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Senator Bartolomeo, Representative Urban, Representative Betts and Senator Linares,

Good afternoon and thank you for the privilege of speaking with you on Senate Bill 46, the Pesticides on School Grounds bill, and House Bill 5036, Chemicals of Concern to Children. I'm Philip Miller and I represent the 36th House district.

One of the most successful business enterprises of the last generation is the proliferation of common pesticides in lawn care. Pesticides are a business acumen for professionally trained landscapers who are accredited at industry endowed institutions. Federal agencies allow industry submitted data to pass for scrutiny, and so it has become a necessity for states to be vigilant. The thirty most commonly used pesticides have been tested for association with cancers, endocrine, or hormonal, disruption, reproductive effects, neurotoxicity, kidney and liver damage, sensitizer and irritant capacity, and association with birth defects. Some, like glyphosate, also known as Round up, test positively in five or more of these seven categories, as does 2 4D, Dicamba, MCPA, MCPP, and Trifluralin among the herbicides, and acephate, Carbaryl, Fipronil, Malathion, Permethrin, and Trichlorfon among the insecticides, and Ziram, a fungicide. I have included a listing of these and the footnoted studies for your consideration.

I was the First Selectman of the Town of Essex for four two year terms, from 2003 to 2011, and in 2005, the town instituted a policy to be pesticide free on municipal parks, fields, and playgrounds. The School Board followed shortly with a pesticide free regimen, and this has been done continuously since, and this predated our present pre K through 8th grade ban, as it has evolved. I have seen the town crew set up a state of the art composting system, with so much manufactured that it is given to residents on Saturdays at the transfer station. This compost is used for the premier athletic fields at Valley Regional High School as well. It amends and strengthens the soil profile, to grow the best grasses, which out compete weed species, and it balances the pH, or potential of hydrogen, and this is brings successful chemical free turf and lawn.

I have seen landscapers now control weeds in parking lot cracks with a torch wand, instead of toxic chemicals, and initial grub outbreaks controlled with milky spore and corn gluten applications.



There are a number of towns and cities in Connecticut which have successfully adapted to natural organic care, and we should follow states like New York, which have successfully extended pesticide bans to high schools and even state colleges and universities.

It is with dismay that I hear that landscapers and even the Connecticut Conference of Municipalities make the case that without chemicals, we see playing areas degrade with weed clumps that cause children to trip and fall. They even complain that without chemicals, clover flowers and dandelions attract bees which could conceivably sting and cause anaphylactic shock. Three weeks ago, the World Health Organization predicted a 57% rise in cancers in the next twenty years. They suggest we spend less effort at finding cure and more on prevention. Pesticides have been found in wells, groundwater, streams and rivers. Shouldn't we reduce or better yet, eliminate exposure, particularly for our teens as well as younger children? I grew up naive, thinking that what we used, touched and ate was safely vetted. I know otherwise, and I suspect most if not all legislators, particularly those subject to matter discussed at this Committee, are similarly informed.

The Department of Public Health has volunteered to compile a data base of academic studies of chemicals of concern to children. There is no fiscal note. It may evolve to allow the Department to issue notes of concern, or even warning. The standard is these chemicals may be harmful to young people. With this in mind, it must trump the objections of toy manufacturers, water providers, and business interests who object. We actually belong among our nation's leaders in sustainable green chemistry.

Please consider yourself informed, and now that you know, would you believe that voices like mine are tilting at windmills or predicting a falling sky? Thanks for your consideration.

Regards,

State Representative  
Philip Miller  
36<sup>th</sup> Assembly District



**GUIDANCE ON CHAPTER 85, LAWS OF 2010**  
**SUMMARY OF PESTICIDE PROHIBITION REQUIREMENTS AND PESTICIDE ALTERNATIVES**  
**REGARDING SCHOOLS AND DAY CARE CENTERS IN NEW YORK STATE**  
DECEMBER 22, 2010

In May 2010, New York State enacted Chapter 85 of the Laws of 2010 (Chapter 85), a new law containing limitations regarding pesticide use on playing fields and playgrounds at schools and day care centers. This guidance is intended to help schools and day care centers comply with the new law, by providing information on its requirements and on allowable alternatives to pesticides for grounds maintenance.

