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Bee Precautionary Labeling Statements

The United States Environmental Protection Agency (EPA) has changed its labeling statements for pesticides toxic to bees, including honey bees, alfalfa leaf-cutting bees, alkali bees, and other native and non-indigenous pollinating insects important to crop production. Although the labeling statements focus primarily on protecting honey bees, EPA feels that if honey bees are protected then other bee species and other pollinators are also protected.

Background

To help determine whether pesticide products used outdoors pose risks of bee mortality, EPA generally requires that acute toxicity data on bees be submitted with a registration application. Depending on results of the acute study, EPA may require additional residual toxicity data. EPA pesticide-labeling regulations require that pesticides toxic to pollinating insects bear appropriate label cautions. In the 1980s, EPA published a policy describing a set of standard bee precautionary labeling statements believed appropriate where results from the bee data indicated toxicity. These statements identified a product as either "toxic" or "highly toxic" to bees and warned against application if use would result in residues in blooming crops or weeds when bees are visiting the treated area.

The current standard labeling statements were introduced in the early 1980s, but controversy has continued among beekeepers, growers, commercial applicators, and state regulators about the adequacy of these statements. Many beekeepers believe the statements are not adequately protective, while many growers believe the statements are overly restrictive and prevent them from managing pests adequately during the bloom period. Commercial applicators are concerned about the risks to themselves from such practices as flying at night when bees are less active. State regulators believe that the statements need to be clarified regarding the obligations of applicators with respect to bees.

In response to these concerns, EPA has extensively reviewed and discussed these issues with interested groups. It has also received formal resolutions from the American Beekeeping Federation and the Association of American Pesticide Control Officials.

EPA has decided to revise its policy on bee precautionary labeling statements and to develop new language believed appropriate for bee protection. EPA believes these revisions will help to make the labeling clearer and more easily understood. Once implemented, these changes should help to improve bee protection and to resolve some significant concerns that have been raised. The revised policy and steps for its implementation are described here.

Precautionary label statement

EPA believes that the following language constitutes an appropriate label caution for pesticides toxic to bees. All pesticides registered for outdoor uses to which bees or other

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pollinating insects may be exposed, and that meet criteria of being toxic to bees, should bear the following labeling statements:

*This product is toxic to bees exposed to treatment and for X hours/days** following treatment. Do not apply this pesticide to blooming, pollen-shedding or nectar-producing parts of plants if bees may forage on the plants during this time period. The X hour/day limitation does not apply if the applicator operates in a state with a formal, state-approved bee protection program, and the applicator follows all applicable requirements of the state-approved program designed to ensure that managed bees are not present in the treatment area during this time period.*

**The time period to be inserted is based on the bee residual toxicity data for the product submitted to the Agency. If no bee residual toxicity data are available, the time period should be at least 24 hours.

Explanation

EPA requires residual toxicity data to be generated by testing the maximum application rate of typical end-use products. At times, lower rates can provide effective pest control for users and may have the advantage of reduced time limitations for bee protection, compared to maximum rates. In cases for which the use of a product on blooming crops is important, registrants can register reduced-rate formulations if data indicate that residual toxicity to bees would be reduced enough to make applications practical.

Use of the labeling statements recommended by the 1980s policy requires the pesticide user to judge whether bees are "visiting" or "actively visiting" the treatment area. Where the revised language described in the new policy is used on a label, the user must judge whether or not one of several conditions applies that allows use. Use of a pesticide to treat a crop that is blooming, shedding pollen, or producing nectar would be allowable if (a) the period of toxicity stated on the label is short enough (for example, less than 12 hours) to allow evening or night application when bees will not be foraging; or (b) the application method (for example, soil incorporation) does not result in residues on "blooming, pollen-shedding, or nectar-producing parts of plants," so that bees are not exposed; or (c) the user participates in a state-approved plan for the protection of managed bees.

EPA wishes to balance pest-control needs with reasonable assurance that effective precautions to protect bees will be taken. The language providing for an alternative to a time-period limitation on use (that is, participation in a state-approved plan for bee protection) is intended to achieve this balanced result.

