiative's primary audience, because they are usually the first point of contact for patients, and they treat the most patients who may have been exposed to pesticides, said James Roberts, an assistant professor of pediatrics at the Medical University of South Carolina in Charleston. These caregivers need to know how to handle issues of identifying and treating pesticide and other environmental exposures. [Pesticides are] going to be out there, and we need to bring practitioners, nurses, physicians, and others into thinking about [them], said Katherine Kirkland, executive director of the Association of Occupational and Environmental Clinics. Currently, the vast majority of patients are seen by physicians who have no training in occupational or environmental medicine, says NIEHS director Kenneth Olden. Much work lies ahead to fill this knowledge gap.

A June 2003 forum on this topic, attended by more than 100, worked to build support for the initiative from stakeholders, create a national vision for environmental health outreach to health-care providers, and develop a nationwide network of health-care providers committed to incorporating environmental health into primary-care education and practice. Specifically, participants developed strategies to help ensure that information on pesticides would be used by caregivers and would infiltrate the medical and nursing community. Forum participants included representatives from health-care provider organizations, credentialing bodies, academia, government agencies, primary-care providers, and more.

Many pledged to encourage implementation of the initiative by working with their professional associations, decision-making authorities, and practice settings to integrate pesticide-related content into curriculum and practice. For example, several individuals committed to seeking endorsements from national professional associations of the initiative's companion booklets—*National Pesticide Competency Guidelines for Medical & Nursing Education* and *National Pesticide Practice Skills Guidelines for Medical & Nursing Practice*, both published in January 2003 by NEETF.

Selling the message. Forum participants generated specific recommendations for education and practice settings and for the development of resources and tools. Examples included pursuing consumer-based promotion of environmental health/pesticides messaging, along with caregiver continuing education; initiating discussion and coverage of the issue with leading physician and nursing societies; and creating educational opportunities through credentialing bodies and professional societies that influence providers' continuing education.

Shelley Davis, coexecutive director of the Farmworker Justice Fund, said that gaps in the data on nationwide pesticide

exposures make addressing related health issues difficult. For example, clinical diagnostic tests are limited, as are efforts to track such exposures on a broader scale. There are needs for better data generation and more accessible diagnostic tests.

Besides working at the grassroots level, health-care providers need to function as advocates for environmental health issues on many fronts. "We should also be concerned about the environmental justice and ethical issues related to pesticides and environmental health issues," said Bonnie Rogers, an associate professor of nursing and public health at the University of North Carolina School of Public Health. For example, exposures are worse in inner cities (where more pesticides may be used inside the home to control cockroaches and other vermin) and in migrant farm communities.

Following up. The forum succeeded in obtaining commitments from important players, such as key nursing and occupational health associations. Pesticide manufacturers need to be contacted to assist as well in the reduction of pesticide poisoning. It was reported that the industry generally supports the pesticides initiative.

NEETF will conduct a 6-month follow-up survey to assess the progress that participants make on their commitments and the short-term goals of the forum. Forum leaders expect full implementation of the initiative will be a long-term national effort. A conference report will be available in the fall of 2003.

For more information, visit the *National Strategies for Health Care Providers: Pesticides Initiative* Web site at <http://www.neetf.org/health/providers/index.shtm>. (Adapted by Phil Nixon from an article written by Julie Wakefield.)

Welcome, Scott Bretthauer!

The Department of Agricultural and Biological Engineering recently hired Scott Bretthauer as an Extension specialist. Scott is the newest member of the Pesticide Safety Education Program. He will be focusing on the pesticide-application equipment and calibration sections of the Pesticide Safety Education Program. He will also be available for assistance with all matters related to chemical-application equipment, including the latest technologies and techniques used to apply pesticides safely and accurately. Scott grew up on a farm in northern Illinois and received his B.S. and M.S. degrees in forest science from the University of Illinois. Scott can be reached at

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Mark Your Calendar

The 56th Illinois Crop Protection Technology Conference will be held in Urbana on January 7 and 8, 2004. Topics, speakers, and other details will be available online at <http://www.conferences.uiuc.edu/cptc>.

