WHATS BUGGING YOU?

How to kill, destroy, expunge, obliterate houseplant pests

Diane Martin

Harrowsmith Country Life, December 1993

Most Garneners realize that all manner of bugs are a fundamental part of nature--as pollinators, recyclers and sources of food for other animals--and strive for a mutually beneficial coexistence with them. Yet many of today's safe pest-management practices aren't suited for the indoor garden. Few of us are eager to introduce a swarm of green lacewings into our living rooms or to cover our African violets with lloating row covers. Indoors, we need to kill pests dead (to borrow the slogan created by the poet e.e. cummings for Raid pesticides). But we also want to get rid ofthem without harming ourselves, our pets, our plants or the environment.

Fortunately, there are better and safer ways than using pesticides, synthetic or natural, to eliminate bugs on indoor plants (see the charts on pages 74 and 75). Although climatic conditions are ideal, food is abundant and there are no natural enemies, indoor bugs are at a disadvantage if you know what you're doing and, just as important, you know what they're doing. The earlier you notice bugs on your plants and take care of them, the better your chances of never being tempted to resort to chemical warfare.

What to look for? Foliage wilt and yellowing, leaf drop and stunted growth (which can also indicate improper environmental conditions) are indicators of pest-infected plants. Other signals of insect problems are sticky foliage and foliage that is flecked, blotched, stippled or covered with bumps. Check carefully, for sooner or later everyone encounters one or more of the five most common houseplant pests: mealybugs, whiteflies, scale, aphids and spider mites.

MEALYBUGS

Mealybugs, which prefer to feast on soft-stemmed or succulent plants and thrive in warmth and humidity, are easy to identify. Their round, white, furry bodies are about the size of a dill seed and are covered with

a fine granular excretion, or wax, that makes them look as if they were dusted with flour. They can be found at rest or crawling along stems, on upper as well as lower leaf surfaces (especially along the veins) and in the axils, where leaves and stems meet. They also hide in the tips of new shoots and often cluster together. The citrus mealybug (Plarlococcus citri) is the most common indoor pest, but there are hundreds of types. Because mealybugs are soft-bodied insects, they are highly sensitive to temperature and humidity.

Females lay between 300 and 600 eggs in conspicuous cottony masses in protected spots, such as in the angles of stems or midribs of leaves. The eggs hatch in a week's time, and the emerging nymphs begin feeding almost immediately on plant sap. Male nymphs pass through a cocoon stage and emerge with wings and no mouth, dying soon after they mate. After molting several times, females reach maturity, lay eggs for a week or two and then die.

It is the nymphs and adult females that cause most damage to plants, by piercing leaves, sucking sap and excreting honeydew (a sticky substance that coats leaves and nourishes black sooty mold, a fungus). Nymphs and adult females are also the most vulnerable, since in these stages they are slow-moving and visible.

Likely victims: African violets, aralias, begonias, cacti and other succulents, dieffenbachias, dracaenas, ferns, gardenias, grape ivies, jade plants, philodendrons, pothos.

WHITEFLIES

Adult whiteiflies, which are unrelated to houseflies, are about the size of a celery seed, have four broadly rounded wings and are covered with a snow-white waxy powder that causes them to resemble tiny moths. They congregate on the undersides of leaves and, when disturbed, fly short distances, creating small, agitated white clouds. The subtropical greenhouse whitelly (Trialeurodes vaporariorum) is the most common indoor variety. Like the mealybug, it is a sucking insect.

Most whiteflies are primarily parthenogenetic, which means they can produce off spring without mating. Females lay between 200 and 400 pale

green eggs during their lifetime, leaving them in circular clusters on the undersides of leaves. Minute six-legged crawlers--flat and colored light green--hatch in about 10 days. The crawlers attach themselves to the leaves and begin sucking sap and excreting honeydew, which can foster sooty mold. They will remain attached to the foliage while they pass through several scalelike stages from which they emerge as winged adults.

Adults, which are easily visible, tend to cluster at the tops of plants and on new growth, especially on shoots that are yellow-green, a color that attracts the insect.

Likely victims: Begonias, coleus, fuchsias, hibiscus, peace lilies, pelargoniums, primulas, poinsettias.