## **A. WHAT THE NEW LAW REQUIRES**

- **AMENDMENTS TO EXISTING LAWS AND IDENTIFICATION OF INVOLVED NEW YORK STATE AGENCIES:** Under Chapter 85, new requirements were added to the State Education Law (SEL) and the Social Services Law (SSL). The State Education Department (SED) is responsible for administering the sections of the SEL added by Chapter 85, and the State Office of Children and Family Services (OCFS) is responsible for administering the new sections of the SSL. Also, a requirement was added to the Environmental Conservation Law (ECL) for the State Department of Environmental Conservation (DEC) to develop this guidance. Chapter 85 is summarized in the remainder of this Section of the guidance. See **Section E** (Where to Read the Law and Ask Questions) for information on where to read the new requirements and which agency to contact with questions. DEC's role in the implementation of the new requirements is limited to issuing this guidance and to being one of the entities authorized to make determinations regarding emergency pesticide applications. (See **Section D** Emergency Determinations.)
- **GUIDANCE:** As required under Chapter 85, DEC developed this guidance in consultation with the State Department of Health (State DOH) and the SED. DEC also consulted OCFS.
- **PESTICIDE PROHIBITION AND EXCEPTIONS:** Schools and day care centers are prohibited from using pesticides on playgrounds (includes playground equipment), turf, and athletic or playing fields. The prohibition does not apply to indoor use of pesticides or pesticide applications to buildings or structures (e.g. school buildings, garages). If you have questions about whether a portion of grounds are subject to the law, contact SED or OCFS (see **Section E** for contact information). In general, "pesticide" covers a broad range of products: insecticides, herbicides, fungicides, rodenticides, and others. The new law specifies that "pesticide" has the same meaning as under Section 33-0101.35 of the ECL<sup>1</sup>. However, under the new law, "pesticide" does not include six types of pesticide products, which *can* be applied on playgrounds, turf, and athletic or playing fields at schools and day

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<sup>1</sup> Environmental Conservation Law (ECL) 33-0101.35 "Pesticide" means: a. Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; and b. Any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.

care centers. For details about these exceptions, see **Section C** (Which Pesticides Are Allowed). NOTE: Under a separate new law, (Chapter 205 of the Laws of 2010), fertilizer use restrictions become effective January 1, 2012. Please see “Attention” section at the end of this guidance.

- **EMERGENCY PESTICIDE APPLICATIONS:** An exception from the pesticide prohibition is provided for emergency applications, which may be made only as determined by entities specified in the new law (e.g. schools boards and certain State agencies). For further information, see **Section D** (Emergency Determinations).
- **WHO MUST COMPLY:** The new requirements apply to schools and day care centers, as defined in the SEL and SSL. These encompass public school districts (including the New York City (NYC) Department of Education), non-public schools, boards of cooperative education (BOCES), and child and Head Start day care centers. The law also applies to a school or day care center located at a college or university. The law does not apply to family day care centers, group family day care centers, school-age child care programs, day care centers in the five boroughs of NYC. To find out if this new law applies to a specific school or day care center, contact SED or OCFS, as applicable (see **Section E** Where to Read the Law and Ask Questions).
- **WHEN TO COMPLY:** The prohibition, exceptions, emergency allowance and other provisions go into effect on November 14, 2010 for day care centers and May 18, 2011 for schools.

**PESTICIDE APPLICATION REQUIREMENTS:** Schools and day care centers must continue to comply with previously existing requirements when applying pesticides, including when applying those pesticides excepted from the prohibition in Chapter 85. **Section C** (Which Pesticides Are Allowed) and the “Attention” at the end of this guidance provide a summary of existing State requirements regarding pesticide use and pesticide application notification.

## **B. HOW TO MAINTAIN CHILD-SAFE PLAYING FIELDS AND TURF WITHOUT PESTICIDES**

- **MANAGING GROUNDS WITH ALTERNATIVES TO PESTICIDES:** Many schools and day care centers already care for their grounds without the use of conventional pesticides. Others, however, may be making the shift away from pesticides for the first time. Depending on their current practices, schools and day care centers may only need to fine tune their methods, or they may need to learn a new, systematic approach to sustainable grounds maintenance through alternatives to pesticides. Training in alternative methods of grounds management could help those with less experience successfully make the transition. Check the on-line resources in this section for links to training programs.
- **GENERAL GUIDANCE ON PESTICIDE ALTERNATIVES AND ADDITIONAL RESOURCES:** There are a number of things to consider when managing grounds without pesticides, ranging from familiarity

with the grounds and potential trouble spots to soil and plant health. Because the steps taken for grounds management are specific to each school or day care center, this guidance is necessarily intended as a starting point, rather than a handbook to address every situation at schools and day care centers.

