



Regulatory Oversight in Biotechnology

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Whether you advocate or oppose the use of biotechnology in crop production, it is important to understand what biotechnology provides and how it is regulated. This article defines the major ways in which biotechnology is being applied to augment pest-control options in crop production. More importantly, it provides follow up for several issues that surfaced over the past few years and summarizes the current regulatory process.

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Crop Protection via Biotechnology

Herbicide-tolerant crops. Weed control is often the largest and most consistent challenge in crop production. For this reason, scientists have applied biotechnology to create crops that are resistant to certain herbicides. Herbicide-tolerant crops contain new genes that allow the plants to tolerate these herbicides. The most common herbicide-tolerant crops (cotton, corn, soybeans, and canola) are those that are resistant to glyphosate, a herbicide effective against many grass and broadleaf weeds.¹

Plant-incorporated protectants (PIPs). Some plants and other organisms naturally contain proteins or other chemicals that provide natural defense against pests. Such substances can also be introduced to plants through either the conventional breeding of sexually compatible plants or techniques of modern biotechnology. For example, by transferring specific genetic material from a bacterium to a plant such as corn, scientists can create plants that produce pesticidal proteins or other chemicals that the plant could not previously produce. The plant's modified DNA then expresses pesticidal properties by producing a pesticidal protein that is toxic when ingested by specific insect pests.¹

Genetically modified microbial pesticides. Genetically modified microbial pesticides are organisms—either bacteria, fungi, viruses, protozoa, or algae—whose DNA has been modified to express pesticidal properties. The modified microorganism generally performs as a pesticide's active ingredient. For example, certain fungi can control the growth of specific types of weeds, while other types of fungi can kill certain insects. These products are typically applied in a spray solution.¹

Biotech Regulations

Before commercialization, genetically engineered plants/organisms must conform to standards set by statutes, such as state seed-certification laws; the Federal Food, Drug, and Cosmetic Act (FFDCA); the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); the Toxic Substances Control Act (TSCA); and the Federal Plant Pest Act (FPPA).² Depending on the new trait or organism and its end use, as many as three federal agencies may be involved in the regulatory process (Table 1)—the U.S. Food and Drug Administration (FDA), Environmental Protection Agency (EPA), and Department of Agriculture (USDA).



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Table 1. Role of federal regulatory agencies

New trait/organism	Regulated by	Reviewed for
Insect or viral resistance in food crop	USDA	Safe to grow
	EPA	*Safe for the environment
	FDA	Safe to eat
Herbicide tolerance in food crop	USDA	Safe to grow
	EPA	New use of companion herbicide
	FDA	Safe to eat
Herbicide tolerance in ornamental crop	USDA	Safe to grow
	EPA	New use of companion herbicide
Modified oil content in food crop	USDA	Safe to grow
	FDA	Safe to eat
Modified flower color in ornamental crop	USDA	Safe to grow
Modified soil bacteria to degrade pollutants	EPA	Safe for the environment

*EPA is charged with ensuring that pesticides (including PIPs) pose no reasonable risk of harm to humans or the environment. Thus, the EPA effectively takes the lead in a PIP food-safety review.

FDA. As a part of the Department of Health and Human Services, and acting under the authority of the FFDCFA, the FDA regulates foods and feed derived from new plant varieties. FDA policy is based on existing food law and requires that genetically engineered foods meet the same rigorous safety standards as other foods. This policy treats substances intentionally added to food through genetic engineering as food additives if they are significantly different in structure, function, or amount than substances currently found in food. Developers must demonstrate, in a food additive petition, that a reasonable certainty of no harm would come from the consumption of a proposed new food, ingredient, or additive. Many food crops being developed with biotechnology do not contain substances that are significantly different from those already in the diet and thus do not require premarket approval.²

Currently, developers of food and feed developed through biotechnology participate in a *voluntary* consultation program with FDA. In the premarket consultation, FDA advises developers if a food additive petition is appropriate for the proposed product. To date, all such food and feed

marketed in the United States have gone through the consultation program before entering the market.³

In early 2001, the FDA issued a proposed rule that would *require* developers to notify FDA at least 120 days in advance of their intent to market a food or animal feed developed through biotechnology and to provide information showing that the product is as safe as its conventional counterpart. FDA also proposed to increase the transparency of the agency's review process for such foods.³ During the 30-day, public comment period, the proposed rule received about 120,000 comments. It has not yet been finalized.