SCALE

There are more than 2,000 species of scale insects; those that attack houseplants are classified either as soft (Coccidae) or armored (Diaspididae) scales. Among soft scales are the types most commonly found on houseplants: hemispherical scale (Saissetia coffeae), black scale (S. oleae) and brown soft scale (Coccus hesperidum). These foes, which are recognizable by their hard, turtlelike, gray-brown shells, are oval shaped and measure between 1/5 and l/4 inch long. Looking like dark bumps on leaves and stems, soft scales are sucking insects. They secrete honeydew and flourish and multiply best in warm, hurnid conditions.

Females lay 500 to 1,000 eggs under their shells. When the eggs hatch, the young feed on the mother's body until they are ready to venture out and begin sucking sap from the plant.

Female offspring shed their shells twice on their way to maturity, keeping the same form, but males undergo metamorphosls, turning into small, mouthless, flylike bugs. The males live only three or four days--long enough to mate--while females can live for almost four months.

Armored scale species are also covered with hard protective shells, which are separate from their bodies, but they rarely produce honeydew. Oysterlike or volcanic in shape, they blend in color with their host plant. Determining whether your poinsettia is covered with a soft or armored scale is important only if you're using biological controls. Deciding whether you

have scales or simply bumps on the leaves is more important. Scrape the spot in question with a knife: if it is a scale, it will lift easily.

Likely victims: Citrus, cyclamens, ivies, palms, philodendrons, poinsettias, schefleras, weeping figs.

APHIDS

Sometimes called plant lice or green flies, aphids are a huge genus--about 4,000 species--though they are more common in greenhouses than in living rooms. Even better, only a small percentage of aphids, approximately 10 percent, attack many different plants; most aphids feed only on a particular species.

Still, there are plenty of aphids to torment the indoor gardener: fern aphids (Idiopterus nephrolepdis) attack ferns; melon aphids (Aphis gossypii) attack dioscorea and schefflera; mottled arum aphids (Macrosiphum circumflexum) attack amaryllis, arums, begonias, caladiums and cyclamen. The type most commonly encountered on houseplants is the green peach aphid (Myzus persicae), which is also a threat to many agricultural crops.

Aphids' soft, delicate, pear-shaped bodies are about the size of sesame seeds and are colored pink, white or yellowish green. Equipped with long legs, antennae and a set of tailpipelike projections off their backs, most aphids are wingless and slow moving indoors. They feed on succulent growth, causing wilting and deformed leaves and buds, and they secrete honeydew; its shine may be one of the first signs that your plants are infested.

Although aphid reproduction is a complicated affair--some females lay eggs, some give birth to live young, some do both--indoors, aphids usuallv reproduce parthenogenetically and give birth to live young rather than laying eggs. That's one reason why they can turn up so quickly on a leaf that appeared to be aphid-free the day before. Because the offspring stay close to their mothers, aphids are found in clusters on new growth, flower buds and the undersides of leaves. Each unfertilized female produces about 50 daughters that mature in approximately a week, ready to become mothers themselves.

Likely victims: African violets, arrowhead vines, begonias, caladiums, cinerarias, chrysanthemums, cyclamens, ferns, gardenias, hibiscus, ivies.

SPIDER MITES

The first sign of spider mites is usually stippled, yellowing leaves, the result of the tiny punctures these pests make in order to suck sap from the plant. Spider mites also spin irregular webs that, in time, can encase an entire plant. Although related, these are not the beneficial predatory mites that eat other insects; these mites eat your plants. The two-spotted spider mite (Tetranychus bimaculatus) is the species found most commonly on indoor plants. Similarly troublesome, especially on cyclamens, begonias, grape ivies and African violets, are broad or cyclamen mites (Steneotarsonemus pallidus), which are much smaller than spider mites, about one-fourth their size. Citrus red mites, false spider mites and European red mites also ravage houseplants.

With a 10-power hand lens, you can identify spider mites: greenish, pinkish or yellowish elliptical forms with eight legs and two large blotches on either side of their backs. The female lays between two and six round, shiny, cream-colored eggs each day. The six-legged baby mites feed for a daY or two after hatching, then

begin a series of molts until they reach maturity (8 to 20 days). Outdoors, twospotted spider mites go through diapause, a resting phase somewhat like hibernation, but indoors they are active throughout the year.

True spider mites live in colonies, clustering on mature leaves, and they prefer dry, warm conditions, exactly the environment provided by many houses. Misting plants daily or hosing frequently with a jet of water will break up webs, wash away eggs and suppress their development.

Likely victims: Aralias, aspidistras, crotons, dracaenas, ferns, ficus, hibiscus, ivies, palms, scheffleras.