Educators Participate in National Workshop

Three members of the University of Illinois' Pesticide Safety Education Program and two Extension educators who conduct private applicator training clinics spent 4 days in Honolulu in August at the North American Pesticide Applicator Certification & Safety Education Workshop. This meeting, sponsored by the American Association of Pesticide Safety Educators, allowed EPA administrators, state and provincial regulatory agencies, and pesticide-safety educators to debate and discuss safety, competency, and security issues in national programs for pesticide workers.

The meeting kicked off with an excellent tour featuring agriculture in Hawaii. Stops included Hawaiian Sunshine Nursery (ornamental flowers and foliage), Nalo Farms (high-end, fresh-market greens and sprouts), University of Hawaii—Agriculture Experiment Station (papaya, banana, ornamentals, etc.), and Del Monte's Pineapple Plantation. It was an educational day complete with fresh pineapple tasting in the field. We may never eat canned again! The profitability of Nalo farms was especially impressive. As much as I love my yard, I would replace the turf with greens if I could sell them for \$7 a pound.

Unfortunately, the following 3 days were spent indoors, but discussions were interesting. Some hot topics included

global harmonization of hazard labeling, computer-based testing, proposed certification of pesticide consultants (any person providing advice on non-home and garden pesticide selection or use), and adequate and stable federal funding for state training programs. Some proposed national requirements (that is, written exams, certification of dealers of restricted-use pesticides, and new categories including sewer root and aerial) are already in place within Illinois's laws, so it seems that we are ahead of the game and traveling in the right direction.

Updates were provided on the national pesticide applicator core exam and manual projects, the farm-family exposure study, breast cancer and environmental chemicals, Canadian Healthy Lawns Strategy, and applying engineering principles to reduce contamination of operator and sprayer—just to name a few.

Educators had the opportunity to share their experiences with various training methods, including PowerPoint, streaming video, DVD, and distance education.

As always, attendees found the meetings to be very informative and returned home with ideas and renewed spirit. The next national meeting is scheduled for August 2005 in Madison, Wisconsin. Many Illinois educators will likely attend the next north central regional meeting in June 2004 in St. Louis. (*Michelle Wiesbrook*)

Pesticide Disposal

Disposing of pesticide concentrate that is no longer needed or legal to use can be a burden, but there are safe disposal options available to you. The first step is to store the product in a safe place (away from children, potential flooding sites, etc.) for future, proper disposal or collection. Be sure the container is labeled and in good condition.

One method of getting rid of excess pesticide concentrate is to contact the

pesticide manufacturer to see if they will take it back. Another method is to contact other possible users of the pesticide to see if they have a use for it. For legal reasons, never sell a pesticide unless you are a licensed dealer. Both of these suggestions are based on the assumption that the pesticide is in the original, fully labeled container. Keep in mind that you may apply a pesticide to a labeled site even if the pest is absent.

Pesticides with outdated labels, pesticides for which the labeled uses have changed or the pesticide has been taken off of the market, can usually still be used until supplies are exhausted. This means that for most pesticides with outdated labels, you can legally use up the pesticide according to the label on the container. There are exceptions to the rule because for some pesticides, the U.S. Environmental Protection Agency (EPA) will allow old label uses for only a short time after product cancellation or label change. In rare cases, U.S. EPA may put a stop-use on a product at the time of cancellation. For instance, it is no longer legal to use old stocks of 2,4,5-T or chlordane in the United States. Contact the pesticide manufacturer to find out whether you can still use the product. One can also contact the state lead agency, Illinois Department of Agriculture, (217)785-2427, or the U.S. EPA to obtain the same information.

Collection programs provide another way to get rid of unwanted pesticides.

For "household activity" pesticides, contact the Illinois EPA, (217)785-8604, and ask when they plan to offer their next "Household Hazardous Waste Collection" in your area. This year, collections will take place through November 8. Alternatively, you can view the collection sites at www.epa.state.il.us/land/citizen-involvement/index.html.

For agricultural pesticides, contact the Illinois Department of Agriculture, (217)785-2427, and ask when they plan to offer their next "Agricultural Pesticide Clean Sweep" site in your area.