EPA. According to EPA,¹ FIFRA requires thorough evaluation of proposed pesticides to ensure that the pesticide poses no unreasonable risk of harm to human health or the environment. For genetically modified plants, EPA considers many factors regarding plant-incorporated protectants, including (1) studies assessing the risks to human health, (2) studies assessing risks to nontarget organisms and the environment, (3) the potential for gene flow, and (4) the need for pest-resistance management plans.

Pesticides that pass EPA's evaluation under FIFRA are granted a license or registration permitting their sale and use according to the requirements set by EPA to protect human health and the environment. In making regulatory decisions, EPA evaluates the risks of pesticide use and balances these risks with the benefits derived from pesticide use.

USDA. Within USDA, the Animal and Plant Health Inspection Service (APHIS) is responsible for protecting U.S. agriculture from insects, weeds, and plant and animal diseases. Under the authority of the FPPA, APHIS provides procedures for obtaining a permit or for providing notification before introducing a regulated organism in the United States. Regulated organisms are considered to be organisms and products altered or produced through genetic engineering which are, or could become, pests. The regulations also provide for a petition process for determining nonregulated status. After a determination of nonregulated status has been made, the organism (and its progeny) no longer requires APHIS review for movement or release in the United States.²

Notable Biotech Events

Since the first version of this article was written in 1999 (*Illinois Pesticide Review*, 4:1999), a number of events and regulatory actions have occurred, prompting this revision. Some of the more notable events are explained:

October 2000: Following reports from a consumer group that StarLink germ plasm was found in taco shells, Aventis canceled EPA registration of StarLink (containing *B.t.* protein Cry9C) corn. Because of questions about Cry9C's potential to cause allergic reactions, StarLink had not been approved for food consumption. However, it had been approved for livestock feed and industrial uses. Communication failures and faults in the system allowed StarLink to enter the food supply. "The major lesson which should be learned from this event is that

regulators should, in general, not approve varieties for one use but not another [for example, split registration] unless the system is prepared to carry out the necessary segregation."⁴ The EPA no longer approves split registrations.⁴

October 2001: After several years of controversy and research regarding the threat of *B.t.* (Cry1Ab protein) corn to monarch butterflies, EPA extended registration for *B.t.* corn for 7 more years. EPA's conclusion that "*B.t.* corn does not harm butterfly populations" was based on a comprehensive review of scientific literature published in the *Proceedings of the National Academy of Sciences*.⁵

December 2002: Following the introduction of glyphosate-resistant soybean varieties in 1996 and corn hybrids in 1998, several weed scientists reported cases of glyphosate-resistant and -insensitive weeds in the United States.⁶

February 2003: EPA approved Monsanto's YieldGuard® Rootworm (MON 863 with *B.t.* protein Cry3Bb1) corn. An EPA press release⁷ stated: "Today's action is based on a thorough and comprehensive scientific and regulatory evaluation by EPA. It also builds upon a multi-year reassessment performed by the Agency on all currently available *B.t.* plant-incorporated protectants regulated by EPA which was completed in October 2001. As with all similar products, EPA has approved MON 863 for time-limited use which will be subject to reevaluation in several years." YieldGuard® Rootworm hybrids will be available for the 2003 planting season, and according to Monsanto press releases, the trait also is approved in Canada⁸ and Japan.⁹

No "Silver Bullets," No "Absolute Food Safety"

Despite producers' desire for sustained, highly effective pest-control options and consumers' and producers' desire for a guarantee that our food supply is 100% pure and safe, we have never—and probably will never—achieve either.

Clearly, insects, weeds, and plant pathogens have the ability to adapt to wide array of crop-protection strategies we use, including PIPs. Thus, a common goal for scientists, producers, and regulators is to help maintain the usefulness of all crop-protection strategies, including biotechnology traits, by implementing practical resistance-management plans based on the best available science.

Because "zero risk" and "absolute safety" are impossible to achieve, the key regulatory agencies have defined "reasonable certainty of no harm" as the standard in evaluating food safety. The common goal for scientists, producers, and regulators is to use the best available science and processes to protect our food supply.