Diane Martin lives in upstate New York. This article was adaptedfrom Kill Bugs Dead: An Indoor Gardener's Guide to Eliminating Insects on House Plants Without Using Harrnful Pesticides (The Scriptorium Press, 1992).

THE WEAPONS

OIL-DETERGENTSOLUTION

1 cup vegetable oil
1 Tbsp. dishwashing detergent
Mix well.

To use, dilute as follows: 1 to 2 l/2 tsp. oil-detergent solution 1 cup warm water. Spray plant thoroughly and let sit for 1 to 2 hours, then rinse with clear, warm water.

TOBACCO TEA

1 cigarette or 1 cigar butt or 1 tsp. pipe tobacco
1 cup warm water
1/4 tsp. olive oil
1/4 tsp. liquid soap

Soak tobacco in water for 24 hours.Strain and discard tobacco. Combine tobacco water, olive oil and soap, and mix well . To use, spray on affected area of plant and let sit for several hours. Rinse with warm water.

INSECTICIDAL SOAPS

Insecticidal soaps are commercial preparations based on soaps made from fatty acids. They are effective only when wet and in direct contact with the bug. Relatively harmless, they still should be used in careful compliance with label instructions.

HOMEMADE GARDEN SPRAYS

These 2 recipes are from an episode of The Weekend Gardener TV show. The

first is assumed to be a homemade liquid fertilizer of some kind. The show indicated its use when weather has been particularly hot, if plants are under stress due to other factors affecting their general health, or as a mid or late season nutrient boost. The second was offered as a set spray for tomatoes, which were said not to form blossoms above 90 - 95 degrees F. Whether or not it would be effective in cooler temperatures or on other types of plants was not mentioned. It is supposed to interrupt the nitrogen cycle, so the plant will set blossoms.

GARDEN TONIC

5 gal. bucket
Water
3 pkgs. Unflavored Gelatin
2 c. epsom salts
1 t. Borax (boron)
1/4 c. dishwasher soap (made with vegetable oils, NOT animal fats)

Put gelatin & epsom salts in bucket as you fill it with water, so they will get dissolved properly. Add borax and stor. Put soap in last (to keep down suds). Mix well. Use about 2 cups of formula per plant or group of plants. May be poured directly over foliage and allowed to soak in ground. In 2 - 3 days, plants and foliage should "perk up".

TOMATO SET SPRAY

1 gal. Water
1 t. sugar

Mix well and spray on plants.
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 Msg : 92 of 98

From : Brian Sorensen 9:1992/195 Fri 10 Dec 93 17:04
To : All
Subj : Homemade Garden Sprays
ÄÄÄ

Greetings,
Found this on a Agriculture BBS here in DC.

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--- Blue Wave/RA v2.10 [NR]
 * Origin: SurvNet - Powderhorn BBS 202-562-8239 (9:1992/195)

RE: NOSB COMMENTS ON PESTICIDE RESIDUES IN ORGANIC PRODUCTION.
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The following comments were submitted by the Agricultural Resorces Center (ARC, Carrboro, NC, and several other organizations to the National Organic Standards Board (NOSB), created by the 1990 Farm bill to develop national standards for organic agriculture. Among the questions to be decided are how to control pesticides that are in the environment but not applied directly by the organic farmer. The NOSB is considering draft policies on Emergency Spraying of Pesticides, Pesticide Drift, and Irrigation Water Quality. The document expresses concern about the direction that the draft policies seem to be going and suggests that stronger incentives for avoiding contamination of organic production with pesticides used in conventional agriculture or elsewhere is essential for maintaining the

integrity of organic production, protection of the environment, and confidence of consumers. It is apparent that there are strong differences of opinion even within the organic community about what standards are appropriate. Some of them are philosophical, some are regional, and some are practical. We welcome responses which support or question the views below as these standards are developed.