For structural pesticides (those used by professional applicators to control pests in and around structures), contact the Illinois Department of Public Health, (217)782-4674, and ask when they plan to offer their next "Structural Pesticide Clean Sweep" site in your area.

With commercial agricultural or structural pesticide-collection programs, there may be a period before the collection time when those wanting to dispose of pesticides must declare which pesticides and how much of each they will be bringing to the collection site. This allows the sponsoring agency to work with the commercial waste collector to get the maximum amount of pesticide disposal for the money. In this process, some pesticides or pesticide formulations may be refused.

The most expensive option is to contact a waste hauler/collector. There will be large disposal and transport fees involved. Even a few small containers with transport fees are likely to cost about \$1,000. Your local waste hauler may be able to dispose of certain pesticides. If not, they should be able to refer you to a company that can deal with the waste. These may include

PDC Laboratories: (309)688-0760,
Peoria, IL

Onyx Environmental Services: (618)271-2804, Sauget, IL

Heritage Environmental Services:
(317)243-0811, Indianapolis, IN

If you contact a commercial waste collector, they will ask you to submit an inventory of chemicals. They will then provide you with a price quote and set up a collection date and time. (Bruce Paulsrud and Phil Nixon, 10/98; revised 3/01.)

Self-Study CD-ROM Helps Producers, Grain Handlers Manage Stored Grain

For years, specialists from University of Illinois and Purdue University Extension have provided training sessions and study materials that help producers and grain handlers understand and effectively manage stored-grain pests.

Recently, experts from both universities combined efforts to produce a self-study CD-ROM that provides a convenient way for both client groups to learn about stored-grain pest management at their own pace, either at home or at the office.

The CD, which is easy to install and use on a personal computer, contains movies with narration, photos, and text developed by Linda Mason from Purdue and Bruce Paulsrud, Don White, and Phil Nixon from the U of I.

"The *Stored Grain Pest Management Self-Study CD* was primarily designed as an educational tool to help Illinois pesticide applicators prepare for certification exams," Paulsrud said. He added that "in addition to learning how to properly apply fumigants and protect themselves during application, users will be able to identify and better understand major pests such as insects, molds, and rodents."

Mason stressed that "because the CD covers all areas of Integrated Pest Management, including such topics as bin cleaning, temperature and moisture management, pest detection and identification, and mycotoxins, it is very appropriate for producers and grain handlers in all Midwest states."

"S.L.A.M (Sanitation, Loading, Aeration, Monitoring), a postharvest IPM strategy that maximizes grain quality and profits, is the cornerstone to maintaining

postharvest quality and is the basis for a solid grain-management program," Mason said. "This CD examines proactive and preventative S.L.A.M. steps every grain handler can put to use immediately."

Paulsrud noted that the system requirements for the CD include a Pentium-based, or equivalent, computer equipped with at least 32 MB of RAM, CD-ROM drive, sound card and speakers, Windows 98 or newer operating system, and Internet Explorer or Netscape version 4.0 or newer.

"Application technology, pesticide labels, and legal issues have changed considerably over the past 5 to 10 years, and we will experience more changes in the near future," Mason said. "Whether you're an experienced grain handler or new to the industry, this CD will be a valuable educational tool."

The *Stored Grain Pest Management Self-Study CD* (SP39-8-CD) costs \$30, plus shipping. To order, call 1-800-345-6087. MasterCard and VISA are accepted. (Bruce Paulsrud)

Online Extension Events Calendar and Publications Catalog

In November, University of Illinois Extension will unveil a new and improved Web site to help you quickly find the information and services that you want. In the meantime, this article describes two of the new features that are available to you right now.

Extension calendar. Save yourself a trip or a phone call and search for upcoming Extension programs anytime, day or night. From the main University of Illinois Extension Web site (www.extension.uiuc.edu), click on "Extension Calendar." Use the keyword search feature or scan

the topic areas to quickly find an educational program of interest. Narrow (or widen) your search results by entering your zip code and the maximum distance you are willing to travel. Each program includes the time, date, and location of the event, along with a program description and whom to call for more information or to register. Most regional and statewide winter programs will be posted to the calendar in early October.