By its very nature, science pushes the envelope of what is possible and what is understood. As individual observers, we can not expect to keep up with the wide range of technologies and products that we encounter each day; the science simply evolves too quickly. Although we may feel uncertain, we should find comfort in the fact that the science and regulation of biotechnology is debated^{10, 11, 12, 13} and guided by many specialized regulators and public and private scientists. Via the Internet, nonspecialists have more opportunities than ever to learn about the issues and provide constructive input.

Regulatory agencies are moving toward a more transparent debate process and doing a better job of collecting and *considering* diverse input. In short, although not perfect, the regulatory process does promote input and debate, which leads to evolution of thought and law.

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(Bruce E. Paulsrud)

Pesticide Safety Education (PSE) Program Steering Committee

The U of I Pesticide Safety Education Program is pleased to announce the creation of a five-member steering committee. You may not be familiar with the PSE Program, but most likely you are familiar with a significant part called PAT, or Pesticide Applicator Training.

No, we did not change the program's name to improve our image or "reinvent" ourselves. In fact, we did not change the name at all. For many years, we have used the Pesticide Safety Education Program title on our Web site (www.pesticide.safety.uiuc.edu) and in our annual reports. As the title suggests, the PSE team provides programs and service beyond the familiar pesticide applicator training clinics. We collaborate with a wide range of Extension professionals across the state to provide pesticide and integrated pest management education for homeowners, Master Gardeners, producers and their employees, garden centers, and an array of agricultural and horticultural clients.

A ship needs a good rudder

To its benefit, the group of PSE specialists represents three departments; and each team member offers different expertise, experiences, and perspectives. Although the program mission may seem straightforward, a wide range of opportunities and challenges arise. Thus, the steering committee serves in program administration and advisory capacities.

The steering committee members listed here were selected from within the College of Agricultural, Consumer and Environmental Sciences, based on two main criteria: (1) familiarity with the program and its mission and (2) ability to represent the interests of his/her discipline, associated clientele, and department.

• **Loren Bode**, committee chair and Department of Agricultural Engineering representative

• **Dan Nelson**, off-campus Extension representative

• **Kevin Steffey**, Department of Crop Sciences representative

• **John van Es**, Extension administration representative

• **Tom Voigt**, Department of Natural Resources and Environmental Sciences (NRES) representative

PSE Program team includes

Patty Bingaman, PAT program facilitator; NRES: Coordinates commercial PAT clinics. Conducts commercial clinic pre-registration and PAT publication distribution. Maintains financial accounts, develops new data bases, and prepares special reports and brochures. Co-coordinates acquisition, reprinting, and marketing of PAT study material.

Jean Miles, PAT office assistant; NRES: Helps handle telephone questions and registration. Collects registration and publication data. Fulfills mail orders for educational materials and assists in other operations within the PAT office.

Mark Mohr, communications coordinator; Extension specialist in application equipment, Department of Agricultural Engineering: Provides subject-matter expertise and training in pesticide application equipment and calibration. Conducts special aerial-calibration clinics and pesticide drift-reduction programs. Coordinates the development of electronic training materials. Manages the PAT Web site. Maintains and coordinates storage of PAT supplies and equipment.

Phil Nixon, reporting coordinator; Extension specialist in entomology, NRES: Provides subject-matter expertise and training in entomology. Prepares grant proposals, state and federal reports, and other reports and summaries. Co-coordinates PAT study material activities; Commercial PAT support trainers.

Structural pest-control liaison with the Illinois Department of Public Health.

Bruce Paulsrud, private PAT coordinator; Extension specialist in plant pathology, Department of Crop Sciences: Provides subject-matter expertise and training in plant pathology. Coordinates the private PAT program. Has primary responsibility for producing and updating private applicator training materials. Facilitates the flow of information from USEPA and Illinois Department of Agriculture. Co-coordinates Illinois's Worker Protection Standard program.

Michelle Wiesbrook, newsletter coordinator; Extension specialist in horticulture, NRES: Provides subject-matter expertise and training in horticultural weed science. Collects and organizes newsletter information and ensures its timely publication. Facilitates establishment and collection of supportive data related to weed science. Co-coordinates Illinois's Worker Protection Standard Program.