ARC can be reached the following ways:

1) By mail or phone at the following address:

   AGRICULTURAL RESOURCES CENTER
   PESTicide EDucation Project
   15 West Main Street
   Carrboro, North Carolina, 27510
   1-919/967-1886

2) Through Internet E-Mail at following address:
   Allen.Spalt@bbs.oit.unc.edu

3) FidoNet netmail (e-mail) at:
   Allen Spalt, 1:151/502 (EARTH*Net BBS, 1-932-3115)

4) Post a message to Allen Spalt in the FidoNet
   Sustainable Agriculture echo (SUST_AG, Host system: 151/502)

September 11, 1992
Dr. Harold Ricker

National Organic Standards Program
USDA/AMS/TMD
Room 2510-South Building
P.O. Box 96456 Washington, DC 20090-6456

Dear Dr. Ricker:

Please accept these comments concerning proposed policies on Emergency Spray Exemptions, Pesticide Drift, and Irrigation Water Quality to the National Organic Standards Board and its Crops Committee for the meeting on September 17, 1992. The drafts considered were adopted by the Crops Committee in August, 1992. These comments are submitted on behalf of the Agricultural Resources Center (ARC), Kansans for Safe Pest Control, the Hazardous Materials Committee of the National Sierra Club, and the National Coalition Against the Misuse of Pesticides (NCAMP). ARC is a private, non-profit, public interest organization which conducts research and public education on food, agriculture, and natural resources and, through its Pesticide Education Project (PESTed), has a special interest in preventing the misuse of pesticides and promoting least toxic, sustainable alternatives to chemical pesticides. Kansans for Safe Pest Control is a non-profit organization in Kansas devoted to promoting safe alternatives to hazardous pesticides. The Hazardous Materials Committee of the National Sierra Club is charged with providing expert commentary and policy development on issues relative to pesticides, hazardous waste, and other toxic materials. NCAMP is a national coalition of grassroots groups concerned with the health and environmental consequences of pesticides and promoting safer alternatives. All have long been involved in supporting organic agriculture and welcome this opportunity to comment on important matters before the NOSB.

I. GENERAL COMMENTS.

Developing a comprehensive system of organic crop certification as mandated by Title XXI of the Food and Agriculture Act of 1990, the Organic Foods Production Act (OFPA), is an important task. Defining and implementing "organic" may be difficult, but it is vital that the regulations reflect the popular conception that it means no synthetic pesticides or fertilizers. Confidence of consumers, producers, sellers, and regulators in the new national organic label depends on the overall thrust as well as the fine print. We believe it is important that what is controlled in the major provisions not be undermined by unwarranted exemptions. If not carefully crafted, emergency spray, drift, and irrigation water exemptions could provide major loopholes in an otherwise worthy program. We support the comments by Jay Feldman, Executive Director of the National Coalition Against the Misuse of Pesticides, to the NOSB at its meeting on July 8, 1992, in Fort Collins, Colorado. NCAMP's critique of the federal pesticide regulatory system are particularly important. The analysis supports the assumptions which underlie our joint comments on the particular policies in question here. NCAMP's conclusion is particularly important. We believe that: "...organic agriculture is of vital importance to the future of agriculture, the public's health and environmental protection. It should be fostered and encouraged. At the same time, we feel that it is important that in our desire to support organic agriculture, we not institutionalize practices that do not establish the ultimate protections we are seeking.... "The Organic Foods Production Act provides for an opportunity and a challenge....[T]here is the challenge of building and maintaining agricultural systems that are true to a new standard of environmentalism and safe food--not embodied in previously established EPA risk standards that are plagued by uncertainties

and miscalculation. The organic standards established under the act must be borne out of a non-contamination standard, not simply a lower toxicity model of production and acceptable pesticide residues.* It is the goal, we believe, to encourage through this act agricultural systems that do not add elements of health risk to our diet and environmental risk to our planet under any formula of acceptable risk. The goal is to define systems of organic production, rather than accept existing production problems as unresolvable. [Jay Feldman, Statement to NOSB, July 8, 1992. * Emphasis added.] We believe the standard of contamination by prohibited substances which is most appropriate is already embodied in the Act, in Section 2112(c)(2)(B). It is the standard for removal of the organic label if prohibited substances are present at levels greater than "unavoidable residual environmental contamination." We understand this term as it has typically been used indicates levels similar to EPA's requirement to establish action levels for residues of banned pesticides, such as organochlorines. These levels are unavoidable in the sense of long-term background rather than those resulting from incompatible current conventional practices, which should be treated as chemical trespass. Deviation from this standard in the context of organic production should be minimal, rare, accidental, unintentional, and involuntary. Any other standard, such as "best available" or "x percent" of some established legal value including EPA tolerance levels, perpetuate the conventional approach of "acceptable" risk, albeit at a lower level of risk, rather than seizing the opportunity to further a viable, lasting, organic alternative.