Publications catalog. How many times have you said, "I wonder where I can find more information about ...?" Hopefully, you contact your local University of Illinois Extension office and pose the question. However, if questions like this emerge or reemerge at inconvenient times, don't be discouraged and don't delay, go to www.PublicationsPlus.uiuc.edu.

The Publications Plus online catalog includes publications available from University of Illinois Extension and its "parent," the College of Agricultural, Consumer and Environmental Sciences. Use the keyword search feature or browse any of the nine publication categories: Agriculture, Commercial Horticulture, Dollars & Sense, Family Matters, Gardening, Healthy Living, Instructional Materials, Leadership & Community, Science & Environment, and Teaching Tools.

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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

CALYPSO 4F & 70WP (thiacloprid)—Bayer Crop Science—Proposed to EPA to register this new active ingredient for insect control in cotton and pome fruits. The comment period expired 8-18-03. (FR, vol. 68, 7-18-03) [insecticide]

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

EXPERT (atrazine/s-metolachlor/glyphosate)—Syngenta—A three-way combination herbicide, registered for use on corn and grain sorghum.

OUTLAW (dicamba/2,4-D)—Albaugh—A new formulation for use on pastures, rangelands, preharvest wheat, and fallow ground. [herbicide]

PROPANIL—Dow AgroSciences/Rice Co.—Due to the high cost of reregistration, the companies have requested EPA to cancel voluntarily the use on spring wheat, oats, spring barley, and durum wheat, effective 7-28-03. (FR, vol. 68, 6-27-03)

PROTEGE (azoxystrobin)—Syngenta—A new formulation for use on sunflowers, cereals, and rice. [fungicide]

STALWART C (metolachlor)—Sipcam Agro—A new formulation for use on corn. [herbicide]

Fruit/Vegetable

ALLI-UP (diallyl sulfides/DAD)—Platte Chemical Co.—A new, naturally occurring product, found in Allium crops, being developed as a soil fumigant to control white rot on garlic, leeks, onions, and shallots. It is a 90% liquid.

ENVIDOR (spirodiclofen)—Bayer—Proposed to EPA to register this new active ingredient to control mites on citrus, pome fruits, stone fruits, and tree nuts. The comment period expired 8-8-03. (FR, vol. 68, 7-9-03)

KRYOCIDE (cryolite)—Cerexagri—Label additions include the removal of restrictions to use on Brussels sprouts and kohlrabi in California, to add pumpkins and winter squash to the label, to revise the mixing rate on citrus, and to revise the spray interval on grapes. [insecticide]

NUT GUARD V/FRUIT GUARD V (Indian meal moth granulosis virus)—Agri Vir LLC—EPA approved an application to register this new active ingredient to control the Indian meal moth on dried fruit, shelled and unshelled nuts, and in cracks and crevices in processing, packing, and storage areas. (FR, vol. 68, 5-30-03)

SONATA (fenamidone/mancozeb)—Bayer Crop Science—A new combination fungicide being developed for use on potatoes to control early and late blight.

Turf/Ornamental

FENVALERATE—Sumitomo/Bayer Environmental Sciences—EPA received a notice from the manufacturer to cancel the registration for this product. The comment period expired 8-11-03. (FR, vol. 68, 7-11-03) [insecticide]

FORBID (spiromesifen)—Bayer Environmental Sciences—Being developed to control various insects and mites on shrubs, flowers, and trees.

PRO STAR (flutoloniol)—Bayer Environmental Sciences—Added to their label the control of rhizoctonia and rust in ornamental plants. It can be used in shade houses, in greenhouses, and on outdoor containers and field-grown ornamental nursery stock.

SUREGUARD (flumioxazin)—Valent—A new formulation for pre- and post-emergence weed control in woody ornamentals.

TRI STAR (acetamiprid)—Nippon Soda—The company has granted Cleary Chemical Corp. exclusive U.S. marketing rights for this product in the greenhouse, nursery, and ornamental markets. [insecticide]

Structural

BAYTEX (fenthion)—Bayer—The company has proposed to EPA to cancel voluntarily the use of this product by 6-30-04, with use until 11-30-04. The comment period expired 7-29-03. (FR, vol. 68, 5-30-03) [insecticide]

QUICK BAYT (imidacloprid)—Bayer Animal Health—A new fly bait being introduced this year.