- **BROAD TIPS AND CONCEPTS:** The table on the next two pages outlines overall concepts for use in complying with the new pesticide prohibition. Information on the table serves as an introduction to alternative approaches to grounds maintenance and pest management as well as bottom line rules about soil and plant health. The “right” combination of alternatives to pesticides to prevent and manage pest infestations and for maintaining healthy, resilient grounds is specific to each school and day care center.
- **REFERENCES TO RESOURCES FOR FURTHER INFORMATION** on grounds management without pesticides are provided in the table and following it.

<b>GENERAL GUIDANCE ON PESTICIDE ALTERNATIVES PROPER GROUNDS MANAGEMENT – BASELINE CONCEPTS</b>	
<b>Look at the Big Picture</b>	Examine the whole outdoor system. Walk around the site and get an overall understanding of the maintenance needs and where steps should be taken to ensure that it is healthy – able to withstand pests and environmental stresses. Be aware of all possible sources of pest infestations, including dumpsters and recycling containers, and ensure that they are clean and well-maintained.
<b>Check for these Conditions</b>	Take note of areas and site characteristics that already have, or are prone to, pest or disease problems for plants, turf and soil. The following are examples of important conditions to check for: <ul style="list-style-type: none"> <li>▪ <i>overall health of turf or plants,</i></li> <li>▪ <i>existing pest (insects, weeds, etc.) and disease infestations</i> or areas that appear to have pest-or disease-prone conditions. Identify any existing pest/disease to choose proper management method (see Cooperative Extension link below),</li> <li>▪ <i>poorly drained soil</i> (i.e. pools of water or mud present), or soil that is hard and compacted,</li> <li>▪ <i>shady or sunny areas,</i></li> <li>▪ <i>storm or seasonal damage,</i></li> <li>▪ <i>heavy foot traffic areas.</i></li> </ul>
<b>Make a Response Plan</b>	<ul style="list-style-type: none"> <li>▪ <i>Consider whether a certain level of weeds and pests can be acceptable</i> and tolerated at the school or day care centers.</li> <li>▪ <i>Decide which areas of the grounds need special attention.</i></li> </ul>

<b>GENERAL GUIDANCE ON PESTICIDE ALTERNATIVES</b> <b>PROPER GROUNDS MANAGEMENT – BASELINE CONCEPTS, CONTINUED</b>	
<b>Maintain Soil Health</b>	<ul style="list-style-type: none"> <li>▪ <i>Soil Conditions:</i> Keep soils well-drained, properly watered, aerated, and high in organic matter. A variety of soil aeration tools can be found in garden catalogs and supply stores. Organic matter can be enhanced by adding compost, or leaving grass clippings on the lawn after cutting. Adding organic matter will help with drainage as well as soil fertility. Better drainage in heavy clay soils can also be achieved by adding sand or lighter, loamy soil. Ask at a garden supply store for these materials.</li> <li>▪ <i>pH:</i> Check for a healthy pH (pH should be close to 7, which is neutral). Soil testing will help determine pH and if nutrient deficiencies exist. A link to Cornell Cooperative Extension’s soil testing service is provided below.</li> <li>▪ <i>Soil Amendments:</i> Consider whether soil amendments, such as compost or fertilizer, are needed and which are appropriate for site conditions. PH and other soil conditions can be adjusted by adding the appropriate compost, fertilizer, or lime, available from gardening catalogs and supply stores.</li> </ul> <p>Web resource for soil testing: <a href="http://cna1.cals.cornell.edu/">http://cna1.cals.cornell.edu/</a></p>
<b>Select the Right Turf and Plants</b>	<p><i>Select turf and plant varieties and/or mixes that are well-adapted to the site (such as soil type, and sun/shade characteristics) and climate. To the extent possible, select disease- and insect-resistant varieties.</i></p> <p>Web resources for turf and plant selection:  <a href="http://www.yardscaping.org/lawn/seed.htm">http://www.yardscaping.org/lawn/seed.htm</a>  <a href="http://www.nativeplantcenter.org">http://www.nativeplantcenter.org</a>  <a href="http://www.projectnative.org">http://www.projectnative.org</a></p>
<b>Maintain Healthy Turf and Plants</b>	<p><i>Manage turf and plants to create healthy conditions that prevent pests and plant diseases. Examples of cultural management practices include:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Remove diseased plants and debris</i> from the grounds.</li> <li>▪ <i>Keep grass longer</i> (at least 3 inches) to promote a healthy root structure that can out-compete weeds. Keep mower blades sharp to avoid damaging grass. Damage increases its vulnerability to diseases, insects, and weeds.</li> <li>▪ <i>Spread new grass seed each year</i>, to cover bare patches and to crowd out weeds in established areas.</li> <li>▪ <i>Revisit the grounds frequently</i> to check that the methods used are improving areas of concern and adjust management techniques accordingly.</li> </ul> <p>Web resources for cultural practices:  <a href="http://www.dec.ny.gov/public/52570.html">http://www.dec.ny.gov/public/52570.html</a></p>

