



Managing Landscapes Without Toxic Pesticides

The Need for Local Policy

CHE-Alaska
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The Federal Pesticide Policy Context

Rachel Carson

52th Anniversary of *Silent Spring*

Rachel Carson's landmark book, *Silent Spring*, published in 1962 –53 years ago, has provided us with guiding principles, an affirmation of core values, rooted in scientific understanding of biological systems that are central to the sustainability of our environment and our very existence.



Complex Biological Systems

■ “By their very nature, chemical controls are self-defeating, for they have been devised and applied without taking into account the complex biological systems against which they have been blindly hurled. The chemicals may have been pretested against a few individual species, but not against living communities.”

■ “To assume that we must resign ourselves to turning our waterways into rivers of death is to follow the counsel of despair and defeatism. We must make wider use of alternative methods that are now known, and we must devote our ingenuity and resources to developing others.”

-Rachel Carson, *Silent Spring*



Framework for Moving Forward

Ms. Carson has given us a life-long guide to understanding the effects of chemical-intensive practices, the importance of our relationship to nature, understanding chemical effects at the cellular level and resulting cancer, neurotoxic, genetic, and reproductive effects, and insect and weed resistance to chemical controls.

But, most importantly, she gives us a framework for moving off the chemical treadmill of increasing chemical dependency.



What's In A Pesticide?

Active Ingredients are by nature biologically and chemically active against the target pest, be it an insect or fungus. By definition, these materials kill living things.

Inert Ingredients are often as toxic as the active ingredient, although the law defines these materials as "secret business information." Inerts, often petrochemicals, like benzene, toluene or xylene, generally make up the largest percentage of a pesticide formulation. Inerts are the solution, dust, or granule in which the active ingredient is mixed. Inerts generally make up the majority of the pesticide product formulation.

Contaminants and impurities are often a part of the pesticide product and are responsible for the product hazards. Dioxins are contaminants in pentachlorophenol, created as a function of the production process.

Metabolites, often more hazardous than the active ingredients, are breakdown products which form when the pesticide mixes with air, water, soil or living organisms.

Assessing FIFRA

The *Federal, Insecticide, Fungicide, and Rodenticide Act* (FIFRA), the nation's primary law facilitating pesticide registration, provides an inadequate framework:

- Risk Assessment Flaws
- Conditional Registration
- Unreasonable Adverse Effects
- Lack of Efficacy/Essentiality Consideration
- Inadequate Labels and Enforcement
- Emergency Exemptions and Special Local Needs

Solutions needed for improved application of FIFRA standards in general, and especially for pollinators.

Assessing FIFRA

- **Risk Assessment Flaws.** Facilitates 'dose makes the poison' theory of harm and maximum tolerated dose experimentation – foundation of the regulatory review process. Little to no attention paid to pesticide mixtures, synergy, or low-dose exposures.
- **Conditional Registrations.** Insufficient data under the "identical or substantially similar" procedures; results in lack of required data, little oversight and follow-up.
- **Unreasonable Adverse Effects.** With emphasis on taking into account "economic" costs and benefits, assessments minimize or ignore detrimental impacts on whole ecosystem and externalities.

Complexities Not Addressed



- Mixtures
- Synergistic effects
- Inerts, metabolites and contaminants
- Endocrine disruption
- Assumes 100% compliance
- Arbitrary exposure assumptions
- No monitoring of adverse effects
- Additional margin of safety sometimes arbitrary
- Uncertainties/limitation of risk assessment not disclosed on products

30 Commonly Used Lawn Pesticides Health Effects

- 16 are likely, probable or possible carcinogens
- 17 are known or suspected endocrine disruptors
- 12 are linked to birth defects
- 21 are reproductive toxicants
- 25 cause kidney or liver damage
- 26 are sensitizers/irritants





30 Commonly Used Lawn Pesticides

- 19 are groundwater contaminants
- 22 are toxic to birds
- 30 are toxic to fish and other aquatic life
- 29 are toxic to bees



Environmental Impacts

Aquatic microorganisms & plants
– disrupts foundation for aquatic
ecosystems

Amphibians – global decline, gender-
bending

Fish – kills, intersex & other symptoms of
endocrine disruption

Chronic poisoning

- Frog deformities have been linked to a number of pesticides, including atrazine, glyphosate, and other herbicides.



Indirect effects of pesticides

- Herbicides can cause a reduction in habitat or food, such as milkweeds used by monarch butterflies.
- Systemic insecticides can harm pollinators, including honey bees and wild bees.





For More Information...

INFORMATION SERVICES

- Pesticide Gateway
- > **Pesticide-Induced Diseases Database**
- > Overview
- Alzheimer's Disease
- Asthma
- Birth Defects
- Body Burden
- Cancer
- Diabetes
- Endocrine Disruption
- Learning/Developmental
- Parkinson's Disease
- Sexual and Reproductive Dysfunction
- Safety Source on Pesticide Providers
- Alternatives Factsheets
- How-To Factsheets
- Eating with a Conscience
- Quarterly Magazine: Pesticides and You
- Daily News
- State Pages
- YouTube Channel



Pesticide-Induced Diseases Database

The common diseases affecting the public's health are all too well-known in the 21st century: **asthma, autism and learning disabilities, birth defects and reproductive dysfunction, diabetes, Parkinson's and Alzheimer's** diseases, and several types of **cancer**. Their connection to pesticide exposure continues to strengthen despite efforts to restrict individual chemical exposure, or mitigate chemical risks, using risk assessment-based policy.

The *Pesticide-Induced Diseases Database*, launched by Beyond Pesticides, facilitates access to epidemiologic and laboratory studies based on real world exposure scenarios that link public health effects to pesticides. The scientific literature documents elevated rates of chronic diseases among people exposed to pesticides, with increasing numbers of studies associated with both specific illnesses and a range of illnesses. With some of these diseases at very high and, perhaps, epidemic proportions, there is an urgent need for public policy at all levels—local, state, and national—to end dependency on toxic pesticides, replacing them with carefully defined green strategies.