EPA recognizes that the period of toxicity specified in the revised statements may effectively prohibit the use of certain pesticides on blooming crops. However, the new labeling language also provides the option for users to follow a state program designed and operated to prevent the exposure of managed bees to toxic residues of pesticides. Under this option, users may be able to apply safely some products that the label would not otherwise permit.

EPA also recognizes that as a practical matter only managed bees can be protected through programs that rely primarily on notification to beekeepers and the opportunity for removing colonies from pesticide-use areas. However, other measures that states may choose to include in bee-protection programs (such as restrictions on application methods, timing, or specific use sites) can help to protect wild (feral) bees as well as managed colonies.

State bee-protection programs

A state program should be designed to prevent exposure of managed bees to toxic pesticide residues. EPA does not intend to set specific criteria or approve state programs. There are both regulatory and nonregulatory ways that states can pursue the basic goal of bee protection, and EPA recommends that states consider the following approaches, which one or more state programs are using.

In general, a state program should be proportionate to the level of bee-protection problems being experienced, and particularly it should be focused on pesticide/crop combinations with a recurring history of bee-kill incidents. Regulatory approaches can include requiring the registration of beekeepers and, in some cases, of growers. In such systems, notification of beekeepers may be mandatory, but the notification requirements may apply only to use patterns of particularly high risk to bees, for example, bloom periods for certain crops (for example, citrus). Another regulatory approach is for the state to require permits for using pesticides toxic to bees. Such permits may specify application practices to reduce risks to bees and include notification requirements. Some states have worked with registrants to tailor Special Local Need (FIFRA section 24 (c)) labels to improve bee protection for certain pesticide/crop combinations.

The majority of state bee-protection programs are based on voluntary participation in notification programs. EPA recognizes that notification of pending pesticide applications does not necessarily ensure bee protection because beekeepers may not be able to move vulnerable colonies. Some state agencies have found it useful to facilitate meetings between grower groups and beekeepers to improve mutual awareness of issues and encourage participation. In addition, educating pesticide users and crop consultants about pesticide hazards to bees and the availability of less toxic alternatives is an important part of any bee-protection program. Placing a specific time period of toxicity on the label should also make outreach efforts more effective by making it clear when a product may be applied safely with respect to bees.

Implementation

In each individual licensing proceeding, EPA expects each applicant for registration of new products to request adoption of the labeling statements in this notice, if appropriate. Registrants of currently registered products to which this notice is applicable should also take one of the following actions, if appropriate, as listed on EPA's Web site, www.epa.gov/ PR_Notices pr2000_ bee.pdf.

EPA requests that products released for shipment by registrants after *October 1, 2002,* bear labeling consistent with this notice. After October 1, 2002, EPA will monitor pesticide products to determine whether they are labeled in accordance with the regulation at 40 CFR 156.10(h)(2)(ii)(E). It is the responsibility of registrants to submit applications in a timely manner. Registrants should allow adequate review time for acceptance of amendments—which could be several months for EPA's review and additional time for states' reviews. After receiving approval for amended labeling of each product, registrants should submit the final, printed labeling in accordance with PR Notice 82-2 before distributing the product in commerce. *(Adapted from USEPA Draft Pesticide Registration Notice by Phil Nixon.)*

Educator Attends IPM PREP Course

A Pesticide Regulatory Education Program (PREP) entitled "Integrated Pest Management in Agriculture: Principles, Practice, and Policies" took place in East Lansing July 31 to August 3, hosted by Michigan State University (MSU).

An eclectic mix of representatives from 24 states plus the District of Columbia attended. Most participants represented their state's department of agriculture, while a few, like myself, came from Extension. This was a good opportunity to witness the interaction between these two agencies in different states. Such interaction is bound to generate some friction; but it was interesting to hear the representatives, from both sides, praise the cooperation between the groups rather than complain about its lack. Pesticide education is too vast an undertaking to be accomplished by a single agency, so cooperation between the contributors is crucial.

Speakers included representatives from EPA, USDA, industry (Monsanto and Gerber), and Michigan State University, plus a guest speaker from University of Minnesota, Ted Radcliffe. The intention in this course was to expose the attendees, especially those with little first-hand experience, to the fundamentals of IPM. Topics included an overview of the history of IPM, by Dr. Radcliffe, and a description of its components (sampling, thresholds, control methods).