**SOURCES FOR MORE INFORMATION AND TRAINING OPPORTUNITIES  
ON MANAGING GROUNDS WITH ALTERNATIVES TO PESTICIDES**

Numerous training opportunities and informational resources are available to help school grounds managers and day care center operators with problem-specific questions and to provide more detailed, step-by-step instructions for grounds management without pesticides. Below is a sampling of online resources and suggested titles of books and manuals. Information can also be found in the garden section of a local library (suggested titles below), or by contacting Cornell Cooperative Extension or the Master Gardener Program.

NOTE: References to the resources and links in this guidance will be included on the DEC web site in a set of information on Chapter 85 and the final guidance.

- **ONLINE RESOURCES:** See the webpages below for additional links to informational and training resources.

Green Lawn and Garden Tips <http://www.dec.ny.gov/public/52570.html>

Resources for Further Information <http://www.dec.ny.gov/public/52584.html>

*Cooperative Extension* - A resource for assistance with insect, weed and disease identification and appropriate turf and optimal turfgrass culture and management, including the most appropriate turf and plant varieties (including master gardeners in many counties). Contact the local extension office, see list at <http://cce.cornell.edu/Pages/Default.aspx>

- **SUGGESTED PUBLICATIONS:** Listed below are a few of the many available publications on grounds management.

*Managing Healthy Sports Fields: A Guide to Using Organic Materials for Low-Maintenance and Chemical-Free Playing Fields.* By Paul D. Sachs. John Wiley and Sons, Inc., 2004. ISBN 0-471-47269-7 (cloth).

*The Organic Lawn Care Manual: A Natural, Low-Maintenance System for a Beautiful, Safe Lawn.* By Paul Tukey. Storey Publishing, LLC., 2007. ISBN 978-1-58017-655-2 (hardcover), ISBN 978-1-58017-649-1 (paperback).

*The Rodale Book of Composting: Easy Methods for Every Gardener.* By Deborah L. Martin and Grace Gershuny (editors). Rodale Press, 1992. ISBN 0-87857-990-7 (hardcover), 0-87857-991-5 (paperback).

**NOTE:** Prohibited pesticides could be referenced on internet sites or in resources consulted by schools, day care centers and others. Prohibited pesticides cannot be used at schools and day care centers in New York State, even if referenced in resources, including those listed above. Therefore, when consulting these or any other resources about grounds maintenance options,

schools and day care centers should focus on information about pesticide alternatives and soil, plant, and turf care.

### C. WHICH PESTICIDES ARE ALLOWED

Establishing healthy grounds is the best way to prevent pest problems. Should the need for pesticides arise, however, the following is a list of types of pesticide products allowed under the new law and information about how to identify them.