The current database, which contains hundreds of studies, itself is preliminary and will be added to over the coming months. **We urge readers to send studies to info@beyondpesticides.org that you think should be added to the database.**

Data Supports Policy Change

The database is a tool to support efforts to eliminate the continued use of hazardous pesticides in favor of green strategies that emphasize non-toxic and least-toxic alternative practices and products. The studies in the database show that our current approach to restricting pesticide use through risk assessment-based mitigation measures is not working. This failed human experiment must be ended. The warnings of those who have expressed concerns about risk assessment, such as EPA Administrator under Presidents Nixon and Reagan, William Ruckelshaus, have been borne out by three decades of use and study. Mr. Ruckelshaus in 1984 said, "We should remember that risk assessment data can be like the captured spy: If you torture it long enough, it will tell you anything you want to know." EPA's risk assessment fails to look at chemical mixtures, synergistic effects, certain health endpoints (such as endocrine disruption), disproportionate effects to vulnerable population groups, and regular noncompliance with product label directions. These deficiencies contribute to its severe limitations in defining real world poisoning, as captured by epidemiologic studies in the database.

An enlightened policy approach to proposed or continued toxic chemical use, in an age where the adverse effects have been widely and increasingly documented, is to first ask whether there is a less toxic way of achieving the toxic chemical's intended purpose. Simply, "Is there another practice that would make the substance unnecessary?" This approach does not preclude and should demand the prohibition of high hazard chemical use, those chemicals that are simply too dangerous.

The alternatives assessment approach differs most dramatically from a risk assessment-based policy in rejecting uses and exposures deemed acceptable under risk assessment calculations, but unnecessary because of the availability of safer alternatives. In agriculture, where the database shows clear links to pesticide use and cancer, it would no longer be possible to use hazardous pesticides, as it is with risk assessment-based policy, when there are clearly effective organic systems with competitive yields that, in fact, outperform chemical-intensive agriculture in drought years. Cost comparisons must take into account externalities such as



Pesticide-Induced Disease Database

<http://www.beyondpesticides.org/health>

Pesticide-Induced Diseases

Beyond Pesticides' [Pesticide-induced Diseases Database](#) includes:

- Over 760 entries of studies that link labeled uses of pesticides (as instructed) to public health diseases:
- cancer, reproductive problems, neurological and immune system damage, Alzheimer's, Parkinson's, diabetes, asthma, and learning disabilities.
- When a Stanford University study finds, as it did in September, 2013 that the body burden of dozens of pesticides that we now all carry are not clinically linked to adverse effects, researchers need to be asked to study the wealth of epidemiologic studies that link use to disease.

Assessing FIFRA

- **Lack of Regulatory Attention to Pesticide Efficacy.** While efficacy data must be developed by registrants, only efficacy data for public health uses are reviewed. Marketplace determines benefits.
- **Labels and Use Designations Become the Default Safety Standards.** Cautionary label information on timing of application does little to prevent long-term, sublethal and residual effects. Compliance enforcement lacking.
- **Experimental and Emergency Exemptions.** Allows unregistered pesticide uses on a case-by-case basis for “significant economic loss,” even though reasons for use, such as pest resistance, is predictable.

Glyphosate - Human Health



- Presents both acute and chronic risks.
- Acute: swollen eyes, face, joints; facial numbness; burning and/or itching skin; blisters; rapid heart rate; elevated blood pressure; chest pains, congestion; coughing; head-ache; and nausea.
- Chronic: Cancer, fetal development, kidney/liver damage.
- Modifies DNA functioning.

Glyphosate - Cancer

- According to Int'l Agency for Research on Cancer:
Identified as having "*sufficient evidence of carcinogenicity*"
in laboratory studies - Group 2(A).
- According Strongest link to non-Hodgkin lymphoma
 - Agricultural health study
 - in 1999 identified 2.7x increased likelihood.
- According Controversy - IARC evaluated glyphosate products
in formulation, not simply technical grade ingredient
 - Rising concerns over inert ingredients in products like Roundup.
 - Studies find POEA (polyethoxylated tallowamine) can damage human cells.

Glyphosate -Environmental Health



- Directly impacts a variety of nontarget animals: beneficial insects, earthworms, benthic organisms, fish.
- Amphibian exposure to Roundup resulted in shape changes.
 - Induce antipredator morphology
 - “Can cause extremely high rates of mortality to amphibians.”

Glyphosate - Resistance

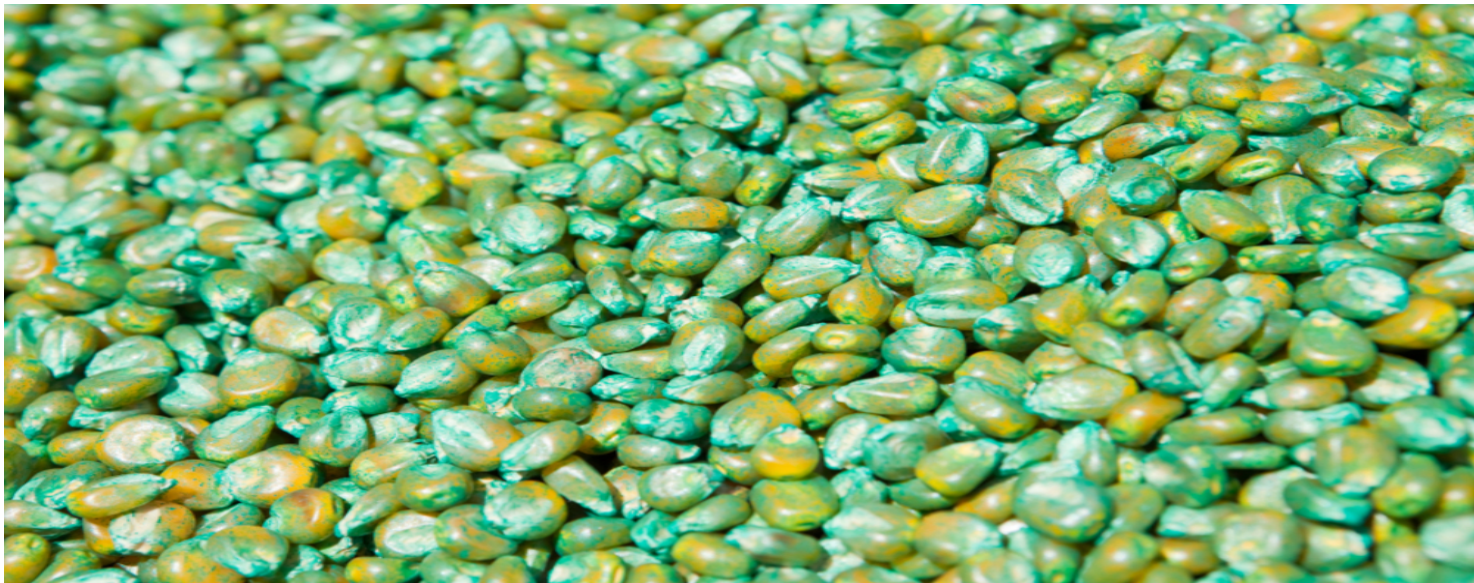
- Directly Overwhelming evidence that glyphosate leads to weed resistance.
- Directly Increased reliance leads to “emergency” events.
- 2014: Texas cotton farmers push for emergency exemption to use propazine.
 - Denied based on potential groundwater contamination.