One highlight was the General Accounting Office report assessing IPM, presented by Harold Coble. This report documents the success of the 1994 IPM initiative and details the goals for IPM implementation. Two salient points are that 71% of the total acreage of major crops had adopted some form of IPM by 2000 (as opposed to the 75% goal set in 1994) and that pesticide use increasd 4% (although a reduction was expected). The increase was due to replacing some pesticides with low label rates (sulfonylureas and imidazolinones) by others with much higher rates (Roundup). It should be noted that most major crops, including corn and soybeans, exceeded the 75% goal. The report also indicates that, effectively, no single agency is in charge of federal IPM efforts and that standard methods for measuring results have yet to be developed. The GAO recommended establishing effective department-wide leadership, coordination, and management for IPM efforts funded with federal money, as well as developing techniques to document the progress of IPM initiatives. Dr. Coble also presented the USDA response to this report, acknowledging the suggestions and outlining some of the USDA parameters used in IPM assessment, particularly the PAMS approach (prevention, avoidance, monitoring, and suppression), in which a farmer is supposed to adopt three of the four strategies for the farm to be considered under IPM.

Some IPM success stories and ongoing research from our hosts cheered up the sessions. Doug Landis (MSU) shared his work with Carabid beetles as generalist predators of weed seeds and biological control of purple loosestrife using *Galerucella calmariensis.* A field trip to the Kellogg Biological Station allowed us to witness several field projects involving various pest-management techniques, including some organic corn and soybean plots, a first for many of us.

Overall, the course offered a variety of perspectives on IPM and an excellent networking opportunity. The consensus was that, to promote IPM techniques and evaluate its success countrywide, a multi-agency approach is required, a daunting project that will involve great efforts in coordination. *(Pablo Kalnay, Extension Educator, IPM)*

Granular Spreader Calibration for Lawn Care

A fall application of fertilizer can improve a lawn's appearance and health in the coming year. If the lawn has problem winter annuals or certain perennials, the right granular herbicide can control them while they are susceptible seedlings and reduce the weeds next spring. Whatever the reason for fall spreading, or whenever you are spreading, your money goes farther if you get an accurate, uniform application.

Accurate spreader rates

Sometimes, a lawn-care product has directions for a few of the more common brands of lawn spreaders. Instructions might include what setting to use for a certain rate of product. However, the setting should be verified. Your spreader may not be listed; then you must determine what setting is needed.

The easiest way to check the application rate of a spreader is to apply a weighed amount of product to a known area. For drop spreaders, use 1,000 square feet; for rotary spreaders, use a larger area, about 5,000 square feet. Spread the product on the area and weigh what's left. The amount you applied is the difference. Some drop spreaders may come with a pan to collect the product while calibrating the spreader. This is convenient because then you won't spread the wrong amount of product on the lawn while you're calibrating the equipment.

If you want to avoid spreading anything until your spreader is calibrated properly, the spreader can be raised on blocks, and the wheels turned. Of course, if you have a rotary spreader, disconnect the spinner drive mechanism so you don't scatter the product. It would be messy, but worse than that it could be unsafe. If the wheels are turned at the right speed (the speed they would turn when really spreading) for the correct number of turns, you can collect the granules in a container, weigh them, and reuse them when spreading on the lawn. The formula for the number of turns for the wheels (to simulate 1,000 square feet) is

45,860/(wheel diameter in inches x swath width in inches) = number of wheel turns

So the process is to collect the product while turning the wheels the right number of turns; then weigh the product to see if the output is right. For adjustment, open or close the metering slide as needed and try it again until the spreader output is set right.

Uniform spreader patterns

A drop spreader is usually more precise and has a more uniform application pattern than a rotary spreader. Rotary spreaders cover a wide swath and thus cover a given area more quickly, but they can be less precise in uniformity and distribution. The first two steps to a good application are simple: (1) read and follow the spreader instructions, and (2) read and follow the product label.