- **ANTIMICROBIAL PRODUCTS** are available in several forms, such as sprays, liquids, and concentrated powders, and contain active ingredients such as bleach. There are only a few antimicrobial products registered for use on artificial turf. Also, although fungi are microbes, this excepted category for antimicrobials does not include fungicides used on turf and plants for the purpose of controlling plant diseases. *Use Examples:* Antimicrobials are designed to destroy or suppress the growth of microorganisms such as bacteria or viruses, often on inanimate objects and surfaces.
- **AEROSOL SPRAYS IN 18 OUNCE CANS (OR SMALLER)** can be readily identified by their packaging. As specified in the law, these are only to be used to protect individuals from imminent threat from a stinging or biting insect (venomous spiders, bees, wasps and hornets). These sprays are not meant for long-term pest management. Consult the internet resources under **Section B** (B. How To Maintain Child-Safe Playing Fields and Turf Without Pesticides) for ways to remove the sources of the hazards posed by stinging insects, such as covering garbage cans and removing yard waste which may attract and harbor such pests. *Use Examples:* These aerosols are used to control bees and wasps.
- **NON-VOLATILE INSECT AND RODENT BAITS IN TAMPER RESISTANT CONTAINERS** are, in general, self-containerized childproof packages or “stations” containing pesticidal bait. Depending upon the product, the container can be purchased with the bait in it or the container can be empty and a certified applicator can fill it with the bait and secure it prior to use.<sup>2</sup> Not allowed under this exception are baits packaged as pellets, granules, treated grain, or any other loose form that can lead to potential exposure to children, non-target organisms and the environment or gel baits in syringes that are applied when squeezed. *Use Examples:* Bait stations are usually used for rodent, roach, and ant control.
- **PRODUCTS CONTAINING BORIC ACID OR DISODIUM OCTABORATE TETRAHYDRATE** will have those ingredients listed on the label. They are, in general, insecticide products containing these chemicals in powder form. *Use Examples:* Products with these ingredients are used to help control wood-boring insects, ants and silverfish.

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<sup>2</sup> For additional information on EPA's criteria for tamper-resistant bait stations see: [http://www.epa.gov/pesticides/PR\\_Notices/pr94-7.html](http://www.epa.gov/pesticides/PR_Notices/pr94-7.html)

- **HORTICULTURAL OILS AND SOAPS THAT DO NOT CONTAIN SYNTHETIC PESTICIDES OR SYNERGISTS** are generally identifiable by reading the label. Make sure the active ingredients listed are limited to paraffinic oil, mineral oil, petroleum oil, citrus oil, or combinations of salts of fatty acids. Most products labeled as horticultural oil, summer oil, dormant oil, or insecticidal soap will not contain synthetic pesticides or synergists, and will therefore be allowed. If you are unsure, look for the acronym “OMRI” on the label. OMRI stands for the Organic Materials Review Institute and horticultural oils and soaps with that label will meet the law’s criteria. *Use Examples:* Such oils and soaps are used, among other purposes, to manage some plant pests, such as aphids, spider mites and leaf hoppers.
  
- **PESTICIDES CLASSIFIED AS EXEMPT BY U. S. ENVIRONMENTAL PROTECTION AGENCY (EPA)** are not registered by EPA, because they contain ingredients EPA considers to pose little or no risk. (These products are also known as Minimum Risk Pesticides or 25(b) exempt pesticides.) A list of those ingredients is on the next page. Schools and day care centers considering use of the EPA-exempt products should investigate the potential uses, as there is more information than is feasible to include in this guidance (EPA resource listed below). *Use Examples:* Corn gluten meal may be used for managing pre-emergent weeds (e.g. crabgrass and dandelions); soybean oil may be used on scales, mites, aphids and other insects; and dried blood is sometimes used as a repellent for deer or rabbits.

There is no comprehensive list of EPA Minimum Risk Pesticides, but there are ways to identify them:

- It may be noted on the label that the product is an EPA Minimum Risk Pesticide, but such an indication is not required.
  
- All ingredients in an EPA Minimum Risk Pesticide must be listed on the label by name and the pesticide can only contain inert ingredients that are minimal risk. An EPA Minimum Risk Pesticide can ONLY contain one or more of the active ingredients listed on the next page.

Information on EPA-exempt pesticides can be found at:  
[http://www.epa.gov/oppbppd1/biopesticides/regtools/25b\\_list.htm](http://www.epa.gov/oppbppd1/biopesticides/regtools/25b_list.htm)

For product label information on registered pesticides listed in this section and to learn whether a pesticide is registered for use in NYS, please search <http://pims.psur.cornell.edu/> the online New York State Pesticide Product Ingredient and Manufacturer System.