II. COMMENTS ON SPECIFIC POLICIES.

A. Emergency Spray Exemptions (Draft Recommendation #3, August 1992):

The OFPA provides under the section "Discretionary Requirements" that the the organic certification program "may" provide "for reasonable exemptions" from requirements if organic farms are "subject to a Federal or State emergency pest or disease treatment program". [2117(b)(2)]. It further provides that the NOSB "shall" advise the Secretary of Agriculture on rules for exemptions for farms subject to such spraying. [2119(k)(6)]. Provisions in the Act for emergency spray exemptions, therefore, are narrow and permissive. No specific exemptions are required, and the Board could recommend that there be no exemptions. We believe exemptions should be very limited. Other mechanisms, such as provisions for "transitional", or "limited treatment" categories, should be considered as alternatives to expanded exemptions. The draft Emergency Spray policy, however, is too broad and does not propose an evaluative process consistent with organic methods. It properly removes certification from produce which has been sprayed with a prohibited substance in an emergency. But it does not adequately deal with the field where such produce was grown. Instead, it proposes an exemption from the requirement that a field exposed to a prohibited substance cannot be certified for three years. It provides that the field "shall not loose its organic certification" regardless of how serious the exposure may be. It allows residue testing "if deemed necessary" and sets a standard of acceptable contamination of ten percent of EPA or FDA levels.

This policy is flawed for several reasons.

1) No Blanket Exemption.
There should be no blanket exemption from the loss of certification. Some exposures from emergency spray treatments may be so serious an insult to organic production that loss of certification is warranted. Providing only for residue testing

during subsequent years is not adequate.

2) Qualitative Evaluation Needed.
A qualitative evaluation of the emergency exposure is needed to help determine whether or not certification of the site should be continued, provisionally continued, or lost. Evaluation of emergency spray treatments should include the frequency, duration, and extent of emergency treatments to which a particular site may be subjected with the recognition that locations which are repeatedly subjected to emergency pesticide treatments are not suitable for organic certification. For example, limited exposure to emergency use of a known non-systemic and non-persistent pesticide may not be sufficient to withdraw certification of the field for subsequent years. However, if the emergency spray is with persistent or systemic poisons or, as is most often the case, if the health and environmental effects of the pesticides are not adequately known, then loss of certification is justified, however harsh. The policy should not automatically rule out loss of certification.

3) Health Based Standard Needed.
A health-based standard appropriate to organic production is needed for residues. Ten percent of the EPA or FDA legal limits is an arbitrary standard that does not provide protection consistent with the demands of organic agriculture. In many, if not most cases, the agency-set standards are an inadequate basis for making health or environmental judgements as to cleanliness or safety, are not protective of the most vulnerable parts of the population, and are not appropriate as a measure for organic certification. Tolerances are commonly set at residue levels which are expected after legal applications, a standard that has no relation to organic production. It follows that ten percent of an arbitrary standard is still arbitrary. It should not be used unless the

produce is labeled, for example, ten percent organic, low spray, or transition. A better standard for certification of subsequent year's produce would be no residue, or no residue above "unavoidable residual environmental contamination", as discussed above, of the emergency spray pesticide. That is what consumers expect.

4) Involuntary Treatments Only.
The policy should be explicit that it applies only to emergency treatments to which the organic grower is required to submit by Federal or State authorities; there should be no special exemption for optional or voluntary emergency spray programs.

5) Limited to Treated Areas.
The policy should apply only to emergency spray treatments on the certified fields themselves. Drift from nearby emergency applications should be treated as any other spray drift is treated. See comments below on proposed Pesticide Drift policy.

6) Limited to Certain Eradication Programs.
The policy should explicitly state that it covers only Federal and State eradication programs that also meet FIFRA Section 18 emergency requirements. Meeting either alone is not sufficient as not all eradication programs are emergencies and Section 18 registrations are widely used as backdoor loopholes to allow the use of unregistered pesticides under conditions that do not constitute actual pest emergencies, no less under conditions compatible with organic production.

B. Pesticide Drift Policy (Position Paper #4, August 1992):

Many of the comments on the above draft Emergency Spray Exemptions policy apply to the proposed Pesticide Drift policy.

While a step in the right direction, the proposal does not adequately protect the integrity of organic production and certification.