Drop spreaders drop the product straight down. The pattern ends abruptly at the end of the spreader; so for a uniform application, be careful not to leave a gap between spreader swaths. Likewise, be careful not to overlap swaths when applying the full rate, or the overlapped strips get a double rate. Simple maintenance helps keep a drop-spreader pattern uniform. Keep all metering holes clean and unplugged, and keep rust or flaked paint from choking down the metering holes.

Patterns for a rotary spreader are more difficult to assess. One method is to lay out a row of shallow boxes (1- to 2-inches deep, like a pop or beer flat) at regular intervals, every 1 or 2 feet. Spread a pattern three times going the same direction, perpendicular over the line of boxes. Put the product caught in each box in a clear test tube, vial, or bottle; and keep the containers in the order the boxes were laid on the ground, left to right. The pattern should smoothly taper from nothing at the far left to maximum in the center and to nothing on the far right. If the pattern isn't smoothly tapered, follow the spreader manual to adjust the pattern if possible. The appropriate swath width should be to the point where the pattern is half what it is in the center. For example, if the center three or four bottles have material 2 inches deep, and the bottles at the 6-foot positions (6 feet to the left and right of the spreader centerline) have material 1 inch deep, the effective swath width is 12 feet.

Never leave a lawn-care product in an unlabeled container. Empty any container used for the pattern testing. Also, never reuse a container for anything else after it contains pesticide. Either clearly label all the boxes and jars you used during the tests and keep them locked in a safe place, or discard them in the trash.

With a little extra care, the performance of your spreader can be greatly improved. That means your lawn-care products can be applied more efficiently and therefore work better. The ultimate result is more response for your dollar and less wasted product, which is good for the lawn and the environment. *(Mark Mohr)*

Controlling Creeping Charlie with Borax

People are always looking for alternative pest-control methods. "Natural" controls are considered by many as more desirable than conventional pesticides. One such method that has increased in popularity with homeowners this summer is the use of 20-Mule Team Borax (yes, the laundry soap) to control creeping Charlie, or ground ivy (*Glechoma hederacea*), (yes, the invasive, perennial weed often found in a lawn or garden near you). In fact, Borax, which contains sodium tetraborate, a naturally occuring mineral, is now sold in some garden centers, as well as in its regular spot on the shelf next to the other detergents.

At first, this control tactic sounds simple. Borax is added to water according to a "recipe." The mixture is then sprinkled on creeping Charlie with a watering can. Charlie dies. Life is good. Unfortunately, it is not that simple and probably not a good idea.

Borax has its advantages, but they seem to be outweighed by the disadvantages.

Limited research has shown inconsistent results. Studies at Iowa State University (ISU) showed that Borax reduced a creeping Charlie infestation in turfgrass, but results were weather dependent. Studies in Wisconsin, however, showed it was not effective, due to soil conditions. ISU studies also found that Borax can injure turf and other plants as well, causing stunting and yellowing. Homeowners in Illinois have also reported yellowing and inadequate control.

There is little room for error with Borax applications: Too little results in poor control and too much in injury to surrounding plants. Yet there are a variety of "recipes," each source swearing that you must follow directions exactly.

How does it work? Borax contains boron, which plants need in minute quantities for healthy growth. However, more can be toxic. Creeping Charlie happens to be extremely sensitive to boron. The availability of boron in the soil is soil type and pH dependent. These factors affect the outcome of applying Borax (as in Wisconsin trials). No recipes I've found mention these important factors. Another problem with using Borax is that boron does not break down or dissipate as conventional weed killers do, so repeated or excessive applications can result in bare areas where no vegetation can grow.

One final reason not to use Borax is that it is not a registered pesticide. If you've heard of using vinegar for weed control, the same applies here. Although Borax may sound like a "natural," it may be harmful to children and pets. Mixtures should be kept out of their reach. Registered pesticides have been studied extensively and come with labels that tell you how to protect yourself and others. The Borax box tells you how to wash your clothes.