Glyphosate - Environmental Fate

- Glyphosate half-life:
 - In water: 70 to 84 days
 - In soil: 47-174 days
- Found in honey samples by Boston University and FDA testing
 - FDA “Difficult to find blank honey that does not contain residue”
 - Lawsuit launched to address “natural” labeling, expose ubiquity of chemical in our environment

Neonicotinoids - Chemical Properties

- Systemic insecticides
 - Taken up by a plant's vascular system and expressed in pollen, nectar and guttation (dew) droplets
 - Persistent in the environment
- Often applied to corn seed

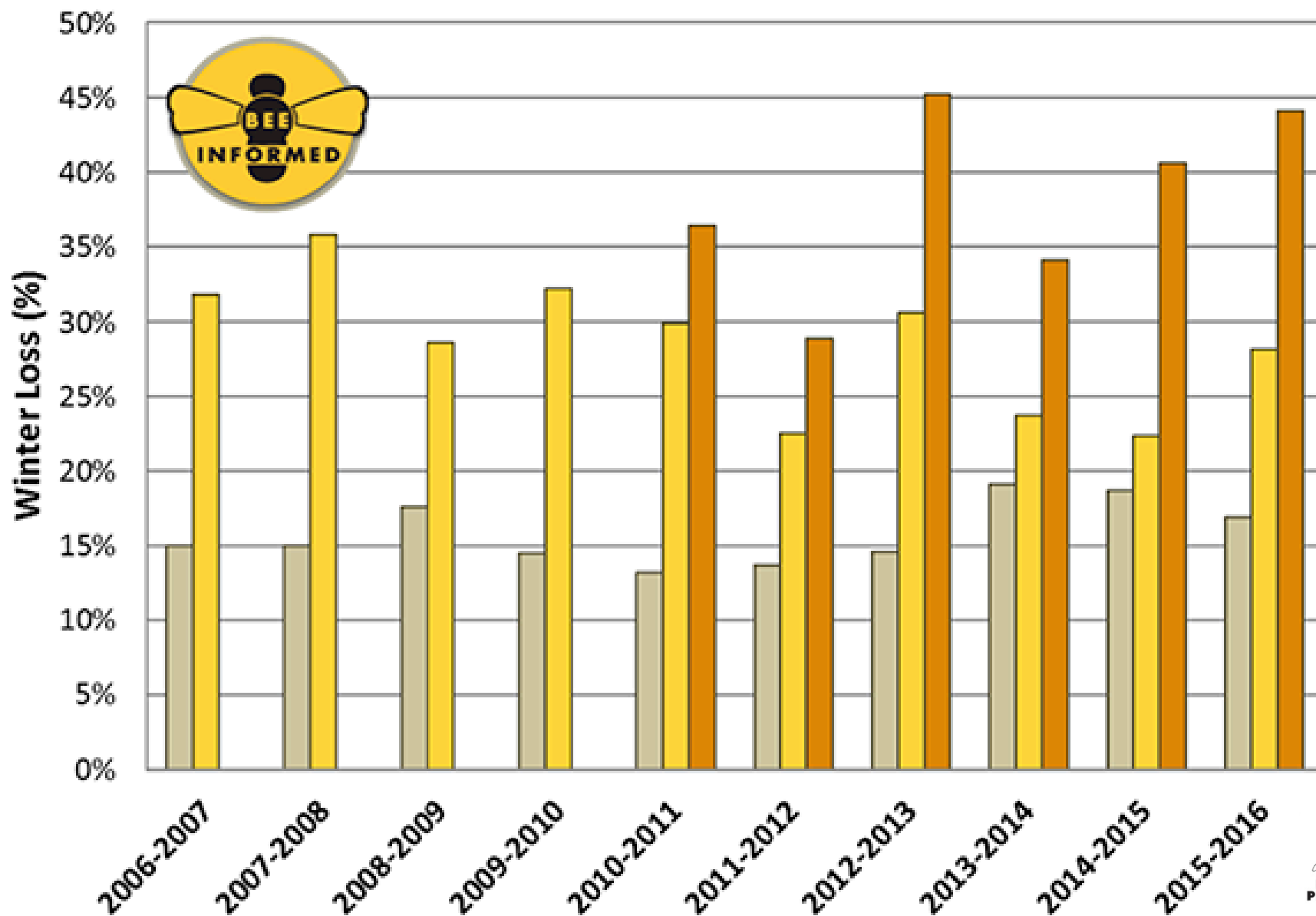


Neonicotinoids – Pollinator Health

- Overwhelming links to pollinator declines
 - Impair memory, foraging, immune system, reproduction, and survival
- Early 2016: EPA admits neonic imidacloprid is acutely toxic to pollinators
- 2015-2016 Colony Loss Survey finds 44% of commercial beekeeping colonies lost
- Effects not limited to commercial honey decline.

Total US managed honey bee colonies Loss Estimates

Acceptable Winter Loss Total Winter Loss Total Annual Loss



Neonicotinoids - Effects on Other Wildlife

- American Bird Conservancy: Single neonic-coated seed “enough to kill a songbird.”
- Late 2016: Health Canada announces intent to cancel neonic imidacloprid due to risks to aquatic invertebrates.
- Delays in metamorphosis in wood frogs.
- “Concentrations of imidacloprid detected in streams, rivers, lakes and drainage canals routinely exceed acute and chronic toxicity endpoints derived for freshwater invertebrates.” (EPA 2017 risk assessment)

Neonicotinoids - Trophic Cascade

- 2015 Penn State study: Soybeans were treated with the neonicotinoid thiamethoxam.
- The seed treatments had zero effect on pest slugs, and instead predators, impairing or killing >60%.
- This resulted in a loss of crop due to a decline in beneficial insect predators and an increase in pest slug population.