ZYROXA TERMITE BAIT (lufenuron)—Syngenta—An insect-growth regulator being developed as a ready-to-use termite bait.

Many

ACARITOUCH (propyleneglycol mono-laurate)—Toagosai Co.—Proposed to EPA to register this new active ingredient to control mites on a variety of food crops and ornamental plants. The comment period expired 6-30-03. (FR, vol. 68, 5-30-03)

ACEPHATE 77WP—United Industries—A new formulation for use on tobacco, peanuts, vegetables, cotton, ornamentals, turf, and noncrop areas. [Insecticide]

CLUTCH (clothianidin)—Arvesta—The company has marketing and development rights to this Bayer product for foliar and soil uses in North America. Registration is expected for next year on pome fruits. It is also being developed for use on grapes, vegetables, turf, and ornamentals. [insecticide]

DISCOVER (clodinafop-propargyl)—Syngenta—Added to their label the control of green and yellow foxtail at lower rates.

DISTANCE (pyriproxifen)—Valent—Added to their label the control of euonymus scale, fungus-gnats, and shore flies and the suppression of mealy bugs.

KANEMITE 15 SC (acequinocyl)—Arvesta—Proposed to EPA to register this new active ingredient for insect control on ornamentals, almonds, pistachios, citrus, pome fruits, and strawberries. The comment period expired 8-18-03. (FR, vol. 68, 7-18-03) [insecticide]

METHOPRENE—Wellmark Int'l.—EPA has revoked all residue tolerances for this product and given it an exemption from residue-tolerance requirements. (FR, vol. 68, 6-11-03) [insecticide]

OBERON (spiromesifen)—Bayer Crop Science—Being developed to control various insects and mites on corn, cotton, vegetables, fruit crops, and ornamentals.

ORYZA (oryzalin)—Ag Venture, Inc.—A new formulation for preemergence weed control in fruit trees, nut crops, and ornamentals.

PLEA/S-1812 (pyridalyl)—Sumitomo Chemical Co.—A new insecticide being developed to control lepidoptera insects and thrips on vegetables, field crops, and fruit trees. It has a new mode of action.

PONCHO (clothianidin)—Bayer Crop Science—Received EPA registration for use as a seed treatment on corn to control cutworms and rootworms. It is being developed for use on numerous crops.

SONATA (Bacillus primilus strain QST 2808)—Agra Quest—EPA established a

temporary exemption from residue-tolerance requirements for this biological fungicide on all agricultural commodities. Expires 6-30-06. (FR, vol. 68, 6-18-03)

TERRA CYTE (peroxide)—Bio Safe Systems—A new fungicide–algaeicide granule that is applied to the soil, potted plants, propagation flats, liners, and turf for the control of moss, algae, slime molds, and liverwort.

UP-CYDE 2.5EC (cypermethrin)—United Phosphorous—A new formulation developed for use on cotton, cole crops, lettuce, bulb vegetables, and pecans. [insecticide]

Other

BASF—The company has opened a new fungicide-production facility in Brazil to produce Boscalid and Pyraclostrobin.

GUARDIAN (ethaboxam)—LG Life Sciences—This South Korean company has given Sumitomo marketing rights for this fungicide worldwide, with the exception of South Korea. It is primarily being used on grapes and potatoes.

MAKHTESHIM AGAN—The company has purchased from Cedar Chemical Co. product registrations it held for metolachlor, pendimethalin, 2,4-DP, and prodiamine.

SOREX—The company has signed a letter of intent to acquire worldwide marketing rights and registration for Syngenta's Ratak (difenacourin) rodenticide products.

UNITED PHOSPHOROUS—The company has purchased the worldwide marketing rights to Surflan (oryzalin) herbicides from Dow AgroSciences.

(Michelle Wiesbrook, unless otherwise noted, adapted from Agricultural Chemical News, July and August 2003.)

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