Creeping Charlie is difficult to control. Fortunatly, various control methods are available. Cultural practices first should be assessed and properly adjusted before turning to conventional registered herbicides. Before applying, you must consider many factors: Are weather conditions favorable? Is there any risk of drift onto nontarget plants? Are the weeds actively growing so that control will be optimized? When is this weed most susceptible to treatment? With any pesticide, always read and follow label directions: This is your best source of application information. Of course, pesticides cannot be used in every situation, so you may want to sharpen your hoe! Creeping Charlie can also be pulled by hand quite easily, but the rhizomes can persist in the soil. For more information about Charlie, click on http://www.ag. uiuc.edu/cespubs/hyg/html/200114e.html or contact your local Extension office. *(Michelle Wiesbrook)*

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

ATTRIBUTE (propoxycarbazone-sodium)–Bayer–This new postemergence herbicide will be marketed this year in Europe. It is used to control grassy weeds in cereals. It will be developed in the United States under the trade name Olympus.

BIRD SHIELD (methyl anthranilate)–Bird Shield Repellent Corp–EPA established an exemption from residue-tolerance requirements for this bird repellent on corn and sunflowers. *(FR,* vol. 66, 6-8-01)

SANLIT (simeconazole)–Sankyo–Being developed as a seed treatment to use on cereals, corn, and rice. [fungicide]

Fruit/Vegetable

ACROBAT (dimethomorph)–BASF–To cover a specific exemption, EPA extended timelimited residue tolerances on cucurbits grown in DE, IL, MI, and WI to control *Phytophthora* spp. They now expire 12-31-03. *(FR,* vol. 66, 7-19-01)

ADMIRE (imidacloprid)–Bayer–Added to their label the use on turnip tops. [insecticide]

CAPTURE (bifenthrin)–FMC–Being developed for use on citrus, celery, tomatoes, potatoes, and bananas. [insecticide]

COMMAND (clomazone)–FMC–Being developed for use on broccoli, mint, and peas. [herbicide]

ESTEEM ANT BAIT (pyriproxyfen)–Valent–Added to their label the use on bearing nut crops, nonbearing olives, stone fruits, and pistachios. [insecticide]

INDAR (fenbuconazole)–Rohm & Haas–Being developed for use on citrus, blueberries, cranberries, and peppers. [fungicide]

MILBEKNOCK (milbemectin)–Gowan–Being developed for use on pome fruits, citrus, stone fruits, and strawberries. [insecticide]

PREVICUR (propamocarb-hydrochloride)–Aventis–Being developed for use on tomatoes, cucurbits, lettuce, and peppers. [fungicide]

PRISM (clethodim)–Valent–Added to their label the use by chemigation on onions and garlic. [herbicide]

RETAIN (AVG)–Valent BioSciences–EPA extended temporary residue tolerances for this growth regulator on apples and pears at 0.08 ppm. Expires 12-21-03. *(FR,* vol. 66, 7-12-01)

RONILAN (vinclozolin)–BASF–EPA has proposed revoking residue tolerances on strawberries, stone fruits, cucumbers, and bell peppers. The comment period expired 9-10-01. *(FR,* vol. 66, 7-10-01) [fungicide]

SELECT (clethodim)–Valent–As a result of the IR-4 Project, EPA established residue tolerances on root vegetables (except sugar beets) at 1 ppm. *(FR,* vol. 66, 6-5-01) [herbicide]

SEMPRA (halosulfuron)–Gowan–Being developed for use on tomatoes. [herbicide]

SWITCH (cyprodinil/fludioxonil)–Syngenta–Being developed for use on grapes, strawberries, and onions to control Botrytis, Alternaria, and brown rot.

Turf/Ornamental

PROGRASS (ethofumesate)–Aventis–Added to their label the use on nondormant bermudagrass. [herbicide]

Structural

FASTRAC (bromethalin)–Bell Labs–A new seed-bait formulation developed for use as a rodenticide to control mice.

Many

ACROBAT (dimethomorph)–BASF–Being developed for use on lettuce, cucurbits, onions, cereals, and peppers. [fungicide]

AKARI (fenpyroximate)–Nihon Nohyaku–Being developed to control mites on cotton, apples, and grapes.

APHISTAR (triazamate)–Rohm & Haas–Being developed to control aphids in pome fruits, leafy vegetables, cotton, cole crops, sugar beets, and hops.

APOGEE (prohexadione-calcium)–BASF–Being developed for use as a growth regulator on rice, cherries, hops, mint, potatoes, strawberries, sweet potatoes, avocados, and mangoes.