At Odds with International Findings

- **Glyphosate (Roundup)**

Most widely used herbicide. Classified as causing cancer in humans based on laboratory animal studies by the International Agency for Research on Cancer (WHO), March 2015.

- **Neonicotinoid Insecticides**

Most widely neonics determined to pose unacceptable hazards to bees by the European Union, European Food Safety Authority; suspended use in agriculture, 2013, European Commission recently proposed to make suspension permanent.

Incentivizing Safer

- Incentivize use of non-toxic systems, with acceptable materials.

OR

- Institutionalize products and practices with acceptable risks -based on risk assessments with inherent limitations.

A Systems Approach: Organic Foods Protection Act (OFPA)

- Requires Organic Systems Plans for agricultural producers, evaluated through certification system; default against synthetic inputs; establishes *National List of Allowed and Prohibited Substances* –compatible synthetic inputs based on life cycle analyses, protecting against adverse health and environmental effects.
- Operates with definition: “Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.”



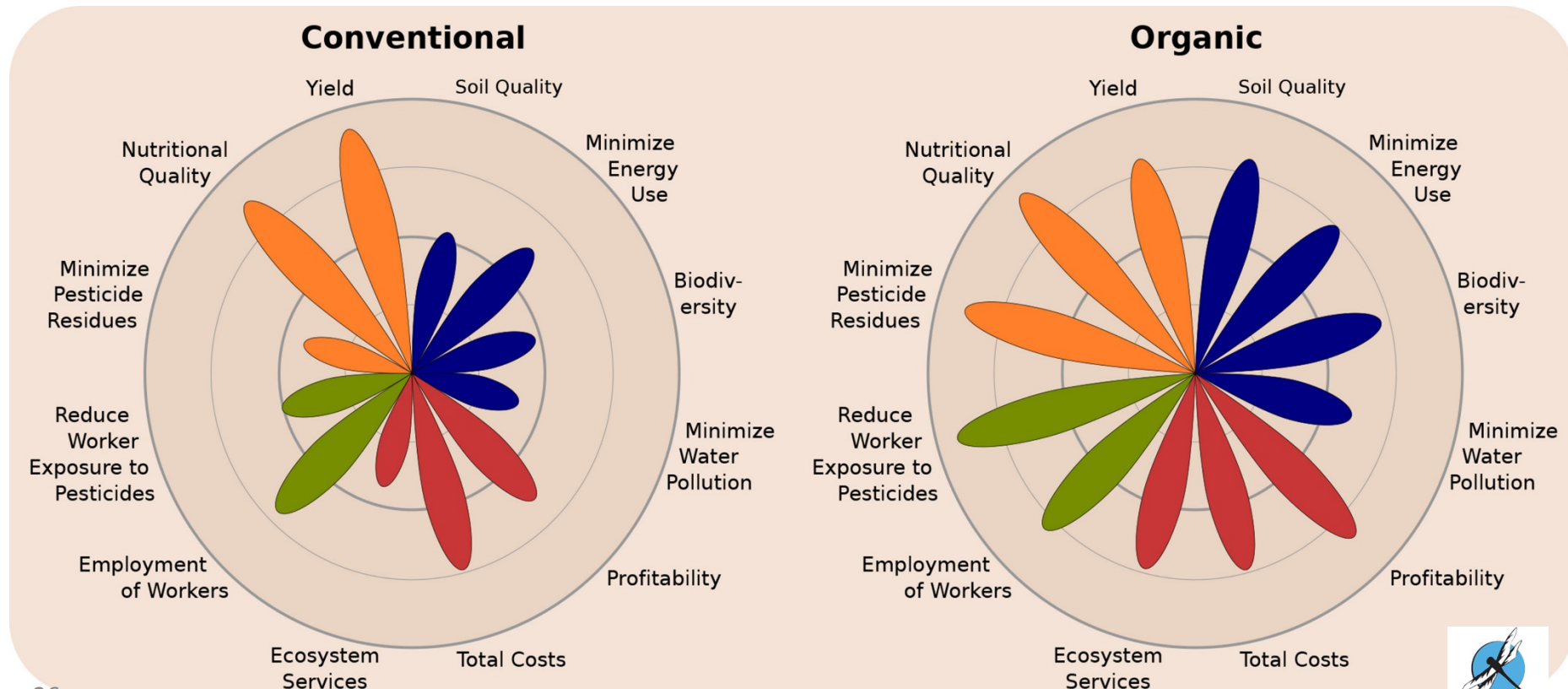
Conventional
chemical-
intensive

vs. Organic

Washington State University 2016 Study: Numerous benefits from organic production

An organic turfgrass system also:

- Improves soil quality ■ Minimizes energy use ■ Increases biodiversity ■ Minimizes water pollution
- Minimizes pesticide residues ■ Reduces worker exposure to pesticide residues ■ Improves ecosystem services ■ Equal or less cost in the long term while maintaining quality landscapes





Soil Chemistry Basics

- pH (Acidity or Alkalinity)
- Nutrient Management
- Organic Matter (OM) and Cation Exchange Capacity (CEC)



Soil Biomass and Microorganisms

- Soil biomass is the foundation upon which our nutrient program is based.
- In taking a “feed the soil” approach, soil microbes are at the heart of our management strategy.
- Natural, organic fertilizer is broken down by the microbial life to nutrients for the plant.
- Synthetic fertilizers by their nature, and with high salt content, compromise the activity of the life in the soil.



Managing the Biomass

- Compost Tea
 - Large number of microbes to soil
- Humates
 - Builds healthy soil; Increased organic matter which helps to reduce N loss through leaching; Contains carbon as an energy source for microbes; Improves soil structure, aggregation, water infiltration, aeration, and water-holding capacity; Increases nutrient availability to the grass plant; Facilitates mineral breakdown; Increases microbial activity; And, helps with root growth and penetration, and chlorophyll density
- Compost
 - Increases soil organic matter; When combined with over-seeding, enhances germination and establishment; By virtue of its neutral pH and healthy microbial population, helps buffer the soil and counteract naturally acidic soils without the use of lime; During decomposition, continues to release nutrients



Transition Period

- When moving from a conventional program to a natural one, the length of transition is directly related to the intensity of current and past management practices and the overall turf quality.
- After years of synthetic, water-soluble fertilizers with high salt levels, the soil microbiology has been bypassed and somewhat compromised.
- Don't expect a collapse or failure.