Off-campus Extension educators and unit leaders: Each year, nearly 50 Extension professionals from across the state contribute considerable time and energy in conducting the private and commercial PAT clinics. They represent many different disciplines and teams and are a vital part of the University of Illinois Pesticide Safety Education Program.

To learn more about the PSE, who is involved, and what we do, view our annual report at <http://www.pesticide.safety.uiuc.edu/about.htm>.

(Bruce Paulsrud)

Unwanted Agri-chemicals: Make a "Clean Sweep"

The Illinois Department of Agriculture (IDoA) will hold two Clean Sweep collections in June, enabling residents of eight counties to dispose of unwanted agrichemicals for free.

"Clean Sweep provides an excellent opportunity to go through barns and storage sheds and dispose of unneeded pesticides that could pose a safety hazard,"

Scott Frank, IDoA bureau chief of environmental programs, said. "The program is free and the state of Illinois will assume liability for the proper disposal of all agrichemicals collected."

Clean Sweep is responsible for safely disposing of more than 300,000 pounds of unwanted agrichemicals since its inception in 1990. The program is funded through a grant from the U.S. Environmental Protection Agency.

Participants must register the products they want to get rid of by May 9. Registration is necessary to give the waste-

disposal contractor ample time to prepare for the different kinds of materials. Forms are available by calling IDoA's pesticide hotline at (800)641-3934 or visiting one of the program sponsors. Forms should be returned before the deadline to the participant's local Extension unit.

After returning these forms, participants will be mailed a reservation card indicating the date, time, and location of the collection.

The accompanying list gives the names and addresses of program sponsors where registration forms may be obtained.

(Adapted from news release dated March 17, 2003, on IDoA Web site: <http://qqq.FE.Arrw.il.ua/nwqaewla/e031703.hml>.)

McLean, DeWitt, Piatt, Macon, and Moultrie counties

McLean County Farm Bureau
2301 W. Market St.
Bloomington, IL 61704-5147

McLean County Soil and Water Conservation District
402 N. Kays Dr.
Normal, IL 61761

McLean County Extension Unit
402 N. Hershey Rd.
Bloomington, IL 61704

DeWitt County Farm Bureau
Highway 54, West
Clinton, IL 61727-0517

DeWitt County Soil and Water Conservation District
P.O. Box 617
Clinton, IL 61727

DeWitt County Extension Unit
P.O. Box 347
Clinton, IL 61727

Piatt County Farm Bureau
427 W. Marion, P.O. Box 223
Monticello, IL 61856-0223

Piatt County Soil and Water Conservation District
4005 Bear Lane
Monticello, IL 61856

Piatt County Extension Unit
210 S. Market St.
Monticello, IL 61856

Macon County Farm Bureau
1150 W. Pershing Rd.
Decatur, IL 62526-6205

Macon County Soil and Water Conservation District
4004 College Park Rd.
Decatur, IL 62521

Macon County Extension Unit
2535 Millikin Parkway
Decatur, IL 62526

Moultrie County Farm Bureau
1102 W. Jackson St.
Sullivan, IL 61951-1030

Moultrie County Soil and Water Conservation District
1412 S. Hamilton
Sullivan, IL 61951

Moultrie/Douglas Extension Unit
122 S. Walnut St.
Arthur, IL 61951

Heartland of Illinois Resource Conservation and Development
4004 College Park Rd.
Decatur, IL 62521

Franklin, Williamson, and Johnson counties

Franklin County Farm Bureau
Rt. 3, P.O. Box 457
Benton, IL 62812-0457

Franklin County Soil and Water Conservation District
711 N. DuQuoin St.
Benton, IL 62812

Franklin County Extension Unit
1212 Rt. 14 West
Benton, IL 62812

Williamson County Farm Bureau
1517 E. DeYoung
Marion, IL 62959-5013

Williamson County Soil and Water Conservation District
712 N. Carbon St.
Marion, IL 62959

Williamson County Extension Unit
1306 N. Atchison Ave., Suite A
Marion, IL 62959

Johnson County Farm Bureau
809 N. First, P.O. Box 335
Vienna, IL 62995-0335

Johnson County Soil and Water Conservation District
807 N. First St.
Vienna, IL 62995