ARIUS (quinoxyfen)–Dow AgroSciences–A new fungicide being developed for use on grapes, hops, and stone fruits.

ASSAIL (acetamiprid)–Aventis–Being developed for use on pome fruits, citrus, grapes, cole crops, leafy vegetables, fruiting vegetables, and cotton to control aphids and whiteflies.

AUTHORITY (sulfentrazone)–FMC–Being developed for use on horseradish, lima beans, cowpeas, sunflower, and sugarcane. [herbicide]

AXIOM (flufenacet)–Bayer–Being developed for use on potatoes, tomatoes, onions, peppers, and rice. [herbicide]

BAROQUE (etoxazole)–Valent–Being developed to control mites in cotton, strawberries, pome fruits, grapes, and nut crops.

BAYTHROID (cyfluthrin)–Bayer–Being developed for use on cole crops, soybeans, corn, cereals, dry beans, and lentils. [insecticide]

BUMPER (prochloraz)–Makhteshim-Agan–Being developed for use on sugar beets, cereals, rice, stone fruits, citrus, canola, and vegetables. [fungicide]

CALYPSO (thiactoprid)–Bayer–Being developed for use on cotton, apples, and pears. Registration is expected in 2002. [insecticide]

CONFIRM (tebufenozide)–Rohm & Haas–Being developed for use on grapes, soybeans, sweet potatoes, peanuts, rice, sugar beets, legume crops, and citrus. [insecticide]

CONTANS WG (Coniothyrium Minitans strain CON/M/91-08)–Prophyta Biologischer–EPA granted approval to register this new active ingredient to use as a soil treatment to control *Sclerotinia* species that cause white mold, pink rot, and water soft rot. *(FR,* vol. 66, 6-27-01)

CORNERSTONE (Glyphosate)–Agriliance–This is a new brand name for this herbicide.

CRUISER (thiamethoxam)–Syngenta–This will be the trade name for this seed treatment in the United States, rather than Adage. [insecticide]

ELEVATE (fenhexamid)–Tomen Agro–Being developed for use on fruiting vegetables, caneberries, blueberries, and citrus and for postharvest uses. [fungicide]

EMINENT (tetraconazole)–Sipcam Agro–Being developed for use on sugar beets, peanuts, and blueberries. [fungicide]

FAMOXATE (famoxadone)–DuPont–Being developed for use on fruiting vegetables, grapes, cereals, cucurbits, lettuce, and hops. [fungicide]

FINALE (glufosinate-ammonium)–Aventis–Label changes include removing from the label the control of woody species and adding uses in greenhouses, by aerial application, and on dormant bermudagrass. [herbicide]

FLORAMITE (befenazate)–Uniroyal–Label changes include reducing the restricted-entry interval from 12 hours to 4 hours, adding the control of bamboo spider mite, and adding the restriction not make more than two applications per year. Use areas are defined as greenhouses and shadehouses; nurseries (including Christmas tree/conifer plantations); landscapes; interiorscapes; residences; public commercial, industrial, and institutional areas; recreational areas, such as campgrounds, golf courses, parks, and athletic fields; rights-of-way and other easements.

FRONTIER (dimethenamid)–BASF–Being developed for use on onions, sugar beets, and garden beets. [herbicide]

FURY (zeta cypermethrin)–FMC–Being developed for use on sugar beets, sugarcane, corn, onions, alfalfa, cole crops, leafy vegetables, rice, cereals, tomatoes, peppers, pears, beans, and soybeans. [insecticide]

KARATE (lambda-cyhalothrin)–Syngenta–Being developed for use on alfalfa, avocado, beans, canola, eggplant, peas, peppers, cereals, sugarcane, stone fruit, pome fruits, and tree nuts. [insecticide]

KNACK (pyreproxyfen)–Valent–Being developed for use on stone fruits, cucurbits, cole crops, olives, legume crops, blueberries, and others. [insecticide]

LARVIN (thiodicarb)–Aventis–Label changes include increasing the reentry interval from 12 hours to 48 hours and adding the use on sweet corn. [insecticide]

LIBERTY/RELY (glufosinate)–Aventis–Being developed for use on rice, sweet corn, canola, potatoes, and sugar beets. [herbicide]

MATRIC (chromafenozide)–Sankyo–A new product being developed to control lepidopteran insects in pome fruits, cotton, rice, tea, soybeans, fruit crops, and vegetables.