Fertility and Turfgrass Nutrition

- Nitrogen (N), Potassium (K) and Phosphorus (P).
- Nitrogen not just from liquid fertilizer, also from compost topdressing, compost tea and humic substances, microbial inoculants, and grass clippings.
- Synthetic fertilizers provide “quick green-up,” but pollute and require many applications.
- Organic fertilizers work with soil microbial life.



Cultural Practices

- Irrigation
 - Deep watering
- Cultivation
 - Need non-compacted, aerobic soils
- Over-seeding
 - Maximum density of grass suppresses weeds
- Mowing
 - 3 inches



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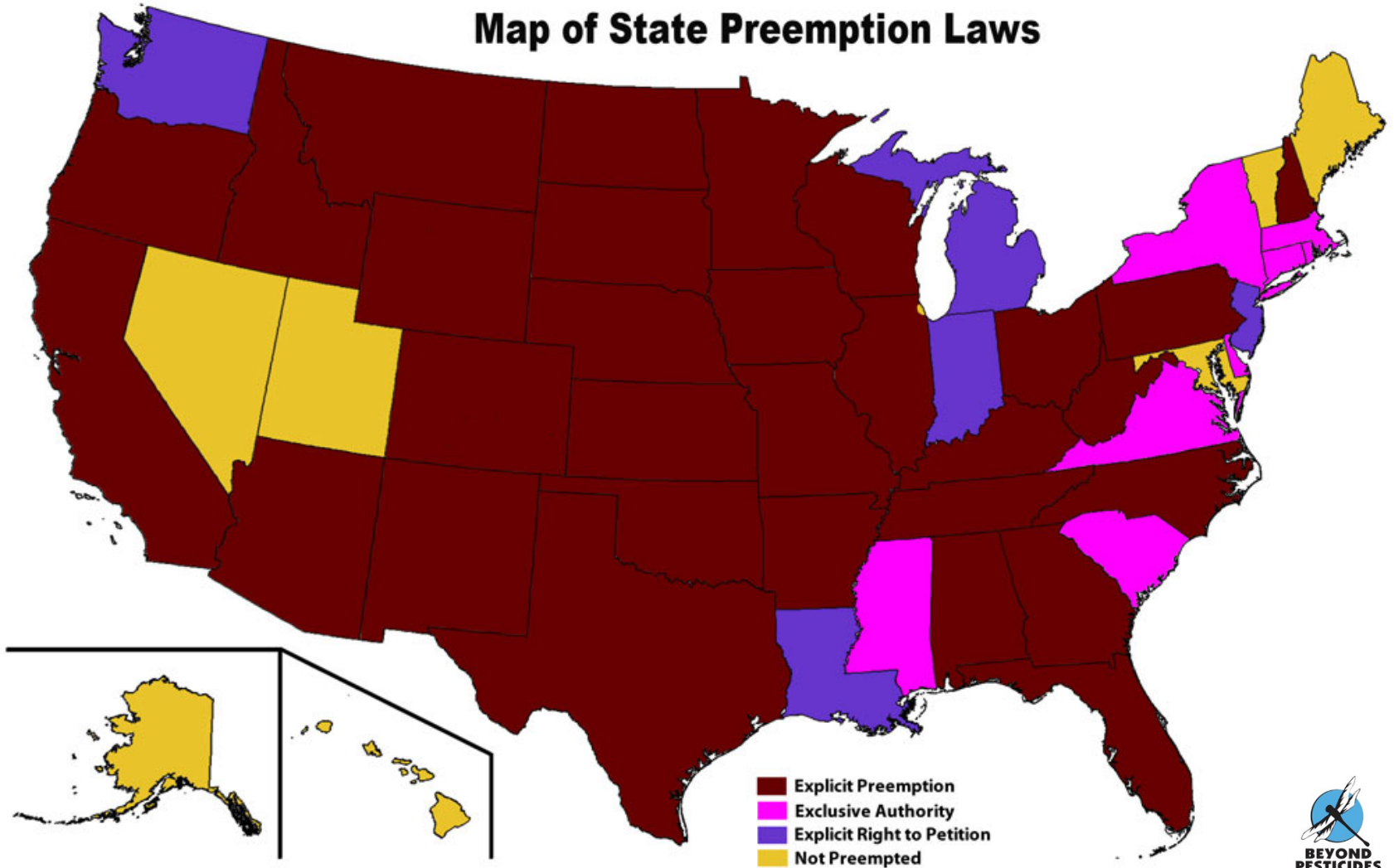
- Soil Test Data by site
- Site Photos
- Recommendations by site
- Management schedule by site

and

- Staff Training

The Importance of Local Action

Map of State Preemption Laws



Local Authority

- **Local Authority Upheld under FIFRA.** U.S. Supreme Court in 1991 ruled that FIFRA does not preempt local jurisdictions from restricting the use of pesticides more stringently than the federal government.
- **State preemption laws** effectively deny local protection when a community decides that minimum standards set by state and federal law are insufficient. While seven states do not preempt local authority, 43 do so.

Skagway, Alaska

Pesticide Ordinance



- Prohibits sale and use of neonicotinoids to protect pollinators and “persistent herbicides” to protect water quality.
- Creates a list of restricted pesticides based on hazard criteria.
- Encourages private landowners to practice organic land management.

Allowed Materials List

(i) the National List of Allowed and Prohibited Substances of the Organic Foods Production Act (OFPA), passed by the U.S. Congress in 1990 and overseen by a stakeholder board created by the statute, the National Organic Standards Board (7 C.F.R 205.601 and 602), and;

(ii) the U.S. Environmental Protection Agency's list of exempt pesticides, Section 25(b) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (40 C.F.R. 152.25).

Products Compatible with Organic Landscape Management

THE MARKET FOR GREENER PEST MANAGEMENT MATERIALS GROWS

With communities across the country adopting organic landscape management practices and policies for lawns, playing fields, and parks, identifying products that are compatible with the sustainable approach is a central concern for managers and residents. Organic systems nurture soil biology to support the natural cycling of nutrients, resulting in a resilient turf system. Because the use of toxic materials undermines the organic system by hampering the soil microbial life, identifying compatible products is an essential component of the system. To assist communities in identifying products and complying with local laws, where they exist, that restrict products to organic compatible materials, Beyond Pesticides has developed the *List of Products Compatible with Organic Landscape Management*.