Johnson County Extension Unit
208 E. Main, P.O. Box 158
Vienna, IL 62995

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

DISTINCT (diflufenzopyr/dicamba)—*BASF*—Now registered for use on popcorn; the replant interval has been shortened to 30 days. [herbicide]

EXTREME (imazethapyr/glyphosate)—*BASF*—Received an additional label on soybeans to apply in the fall before the ground freezes. [herbicide]

LIGHTNING (flumetsulam/thifensulfuron/rimsulfuron)—*BASF*—Added to their label the tank mix with Callisto and Distinct for use on corn. [herbicide]

OPTION (fenoxaprop-ethyl)—*Bayer*—Added to their label over 10 new tank-mix products for use on corn, as well as several new weeds controlled.

SCEPTER (imazaquin)—*BASF*—Received an EPA registration to apply in the fall on soybeans grown in OH, IN, IL, MO, and KS. [herbicide]

Fruit/Vegetable

AUTHORITY (sulfentrazine)—*BASF*—Being developed for use on potatoes. [Herbicide]

BSP LIME SULFUR—Ag Formulators—Added to their label the control of big bud mites on hazelnuts.

ELEVATE (fenhexamid)—*Arvesta*—Added to their label the use on pistachios, suppression of powdery mildew on grapes, control of botrytis disease on canberries, and foliar use on bushberries. [fungicide]

ENVIDOR (spirodiclofen)—*Bayer*—Being developed for use on pome fruit, citrus and grapes to control pear psylla, scales, and other insects.

GERMINE (fenamidone/mancozeb)—*Bayer*—A new combination fungicide being developed for use on potatoes to control late blight.

PROLINE/INPUT (prothioconazole)—*Bayer*—A new fungicide being developed for use on cereals and canola.

RAPTOR (imazamox)—*BASF*—Received an expanded label to use on snap beans in ID, OR, and WA; and on English peas in IL, MN, and WI. [herbicide]

SEIZE 35WP (pyrproxifen)—*Valent*—A new formulation used as an insect-growth regulator on apples, pears, tree nuts, and stone fruits to control scale and other insects.

SERENADE (Bacillus subtilis QST 713)—*Agraquest*—Added to their label the use on broccoli and peppers. [fungicide]

Turf/Ornamental

APHISTAR (thiazamate)—*Dow Agro-Sciences*—As a result of the IR-4 Project, they can add to their label the use on fir trees. [insecticide]

ARDENT (dimethomorph)—*BASF*—Being developed for use on ornamentals to control downy mildew and other diseases.

AZADIRACTIN—As a result of the IR-4 Project, the manufacturers can add 19 more ornamental species to their label. [insecticide]

BIO SAVE 10 LP (Pseudomonas syringae strain ESC-10)—*Eco Science*—Deleted from their label the use on potatoes. [fungicide]

BORDEAUX—As a result of the IR-4 Project, the manufacturers can add to their label the use on Christmas trees. [fungicide]

CHIPCO 26-GT (iprodione)—*Bayer*—As a result of the IR-4 Project, they can add to their label the use on balsam. [fungicide]

CHLOROTHALONIL—As a result of the IR-4 Project, the manufacturers can add use on pines and euonymus to their label. [fungicide]

COMPASS (trifloxystrobin)—*Bayer*—As a result of the IR-4 Project, they can add the use on calamint to their label. [fungicide]

CYCLOCEL (chlormequat)—*Olympia*—As a result of the IR-4 Project, they can add to their label for this growth regulator the use on asters, coleus, Easter lily, sunflower, and zinnia.

DECREE (fenhexamid)—*SePro*—As a result of the IR-4 Project, they can add the use on lilies and daffodils to their label. [fungicide]

DIMENSION (dithiopyr)—*Dow Agro-Sciences*—As a result of the IR-4 Project, they can add to their label the use on Lily of the Nile and viburnum. [herbicide]

DURSBAN (chlorpyrifos)—*Dow Agro-Sciences*—As a result of the IR-4 Project, they can add to their label the use on African violet, azalea, geraniums, juniper, cyclamen, and rhododendron. [insecticide]

ENVOY (clethodim)—*Valent*—As a result of the IR-4 Project, they can add to their label the use on over 50 ornamental species. [herbicide]

FOSPHITE (potassium phosphate)—*JH Biotech*—A new fungicide to control

downy mildew, phytophthora, and pythium on ornamental plants, bedding plants, forests and Christmas trees.