MAXIM XL (fludioxonil/mefenoxam)–Syngenta–Added to their label the control of such diseases as sclerotinia and pythium.

MILESTONE (azafenidin)–DuPont–Being developed for use on citrus, sugarcane, grapes, stone fruits, pome fruits, and nut trees. [herbicide]

PALISADE (trinexapac-methyl)–Syngenta–Being developed as a growth regulator for use on pome fruits, sugarcane, rice, onions, alfalfa, and citrus.

QUADRIS (azoxystrobin)–Syngenta–Added to their label the use on barley, bulb vegetables, carrots, and cotton. [fungicide]

QUINTEC (quinoxyfen)–Dow AgroSciences–A new fungicide being developed to control powdery mildew on grapes and hops.

RAPTOR (imazamox)–BASF–Being developed for use on grasses, legume crops, and canola. [herbicide]

REASON (fenamidone)–Aventis–Being developed for use on fruiting vegetables, cole crops, leafy vegetables, cucurbits, potatoes, grapes, and sunflowers. [fungicide]

SELECT (clethodim)–Valent–Being developed for use on beets, cole crops, cucurbits, canola, bulb vegetables, and hops. EPA extended the time-limited residue tolerances on alfalfa, dry beans, peanuts, and tomatoes. They now expire 4-30-03. *(FR,* vol. 66, 6-6-01) [herbicide]

URARA (IKI-220)–ISK–A new insecticide being developed by this Japanese company has a new mode of action and is effective against aphids, thrips, and other sucking insects. It will be developed for use on fruit crops, vegetables, ornamentals, and tea.

Other

AGTROL–The company has acquired the exclusive U.S. marketing rights to Stimplex PGR from Acadian Seaplants Ltd.

ARYSTRA LIFE SCIENCES–This is the name of the new company set up in Japan with the merger of Tomen and Nichimen Life Sciences business.

BAYER–The company is in exclusive negotiations to acquire Aventis Crop Sciences, whose sales were about $3.2 billion last year. Bayer is then expected to spin off the insecticide portion of the company to BASF.

MONSANTO–The company plans to introduce glyphosate-tolerant Roundup Ready wheat into the United States and Canada from 2003 to 2005. The company will change their pricing system for genetically modified crop seeds. Instead of charging farmers technology fees, they will charge seed companies a royalty fee for the use of their technology, effective in 2002. The company has purchased Limagrain Canada, a Canadian seed company that produces canola seed. The canola seed business was the only part of the sale.

NIHON NOHYAKU–This Japanese company has established a U.S. marketing company called Nichino America Inc. It will market Moncut fungicides and Applaud insecticides in the United States.

NUFARM–This Australian company has purchased the European business of Agtrol Int'l., following its purchase of the U.S. business.

NURSERY & LANDSCAPE WEED CONTROL MANUAL–This newly revised edition has been lengthened by about 100 pages and explains the theories behind physical, cultural and chemical control practices used in the nursery and landscape industries, as well as the use of small-scale equipment for ornamentals. Also included is a complete listing of herbicides registered for ornamentals, plus the mode of action, registered ornamental species, weeds controlled, and directions for use. This new edition is now available from Thomson Publications, P.O. Box 9335, Fresno, CA 93791; or you can order by calling (559)266-2964, faxing (559)266-0189, or using their Web site, www.agbook.com. Cost is $36.95 plus tax, if applicable, and $5.50 for UPS shipping

PIONEER HIBRED–The company is coming out with a new line of *Bt*-resistant corn varieties that it will market under the name Herculex I.

ROYSTER-CLARK–The company has signed a letter of intent with Agriliance LLC to acquire the assets of Pro Source One and its parent company, Agro Distribution South.

SIPCAM AGRO–The company has acquired the marketing rights to Quell (mefenoxam) fungicide from Uniroyal Chemical. The Quell name will be discontinued.

(Michelle Wiesbrook, unless otherwise noted, adapted from Agricultural Chemical News, *July and August 2001.)*

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