1) Recognize All Sources of Drift.
The draft policy recognizes only nearby "conventional fields" as potential sources of pesticide drift. In fact, pesticides are widely used on rights of way, forests, parks, golf courses, lawns, areas subject to emergency spray programs,
and other areas which my be near or adjacent to certified sites.
All potential sources of drift should be recognized.
Notification, as required for conventional fields, should be required for all reasonably expected sources of drift.

2) No Blanket Exemption from Decertification.
There should be no blanket exemption from the loss of certification.
Some exposures from drift may be so serious an insult to organic production that loss of certification is warranted.
Providing only for residue testing during subsequent years is not adequate.

3) Qualitative Evaluation Needed.
A qualitative evaluation of each exposure to drift is needed to help determine whether or not certification of the site should be continued or lost. Evaluation of drift should include the frequency, duration, and extent to which a particular site may be subjected.
As with areas subject to emergency treatments, the Pesticide Drift policy should recognize that not all sites are suitable for organic certification.

4) Residue Testing Inadequate:
The proposed "Multi-residue Screen" is inadequate and outdated.
If testing for unknown pesticides is included, it should also include organophosphates, pyrethroids, phenoxies and others. Some pesticides cannot be detected by commonly available screening

tests. We believe it is inappropriate for unknown pesticide drift to be accepted as part of an organic certification program.

5) Health Based Standard Needed. Comments above on the use of EPA and FDA tolerance standards apply to pesticide drift. No level of known drift of prohibited substances above "unavoidable residual environmental contamination" should be tolerated as "organic".

C. Irrigation Water Quality (Position Paper #5, August, 1992):

The current draft Irrigation Water Quality paper does not adequately address the question of the use of water contaminated with prohibited substances and should be substantially revised before adoption.

1) Contaminated Irrigation Water Must Not Be Used.
The draft policy calls for organic farmers to "avoid" the use of polluted water "unless no other source is available". Such language is weak and difficult to enforce. The policy should recognize that not all sites are suitable for organic certification. If clean water is not available, a site should not be certified for organic production.

2) Qualitative Evaluation of Available Water Supply Needed.
The policy fails to make a distinction between occasional and involuntary use of water that may be slightly contaminated and the routine use of "run-off from conventional farms". A qualitative evaluation of the nature of any contamination is essential to determine the extent of possible insult to organic production. Routine use of water contaminated beyond levels of "unavoidable residual environmental contamination" is not consistent with organic agriculture and

should not be allowed.

3) Difficulty of Enforcement.
Sanctioning the use of contaminated irrigation water as a part of organic production renders unenforceable controls over use of prohibited substances. It increases the difficulty of preventing chemigation, for example, and raises questions about the source of any residues found. It also reduces incentives to clean up contaminated sources or to find uncontaminated alternative supplies

4) Organic Production Not For Waste Disposal.
While a goal of organic production to improve the quality of life and the environment in particular, it cannot, in the short run, solve conventional agriculture's disposal problems. The argument in the draft proposal that "[a]pplication of nutrient-containing irrigation water to the organic farm's biologically active soil is the best way to recapture these nutrients and prevent further contamination of groundwater by synthetic fertilizers" is faulty. "Run-off from conventional farms" is commonly also contaminated with pesticides, which will not help the "biologically active soil", as well as nutrients. The draft policy also proposes applying the same strategy to "irrigation water containing pesticide residues" because the soil "may" break them down and "cleanse the irrigation water". It may in some cases, but breakdown products of pesticides may be more as well as less toxic than the parent compounds. Allowing use of pesticide contaminated water on the assumption that organic fields will clean it is unwise, unscientific, and inconsistent with organic production. The draft Irrigation Water Quality proposal works against the goal of the OFPA to promote and certify organic production. Rather it is more consistent with EPA policy that the best way to "get rid of" left over stocks of cancelled pesticides is to use them up, that is, to spread them around in the

environment. Or to apply sewage sludge to fields to disperse pollution. Organic agriculture cannot at this time solve the runoff problems of conventional agriculture, but it can be an example of how to avoid creating additional toxic runoff. We think it is inappropriate that the use of contaminated water be rationalized as "cleansing".

5) Health Based Standard Needed.
Comments above on the use of EPA and FDA tolerance standards apply to the draft policy on contaminated irrigation water. No level of known prohibited substances above "unavoidable residual environmental contamination" in irrigation water should be allowed as "organic".