The List is based on two established lists of materials and products: (i) the National List of Allowed and Prohibited Substances of the Organic Foods Production Act (OFPA), passed by the U.S. Congress in 1990 and overseen by a stakeholder board created by the statute, the National Organic Standards Board (7 C.F.R. 205.601 and 602), and (ii) the U.S. Environmental Protection Agency's list of exempt pesticides, Section 25(b) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (40 C.F.R. 152.25).

BACKGROUND ON UNDERLYING LIST

In creating the National List, the authors of OFPA recognized the (i) inherent safety of most natural materials that results from a long history of exposure and adaptation, and (ii) need to assess synthetic chemicals that may cause harm to health and ecology. Thus, the National List allows natural materials to be used in organic crop production unless found to be harmful, but prohibits synthetic materials unless recommended

by the NOSB and codified. Three criteria are applied in deciding whether a material should be allowed on the National List: no adverse effects to humans or the environment, need for the material (essentiality) in an organic system, and compatibility with organic practices. OFPA outlines a number of impacts that must be considered in this evaluation.

Because continuous improvement is a principle in the organic law, the National List is under a 5-year sunset and review cycle to evaluate new information about environmental and health impacts, which may require a change in a listing. A petition process allows the NOSB to evaluate proposed additions or adjustments to the National List.

Tying the *List of Products Compatible with Organic Landscape Management* to the National List allows communities to take advantage of the evaluation, and regular re-evaluation, performed by the NOSB's public process. The list of organic landscape management products also incorporates EPA's list of active ingredients that do not need to be registered as pesticides. This is a short list of materials, most of which are nonsynthetic and would be allowed in organic production.

Beyond Pesticides encourages concerned residents to advocate in their community for pesticide policies that include the above criteria. The list can be used as a guide for inputs in all organic lawn care practices community-wide. Organic turf management is not a product-based approach, and since all products have some degree of risk, Beyond Pesticides urges that all products are used as a last resort. For assistance in adopting an organic landscape management policy and adopting organic management practices in your community, visit [tools for change.biz/](http://tools.forchange.biz/) and contact Beyond Pesticides at info@beyondpesticides.org or 202-543-5450.

Note that there may be other formulations of a product under a similar brand name (e.g., many brands sell both ready to use and concentrate versions of their products). The allowed list describes: (i) active ingredient in product; (ii) product name; (iii) pesticide category [i.e. insecticide, herbicide, fungicide, etc.], and (iv) regulatory status [organic or exempt from EPA registration, 25b].

TABLE 1: Products Compatible with Organic Landscape Management—Fungicides

Active Ingredient	Product Name	Regulatory Status
Fungicide		
Bacillus subtilis G803	Companion Liquid Biological Fungicide	Organic
Bacillus subtilis QST 713 strain	Rhapsody	Organic
Bacillus subtilis QST 713 strain	Serenade Garden Disease Control RTU	Organic
Bacillus subtilis QST 713 strain	Natria Disease Control RTU	Organic
Essential Oil (Cinnamon/Clove)	Blizzard Organic Fungicide	25b
Essential Oil (Clove/Cinnamon)	Bravado Organic Fungicide	Organic
Gliocladium catenulatum Strain J1446	Praetop Biofungicide Powder	Organic
Oil (Cottonseed, Corn, Garlic)	Midew Cure	Organic
Potassium Bicarbonate	Greencure Fungicide	25b
Potassium Bicarbonate	Kaligreen	Organic
Potassium Bicarbonate	Bi-Carb Old Fashioned Fungicide	Organic
Potassium Bicarbonate	Carb-O-Nator	Organic
Pythium oligandrum DV 74	Polyvarsum	Organic
Streptomyces lydicus	Actinovate Lawn and Garden Fungicide	Organic
Trichoderma harzianum Rifai strain T-022	Rootshield Seed Treatment	Organic
Trichoderma harzianum Rifai strain T-22* and Trichoderma virans strain G-41*	TurfShield PLUS WP Biological Fungicide	Organic
Trichoderma spp.	Tenet WP	Organic

TABLE 2: Products Compatible with Organic Landscape Management—Herbicides, PGRs

Active Ingredient	Product Name	Regulatory Status
Herbicide		
Acetic Acid	SummerSet AllDown	Organic
Acetic Acid	Vinagreen Natural Non Selective Herbicide	Organic
Acetic Acid, Citric Acid	Black Jack 21	25b
Ammoniated Soap of Fatty Acids	Final-San-O	Organic
Ammonium Nonanoate	Mirimichi Green Pro Concentrate	Organic
Ammonium Nonanoate	Emerion 7020 Concentrate	Organic

TABLE 2: Products Compatible with Organic Landscape Management—Herbicides, PGRs (CONT.)

Active Ingredient—Herbicide	Product Name	Regulatory Status
Herbicide		
Ammonium Nonanoate	Emerion 7020 Concentrate	Organic
Ammonium Nonanoate	Mirimichi Green Effective Earth Solutions Grass & Weed Control Ready To-Spray	Organic
Ammonium Nonanoate	BioSafe Weed Control	Organic
Ammonium Nonanoate	AXXE	Organic
Caprylic Acid, Capric Acid	Suppress Herbicide EC	Organic
Citric acid, Essential Oil (Clove), Malic Acid	Phydura	25b
Corn Gluten	Concern Weed Prevention Plus	25b*
D-limonene	Avenger Weed Killer	Organic
Essential Oil (Clove/Cinnamon)	JH Biotech Weed Zap	Organic
Essential Oil (Clove/Cinnamon)	Safer Grow Weed Zap	Organic
Eugenol, Essential Oil (Clove)	Halo	25b
Oil (Soybean)	EcoBlend Weed and Grass Burndown	Organic
Oil (Soybean)	Praem	25b
Potassium Salt of Fatty Acids	Safer Brand Weed and Grass Killer	Organic
Potassium Salt of Fatty Acids	Safer Brand Fast-Acting Weed and Grass Killer Concentrate	Organic
Sodium Chloride	A.D.I.O.S	Organic
Sodium Lauryl Sulfate, 2-Phenethyl Propionate	EcoSmart Weed and Grass Killer	25b
Mossicide/Algaecide		
Ammoniated Soap of Fatty Acids	Quik-Fire	Organic
D-limonene	Monterey Moss Stopper	Organic
D-limonene	Moss Malt Concentrate	Organic
Oil (Cottonseed, Garlic), Essential Oil (Clove)	No Moss	Organic
Potassium Salt of Fatty Acids	Safer Brand Moss and Algae Killer and Surface Cleaner	Organic
Plant Growth Regulator		
Gibberellic Acid	GibGro 4LS	Organic
Gibberellic Acid	N-Large Plant Growth Regulator Solution	Organic