GALLERY (isoxaben)—*Dow Agro-Sciences*—As a result of the IR-4 Project, they can add to their label the use on cypress, ferns, iceplant, hypericum and yarrow. [herbicide]

KOCIDE (copper hydroxide)—*Griffin*—As a result of the IR-4 Project, they can add to their label the use on hawthorne, holly, poinsettia, privet, and wandering jew. [fungicide]

MEDALLION (fludioxonil)—*Syngenta*—As a result of the IR-4 Project, they can add to their label the use on roses. [fungicide]

ORTHENE (acephate)—*Valent*—As a result of the IR-4 Project, they can add to their label the use on Boston daisy, dahlia, Shasta daisy, and verbena. [insecticide]

PENDULUM (pendimethalin)—*BASF*—As a result of the IR-4 Project, they can add 25 new ornamental species to their label. [herbicide]

PENDULUM AQUA CAP (pendimethalin)—*BASF*—This is a new micro-encapsulated formulation of this herbicide for use on turf. It has a higher concentration, no odor, and less potential for staining.

PENNANT MAGNUM (s-metolachlor)—*Syngenta*—As a result of the IR-4 Project, they can add to their label the use on blanket flower, fir, nandina, palm, pine, and sweet william. [herbicide]

PHYTON 27 (copper sulfate pentahydrate)—*Source Tech Biologicals*—Added to their label the control of bacterial leaf spot and alternaria.

PLATEAU (imazapic)—*BASF*—As a result of the IR-4 Project, they can add to their label the use on phlox and blackeyed susan. [herbicide]

QUICK SILVER (carfentrazone-ethyl)—*FMC*—A new formulation developed to control broadleaf weeds in ornamental lawns and established turfgrass.

SANIMTE (pyridaben)—*BASF*—As a result of the IR-4 Project, they can now add over 50 new ornamental species to their label. [insecticide]

SNAPSHOT (isoxaben/trifluralin)—*Dow AgroSciences*—As a result of the IR-4 Project, they can add to their label the use on palms and sedges. [herbicide]

SPECTRO (chlorothalonil/thiophanate-methyl)—*Cleary*—As a result of the IR-4 Project, they can add the use on phlox, dianthus, and roses to their label. [fungicide]

SURFLAN (oryzalin)—*Dow AgroSciences*—As a result of the IR-4 Project, they can add to their label the use on dianthus, lavender, ferns, speedwell, and lagerstroemia. [herbicide]

TAME (fenpropathrin)—*Valent*—As a result of the IR-4 Project, they can add to their label the use on ash, crabapples, locust, hydrangae, and spirea. [insecticide]

TERRA-CYTE (sodium carbonate perhydrate)—*Bio Safe Systems*—EPA approved an application to register this new active ingredient as an algaecide and fungicide for use in ornamental plants and turf (*FR*, vol. 67, 12-4-02)

TREFLAN (trifluralin)—*Dow AgroSciences*—As a result of the IR-4 Project, they can add 10 new ornamental species to their label. [herbicide]

ULTIFLORA (milbemectin)—*Gowan/Sankyo*—Registration on ornamentals is expected early this year. [insecticide]

Structural

BAYGON (propoxur)—*Bayer*—The company plans to phase out this product as the inventories are depleted. [insecticide]

SEVIN (carbaryl)—*Bayer*—The company has deleted from their label the use on poultry. (*FR*, vol. 67, 12-6-02) [insecticide]

Many

CALYPSO (thiacloprid)—*Bayer*—Being developed for use on cotton and stone fruit. [insecticide]

CLUTCH/PONCHO (clothiadin)—*Arvesta/Bayer*—Being developed for use as a foliar insecticide on apples and pears and a seed treatment on canola and corn.

GNATROL DG (B.t.)—*Valent*—Added to their label the control of mushroom fly larvae in mushroom compost.