III. CONCLUSION.

All three proposed policies have in common an apparent unwillingness to face the hard fact that contamination of organic production should result in loss of organic status and that mechanistic testing to confirm certification is not adequate. Organic agriculture is not just "residue free" or residue limited. Organic is a process, a systemic, holistic, thoughtful, qualitative, sustainable, and humane process. Insults to the system must be evaluated in a similar thoughtful, qualitative way. While residue tests may confirm contamination, they can not confirm "organic". Thus, insults in the form of contamination with prohibited substances including pesticides by emergency spray, drift, contaminated irrigation water, or other means should be evaluated by a qualitative process that is both more difficult and more appropriate than just testing or measurement against an arbitrary standard. The evaluation must include a willingness to withdraw certification when necessary. And, it must recognize

that not all places are suitable for certification. An area subject to repeated, significant exposures to prohibited substances, for example, may not be able to produce organically. Organic certification is an economically valuable commodity. If it is damaged or destroyed, the organic producer should be able--even encouraged--to seek restitution from responsible parties. Diluting certification requirements to include contamination from emergency applications, drift, irrigation water, or other sources reduces the economic value of certification and does a disservice to responsible organic growers. Rather than accept contamination from conventional agriculture as inevitable, national standards should provide incentives for changing practices that promote chemical trespass and for empowering producers to protect their property. The NOSB must be an advocate for effective drift control practices and regulations and for the rights of organic producers. People don't want to buy organic produce only to find it has been treated only in an "emergency", sprayed only by "drift", or nourished with contaminated water. They want to get what they think they are getting. As the organic sector grows from specialty status, where trust in organic practices is reinforced by personal relationships, to a larger, more impersonal marketplace, keeping that trust is difficult but essential. Vigilance, sound polices, and full disclosure, not exceptions which allow "acceptable" levels of contamination, are required. Insistence on a clean, healthy, non-polluting standard is both philosophical and practical. We believe it is right for organic certification. We also believe the public will be far more forgiving to learn that transition to organic production may take longer than expected than to find it has been tricked into thinking organic means "clean" only to find it is something else. If contamination is unavoidable, label it as such. People can take that--as transition or as step in the right direction. Let's not call contamination something else. The Board should recommend

high standards for organic certification. It may also want to establish interim, transitional, or low spray standards for those unable or unwilling to meet full organic criteria. It may be that some locations, because of emergency pesticide use, spray drift, irrigation water quality, or other problems, will always fall into a lesser category. We believe, however, that this is much better than bringing organic standards down to a lowest common denominator.

Thank you for your attention to these comments as the Board carries on its important task of establishing national organic standards.

Sincerely,

Allen Spalt
Director, Agricultural Resources Center & Pesticide Education Project

Terry Shistar
Director, Kansans for Safe Pest Control Pest Management
Coordinator, Sierra Club Hazardous Materials Committee

Jay Feldman
Executive Director, National Coalition Against the Misuse of Pesticides

NATURAL PEST REPELLENTS

These recipes were taken from the June, 1987 issue of Country Journal magazine (p. 42-45).

TOMATO

Tomato leaves, pureed *
4 - 5 pints of water
1 T. each cornstarch & Ivory Soap flakes

Mix together, let stand for a couple of hours. Strain. Spray on roses to prevent black spot. Refrigerate any leftover liquid.

GARLIC

3 - 4 ounces chopped garlic bulbs
2 T. mineral oil
1 pint water
1 t. fish emulsion

Soak garlic in mineral oil for 24 hours. Dissolve fish emulsion in water & mix with garlic-mineral oil. Stir well and strain. Store in glass jar (it reacts with metal). Dilute as follows: 1 part mixture to 20 parts water. Use on plants with large insect infestation. DO NOT USE on peas, beans, or sage. Also repels rabbits.

CHIVE TEA

5 T. chopped chives
10 c. boiling water
1 T. Ivory Soap flakes

Pour boiling water over chives. Let stand until cool. Strain and add soap. Spray on cucumbers to prevent or discourage powdery mildew.

NASTURTIUMS

Nasturtium leaves, pureed *
4 - 5 pints of water
1 T. each cornstarch & Ivory Soap flakes

Mix leaves, water, and cornstarch. Let stand for a couple of hours. Strain and mix with soap. Spray on squash to deter squash bugs. Also, use on broccoli to control aphids.

OVER

HOT PEPPER

5 Pepper pods
2 medium onions
1 Garlic bulb
Water *

Mash pods, onions, & garlic together. Cover with water and let stand for 24 hours. Strain. Add enough water to make a gallon of spray. Use on roses, azaleas, chrysanthemums, & beans.