* not allowed in organic due to concerns over genetically engineered organisms

TABLE 3: Products Compatible with Organic Landscape Management—Insecticides, IGRs, Repellents

Active Ingredient	Product Name	Regulatory Status
Animal Repellent		
Coyote/Fox Urine	Shake-Away Coyote/Fox Urine Granules	Organic
Dried Red Pepper and Dried Blood	Uncle Ians Dog and Cat Repellent	Organic
Dried Red Pepper and Dried Blood	Uncle Ians Mole and Gopher Deer Rabbit and Squirrel Repellent	Organic
Piperine/Oil of Black Pepper/Capsaicin	Havahart Critter Ridder	Organic
Porcine/Bovine Dried Blood	Plantskydd Granular Repellent for Rabbits and Small Critters	Organic
Porcine/Bovine Dried Blood	Plantskydd Granular Repellent for Deer, Rabbits, and Elk	Organic
Putrescent Whole Egg Solids/Capsaicin/Garlic	Deer Off Deer and Rabbit Repellent	Organic
Insect Growth Regulator		
Azadirachtin	Neemix 4.5	Organic
Azadirachtin	Azatin O	Organic
Insecticide		
Bacillus thuringiensis	Safer Brand Garden Dust and Caterpillar Killer	Organic
Bacillus thuringiensis	DiPel® PRO DF Biological Insecticide Dry Flowable	Organic
Bacillus thuringiensis	Thuricide BT Caterpillar Control	Organic
Bacillus thuringiensis	Summit Biological Caterpillar and Webworm Control	Organic
Chromobacterium subtsugae	Grandevo	Organic
Citric Acid	Flying Skull Nuke™ Em Insecticide	Organic
Diatomaceous Earth	Perma-guard	Organic
Diatomaceous Earth	Safer Brand Ant and Crawling Insect Killer	Organic
Diatomaceous Earth	Desect Diatomaceous Earth Insecticide	Organic
D-limonene	Orange Guard Fire Ant Control	Organic
D-limonene	Orange Guard Ornamental Plants Insecticide	Organic
Essential Oil (Blend)	Dr. Earth Yard and Garden Insect Killer	Organic
Essential Oil (Blend)	Mantis Botanical Insecticide/Miticide	Organic
Essential Oil (Cedar)	CedarGuard	Organic
Essential Oil (Cedar)	CedarCure	25b

TABLE 2: Products Compatible with Organic Landscape Management—Insecticides, IGRs, Repellents (CONT.)

Active Ingredient	Product Name	Regulatory Status
Nematicide		
Poecilomyces lilacinus	Bio-Nematon	Organic
Quillaja saponaria saponins	Brandt Nema-Q	Organic
Quillaja saponaria saponins	Monterey Nematode Control	Organic
Insect Repellent		
Garlic Extract	Biolink Insect and Bird Repellent	Organic
Garlic Extract	Garlic Barrier AG Insect Repellent	Organic

TABLE 4: Products Compatible with Organic Landscape Management—Multi-Category

Active Ingredient	Product Name	Category	Regulatory Status
Azadirachtin	AzaSol	Insecticide/Miticide/Fungicide	Organic
Azadirachtin	SoluNeem	Insecticide/Miticide/Fungicide	Organic
Azadirachtin	Azatrol	Insecticide/Miticide/Insect Growth Regulator	Organic
Azadirachtin	Molt-X	Insecticide/Nematicide	Organic
Azadirachtin	Safer Brand BioNeed	Insecticide/Repellent/Insect Growth Regulator	Organic
Azadirachtin	Amazon 1.2 ME	Insecticide/Repellent/Insect Growth Regulator/Nematicide	Organic
Bacillus amyloquelofaciens strain D747	Monterey Complete Disease Control Brand RTU	Fungicide/Bactericide	Organic
Bacillus amyloquelofaciens strain D747	DoubleNickel LC Biofungicide	Fungicide/Bactericide	Organic
Essential Oil (Clove), Oil (Cottonseed, Garlic)	Pest Out	Insecticide/Miticide	Organic
Essential Oil (Thyme)	HumaGrow Promax	Nematicide/Fungicide	Organic
Essential Oils (Various)	EcoSmart Brands	Insecticide/Herbicide/Fungicide	25b
Fats and Oil, Azadirachtin	Debug Tres Emulsifiable Concentrate Antifedant, Insect Repellent, Insecticide, Miticide, Fungicide & Nematicide	Insecticide/Miticide/Nematicide/Fungicide	Organic
Horticultural Oil (may be listed as mineral oil on label)	Civitas Turf Defense Pre-Mixed	Fungicide/Insecticide/Disease Suppression	Organic
Horticultural Oil (may be listed as mineral oil on label)	Civitas Turf Defense Ready-2-Mix	Fungicide/Insecticide/Disease Suppression	Organic
Neem Oil	70% Neem Oil	Insecticide/Fungicide	Organic
Neem Oil	Boyer Natria Neem Oil	Insecticide/Fungicide	Organic
Neem Oil	Triact 70	Insecticide/Miticide/Fungicide	Organic
Neem Oil	Trilogy	Insecticide/Miticide/Fungicide	Organic
Neem Oil	Monterey Neem Oil RTU	Insecticide/Miticide/Fungicide	Organic
Neem Oil	Triple Action Neem Oil	Insecticide/Miticide/Fungicide	Organic
Neem Oil	TerraNeem EC	Insecticide/Miticide/Nematicide/Fungicide	Organic
Neem Oil/and Natural Pyrethrin (without PBO)	Monterey Rose & Flower Spray Plus Broad Spectrum Insecticide, Fungicide, and Miticide	Insecticide/Miticide/Fungicide	Organic
Oil (Sesame)	Organicide 3 in One	Insecticide/Fungicide/Miticide	Organic
Potassium Salt of Fatty Acids	MPEDE	Insecticide/Fungicide	Organic
Potassium Silicate	Sil-Matrix	Insecticide/Fungicide	Organic
Sulfur	Sulfur DF	Fungicide/Miticide	Organic
Sulfur	Kumulus DF	Fungicide/Miticide	Organic