LEXX-A-PHOS (dipotassium phosphate)—*Foliar Nutrient Inc.*—EPA approved an application to register this new active ingredient to control certain fungal diseases on woody ornamentals, turfgrass, and nonbearing fruit and nut trees.

OBERON/BSN-2060 (spiromesifen)—*Bayer*—A new insecticide/miticide being developed to control mites and whiteflies on cotton, vegetables, strawberries, pome fruit, ornamentals, and corn.

PITON (acequinoyl)—*Arvesta*—Being developed as a miticide on almonds, citrus, pome fruits, and ornamentals.

PRISM (clethodim)—*Valent*—Added to their label the use on leafy brassica crops, mint, and spinach. [herbicide]

STORCIDE (cyfluthrin/chloropyrifos-methyl)—*Gustafson*—A new stored-grain insecticide to be used on grain stored in grain bins and warehouses.

TALSTAR (bifenthrin)—*FMC*—Added to their label the use on home perimeters, ornamentals, lawns, and home vegetable gardens. [insecticide]

TRIFLOXYSULFURON—*Syngenta*—A new herbicide being developed for use on stone fruits, tree nuts, citrus, cotton, sugarcane, tomatoes, and turf.

VISTA (fluroxypyr)—*Dow AgroSciences*—A new herbicide being developed to control broadleaf weeds and grasses in noncrop areas.

Other

BASF—The company will eliminate about 300 R&D jobs in its crop-protection business. It will get rid of its research facilities in Greenville, MS; Princeton, NJ; and Ebina, Japan, by the end of the year.

BECKER UNDERWOOD—The company has purchased the Sepiret brand name of seed coatings and colorings from the European company Seppic, a subsidiary of Air Liquide.

CEREXAGRI—The company will have exclusive U.S. distribution rights to Assail (acetamiprid) insecticide, made by Nippon Soda of Japan. The product controls sucking insects in vegetable crops.

CGNS—This is a joint-venture company of Calliope, Gharda, Nufarm, and Stahler. They have purchased Griffin's isoproturon (Arelon) herbicide business.

NATIONS AG—The company has acquired the chlorothalonil fungicide business from Griffin LLC. Included are the branded products Equus for the agricultural industry and Concord for the turf and ornamental business.

VECTOBAC (B.t.)—*Valent BioSciences*—Added to their label the control of aquatic midges.

2003 INSECTICIDE, HERBICIDE, FUNGICIDE QUICK GUIDE—This revision is the best quick reference available! Pesticides are cross-referenced to registered use; pests controlled by each product are listed in alphabetical order. A quick answer can be readily obtained to questions such as what can be used to control mites on corn, or pigweed in cucumbers, or powdery mildew on apples? Available from Thomson Publications, P.O. Box 9335, Fresno, CA 93791; or call (559)266-2964, fax (559)266-0189, or see www.agbook.com; \$25.95 each plus tax, if applicable, and \$5.50 for shipping.

(Michelle Wiesbrook, unless otherwise noted, adapted from *Agricultural Chemical News*, January and February 2003.)

The Future of Atrazine

You may have heard that there will soon be new requirements for atrazine use. This is true, but the details are still being finalized between the product manufacturers and the USEPA.

The use of atrazine in the future (probably beginning in 2004 at the earliest) will focus on proper utilization of the product in sensitive watersheds. An Interim Re-registration Eligibility Decision (IREED) that is being negotiated between the atrazine registrants and USEPA will establish guidelines for atrazine use if water-quality tests indicate that atrazine and its metabolites are showing up in unacceptable levels in

streams and water bodies that are used for drinking water. If these atrazine and metabolite levels exceed 37.5 ppm, then steps can be instituted in the watershed to restrict the use of atrazine. Any restrictions would be coordinated through the Illinois Department of Agriculture, the agency in charge of regulating pesticides in Illinois.

The bottom line is this: Proper management and utilization of atrazine will be critical to ensure its continued safe and effective use, and producers and dealers in sensitive watersheds will need to be well-informed on their responsibilities to control unacceptable levels of atrazine and its metabolites from reaching sources of drinking water.

(Jean Trobec, Illinois Fertilizer & Chemical Association)

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