* No specific amounts were given in the article.----------

HERBAL SPRAY FOR ROSES
USING DRY HERBS,MIX TOGETHER:
7 OZ. NETTLE
6 OZ. LEMON BALM
3 1/2 OZ. CRUSHED HOT CHILI

PEPPERS,WITH SEEDS. 2 OZ. LOBELIA BREW AS WITH ORDINARY TEA, USING 2 TBSP. DRY HERBS PER 1 PINT WATER.ALLOW TO STEEP IN A WARM PLACE FOR 3 DAYS. STRAIN AND SPRAY ROSES TO PREVENT APHIDS AND ENHANCE GROWTH.

SPRAYING FACTS FOR THE GARDEN

An effective spray program can mean the difference between a garden that thrives and one that dies on the vine. And whether you're a veteran or a novice, organic or generalist, there are some basic spraying facts every gardener should keep in mind.

You should mix spray material as recommended, according to David Robson, Extension Educator, Horticulture with the Springfield Extension Center.

Start with the proper spray material. Then follow all directions and precautions on the label of pesticide. A common misconception is that if one tablespoon of pesticide is recommended, two tablespoons will be twice as effective.

Effectiveness will not be increased by doubling the amount of chemical. In fact, higher concentrations of pesticide can harm plants, and is against Federal law.

Use proper measuring utensils. Don't guess at amounts. Measure the pesticides carefully, and mix only the amount needed

for a job. Keep measuring utensil separate from cooking utensils. Never use pesticide measures for food.

When you spray, remember that "how you spray does make a difference". Spray on target (pest), especially under leaves where insects settle and many plant disease begins. A haphazard application will not curb an infestation of insects or stop the spread of plant disease.

Spray just to the point of run-off, never drench the plants. You may think more spray is better, but over spraying can injure plants. And excess run-off may hit non-target plants.

"On-target" spray applications require equipment which gives you control over the spray, so use proper equipment, adds Robson.

Use a sprayer with "control" features such as an adjustable nozzle for various spraying jobs, a positive on-off valve for precise application, and a long spray extension for easy reach under leaves. This can be a pressure sprayer or a hose sprayer. Dusters can be used for dust applications.

Watch the weather and spray before the heat of the day and always avoid spraying when temperatures are high. High temperatures cause some pesticides to evaporate and decompose quickly. Rain or watering after application will reduce effectiveness by washing the spray material off plant leaves. But most formulations can withstand one-half to one inch of rainfall.

Spray when it's calm as on a calm day. Pesticide "drift", the movement of spray from the place of release, should be avoided. Drift can also be minimized by spraying at a lower pressure and using the largest practical nozzle opening.

Wind speeds should be below 5 miles per hour. Early morning and early evening are relatively calm periods.

-30-

Source: David Robson

Horticulture Educator
Springfield Extension Center
217/782-6515

5/24/93
KILL DATE: January 1, 1994
Ä [20] Survnet: SURVIVAL_ORIENTED TOPICS (9:2500/0) ÄÄÄÄÄÄÄÄ
SURVIVAL_ORIENTED Ä
Msg : 88 of 97
From : Brian Sorensen   9:1992/195   Fri 10 Dec 93 17:04
To   : All
Subj : Natural Pest Replellants
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For your library, from DC ;).

NATURAL PEST REPELLENTS

These recipes were taken from the June, 1987 issue of Country Journal magazine (p. 42-45).

TOMATO

Tomato leaves, pureed *
4 - 5 pints of water
1 T. each cornstarch & Ivory Soap flakes

Mix together, let stand for a couple of hours. Strain. Spray on roses to prevent black spot. Refrigerate any leftover lquid.

GARLIC

3 - 4 ounces chopped garlic bulbs
2 T. mineral oil
1 pint water
1 t. fish emulsion

Soak garlic in mineral oil for 24 hours. Dissolve fish emulsion in water & mix with garlic-mineral oil. Stir well and strain. Store in glass jar (it reacts with metal). Dilute as follows: 1 part mixture to 20 parts water. Use on plants with large insect infestation. DO NOT USE on peas, beans, or sage. Also repels rabbits.

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* No specific amounts were given in the article.

--- Blue Wave/RA v2.10 [NR]
 * Origin: SurvNet - Powderhorn BBS 202-562-8239 (9:1992/195)