**EPA-EXEMPT PRODUCTS - ACTIVE INGREDIENTS**

Castor oil (U.S. Pharmacopeia or equivalent)	Malic acid
Cedar oil	Mint and mint oil
Cinnamon and cinnamon oil	Peppermint and peppermint oil
Citric acid	2-Phenethyl propionate (2-phenylethyl propionate)
Citronella and Citronella oil	Potassium sorbate
Cloves and clove oil	Putrescent whole egg solids
Corn gluten meal	Rosemary and rosemary oil
Corn oil	Sesame (includes ground sesame plant) and sesame oil
Cottonseed oil	Sodium chloride (common salt)
Dried Blood	Sodium lauryl sulfate
Eugenol	Soybean oil
Garlic and garlic oil	Thyme and thyme oil
Geraniol	White pepper
Geranium oil	Zinc metal strips (consisting solely of zinc metal and impurities)
Lauryl sulfate	
Lemongrass oil	
Linseed oil	

**D. EMERGENCY DETERMINATIONS**

The purpose of the new law is to minimize the harmful effects of pesticides on children by limiting the use of aesthetic pesticides in sensitive areas such as schools and day care centers and develop pesticide alternatives. An exception to the pesticide prohibition is provided in the State Education Law (SEL) and Social Services Law (SSL). Use of a prohibited pesticide is allowed, when a determination is made that an emergency application is needed.

Schools and day care centers subject to the law must seek an emergency determination from the appropriate entity. The entities which may make such determinations are identified in the SED and SSL.<sup>3</sup> The primary entities are county health departments, State DOH, DEC, and, in the case of public schools' requests for determinations, school boards.

The DEC, State DOH, SED and OCFS together, based on their interpretation of Chapter 85, have identified a working framework for emergency determinations, so that schools and day care centers know which entity to contact when seeking an emergency determination to apply a

<sup>3</sup> Provisions regarding emergency pesticide applications are included in section 409-k.2 of the State Education Law and section 390-g.2 of the Social Services Law, both of which read as follows: "No school [or day care] shall apply pesticide to any playgrounds, turf, athletic or playing fields, except that an emergency application of a pesticide may be made as determined by the county health department or for a county not having a health department such authority as the county legislature shall designate, the commissioner of health or his or her designee, the commissioner of environmental conservation or his or her designee, or, in the case of a public school, the school board."

prohibited pesticide. Also included in the framework are the types of emergencies DEC, State DOH and county health departments will consider. (State DOH oversees most county health departments.)

- **FRAMEWORK FOR IDENTIFYING THE ENTITY A SCHOOL OR DAY CARE CENTER WOULD CONTACT** to seek an emergency determination to apply a prohibited pesticide is outlined below, based on whether a public school, non-public school, or day care center is seeking the determination:

- **PUBLIC SCHOOLS:** Each public school must contact its school board to seek an emergency pesticide application determination for any type of situation that may warrant an emergency. The SED has interpreted the SEL to require that the local school boards make all emergency determinations for public schools. Public schools should not contact the State DOH, county health departments or DEC to seek an emergency pesticide application determination. A school board, as it deliberates, may consult those agencies with relevant questions (as well as the in-house expertise of its grounds managers). Specifically, school boards may contact the county health department or the State DOH to consult on public health-related emergency situations and they may contact the DEC with questions about environmentally-related emergency situations.

- **NON-PUBLIC SCHOOLS AND DAY CARE CENTERS:** These entities should contact either the DOH or the DEC, depending upon whether the emergency request relates to the need to apply a prohibited pesticide for a public health-related matter or an environment-related matter, as follows:

- **Public Health-related Emergency Pesticide Application Determinations:** Non-public schools and daycare centers should contact the DOH (the county health department, State DOH district office in certain counties or the state DOH's Bureau of Toxic Substance Assessment), when a pest issue arises that may warrant an emergency application of a prohibited pesticide to protect public health (e.g. residual larvicide treatments on grounds to control mosquitoes that carry Eastern Equine Encephalitis virus). The DOH will make determinations for emergency pesticide applications only when a pest poses a significant threat to public health.

**To Contact the DOH about Public Health-related Emergency**

**Determinations:** Contact the county health department or applicable district office (telephone number for each county on attached list) or the State DOH, Bureau of Toxic Substance Assessment at 518-402-7820.