Takoma Park, Maryland Safe Grow Act



- Generally restricts the use of cosmetic lawn pesticides on both private and public property throughout Takoma Park based on hazard criteria.
- Information rich educational website to assisted in the implementation of this ordinance. Available here: <https://takomaparkmd.gov/initiatives/safegrow/>

Montgomery County, Maryland Safe Grow Act



- **Restricts pesticides on private and public lawns to organic compatible materials.**
- **Allowed Materials List.** The Executive must include in the regulations adopted under this section a list of acceptable pesticides, known as the Allowed Materials List. The list is limited to:
 - (A) Allowed materials under 7 CFR 205.602 that implements the Organic Foods Production Act;
 - (B) 25b listed pesticides under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).
- **Education Campaign.** Requires informational material where pesticides are sold. PSA campaign over radio, public television, transportation, etc.

Ogunquit, Maine Pesticide Ordinance



- Prohibits “the use or application of chemical pesticides,” except for those classified by EPA as exempt under FIFRA list 25b and those permitted by the Organic Materials Review Institute on private and public property.
- Defines natural lawn care as, “An extension of the principles and practices of organic agriculture to the care of turf and landscape.”
- Exemptions for agriculture, disinfectants, swimming pool supplies, etc.

South Portland, Maine Pesticide Use Ordinance



- Applies to all “turf, landscape, and outdoor pest management activities in the City.”
- Guided by Allowed Material List similar to Montgomery County, MD.
- Education campaign includes requirement that informational material be placed where pesticides are sold. PSA campaign over radio, public television, transportation, etc.

Retailers Making the Switch to Organic



The Well-Stocked Hardware Store

Helping Local Retailers Make the Switch to Organic
Products and Practices



Cuyahoga County, Ohio

IPM Ordinance

(Ordinance No. 0211-0047)



- Prohibits the use of pesticides on property owned by the county.
- Exempts the use of larvicides and rodenticides as public health measures or by a mandatory finding by the Department of Public Works (DPW).
- Adopts an Integrated Pest Management (IPM) program for the county and requires DPW to provide training in IPM.

Camden, Maine

Pest Management Policy



- Establishes “allowable products” to be used on town-owned land.
- Creates a pesticide advisory committee to assist with program implementation.
- Requires personnel involved in landscape maintenance or outdoor pest control to receive regular training on organic land care.

Irvine, California

Organic Amendment to IPM Policy

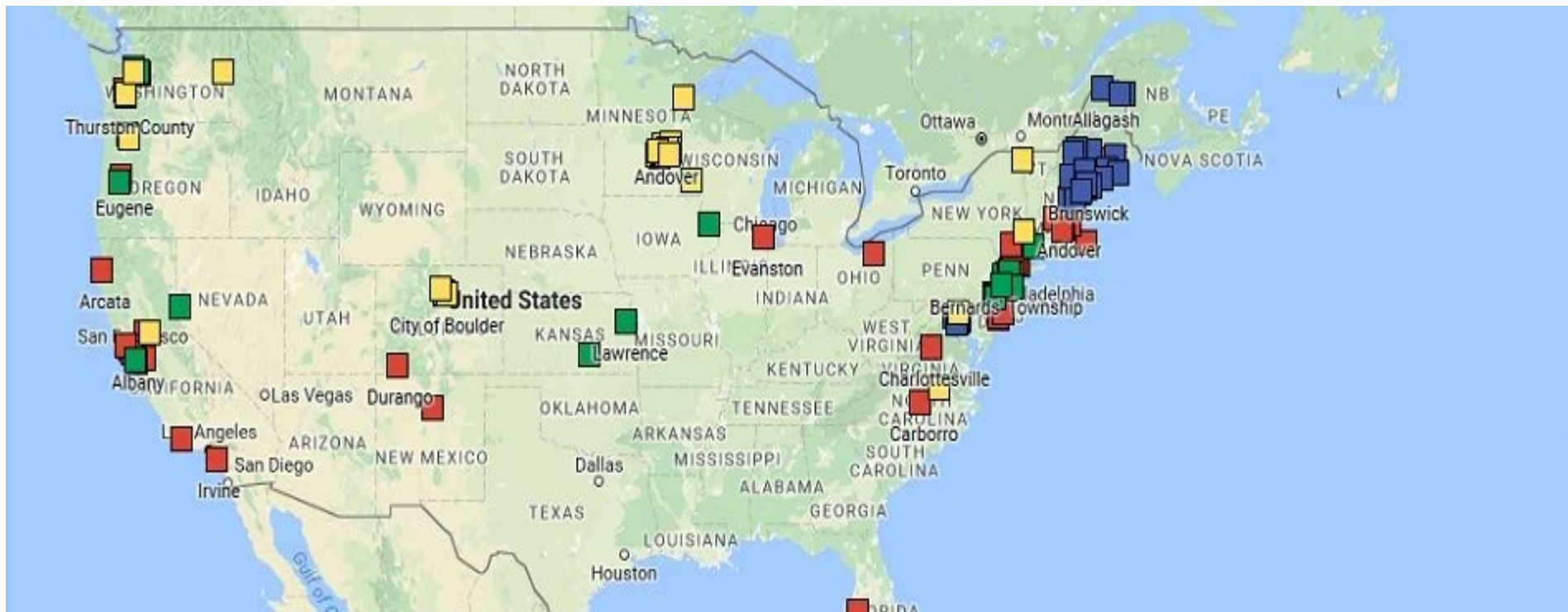


- Prioritizes the use of organic pesticides on parks, fields, playgrounds, and other City properties and rights of way
- Permits the use of EPA registered pesticides only when deemed necessary to protect public health or economic loss, and other methods have proven ineffective

Growing Trend Across the Country

Beyond Pesticides' Map of U.S. Pesticide Reform Policies highlights 120+ community initiatives that reduce or eliminate pesticide use in land care

bit.ly/PesticideReformMap



Rachel Carson

Can anyone believe it is possible
to lay down such a barrage of poisons
on the surface of the earth
without making it unfit for all life?

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