- **Environment-related Emergency Pesticide Application Determinations:** Non-public schools and day care centers should contact the DEC in writing to seek an emergency determination, when an emergency arises which would significantly affect the environment (e.g. invasive species management). For

the form on which requests are to be made to DEC, see the Department website <http://www.dec.ny.gov>.

**To Contact DEC about Environment-related Emergency Determinations for Non-public Schools and Day Care Centers:** Contact the DEC Bureau of Pest Management at: 518-402-8788. Use the form at the above link to submit requests to DEC for emergency determinations.

▪ ***GUIDANCE FOR DETERMINING WHEN A SITUATION IS AN EMERGENCY***

The intent of the new law is to require schools and day care centers to manage grounds and pests without pesticides. Emergency determinations should only be sought or granted for a one-time pesticide application for a specific situation, which presents a true emergency. To provide guidance on deciding when a situation is *not* an emergency, the DEC, State DOH and SED, in consultation with OCFS, identified the following situations that these state agencies generally would not consider to warrant an emergency pesticide application determination:

- when the problem can be managed with the allowed products and/or alternative pest management methods (even when it takes time to learn and fully practice pesticide alternatives).
- for routine or repetitive pest problems. Pest problems can occur on a regular or seasonal basis, but they do not usually rise to the level of a public health or environmental threat that constitutes an emergency.
- when the pesticide application would be for purely aesthetic (non-emergency) reasons.

**E. WHERE TO READ THE LAW AND ASK QUESTIONS**

- ***WHERE TO READ THE NEW LAW:*** The State Education Law (SEL), Social Services Law (SSL) and Environmental Conservation Law (ECL) can be read online at: <http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS>

- *Schools*, see Section 409-k of the SEL.
- *Day care centers*, see Section 390-g of the SSL.
- *To read the requirement for this guidance*, see Section 33-0303.7 of the ECL.

▪ ***QUESTIONS ABOUT THE NEW REQUIREMENTS***

- *For public and non-public schools*, direct questions about the new SEL requirements to the SED, Office of Facilities Planning at 518-474-3906.

- *For day care centers*, direct questions about the new SSL requirements to the OCFS, Division of Child Care Services at 518-474-9454.
- *For help with questions about turf and grounds management without pesticides*, Contact the local cooperative extension office, see list at <http://cce.cornell.edu/Pages/Default.aspx>
- *Questions on this guidance*: Contact the DEC Bureau of Pest Management at 518 - 402-8768.

⇒ **ATTENTION SCHOOLS AND DAY CARE CENTERS: OTHER REQUIREMENTS** ⇐

Separate from the requirements in Chapter 85, Laws of 2010, there are other new and existing requirements, which schools and day cares must be aware of and comply with, in regard to grounds maintenance and pest management. A summary of them is included below:

***NEW FERTILIZER USE RESTRICTIONS***

Under a separate new law, Chapter 205 of the Laws of 2010, starting January 1, 2012, new restrictions go into effect regarding the use of phosphorus fertilizers and fertilizers on lawns and non-agricultural turf. As of that date, the following are prohibited on lawns or non-agricultural turf:

- The use of phosphorus fertilizers, unless establishing a new lawn or a soil test shows phosphorus is needed for growth, and
- The use of fertilizers between December 1 and April 1 annually.
- The use of fertilizers is prohibited within 20 feet of any surface water except:
  - Where a continuous natural vegetation buffer, at least 10 feet wide, separates lawn and water.
  - Where a spreader guard, deflector shield or drop spreader is used, then the application may not occur within three 3 feet of any surface water.

Additionally, fertilizer cannot be used on any impervious surfaces, and, if such an application occurs, it must be cleaned immediately and legally applied or placed in an appropriate container. Details can be found at [www.dec.ny.us.gov/chemical/67239.html](http://www.dec.ny.us.gov/chemical/67239.html) on the DEC website.

**PESTICIDE CERTIFICATION, NOTIFICATION, AND REPORTING REQUIREMENTS**

Anyone who applies pesticides to buildings or grounds at schools or day care centers, including pesticides allowed under the new law, must meet existing pesticide requirements.<sup>4</sup> The following is a summary of these requirements:

- The definition of a pesticide is contained in Section 33-0101.35 of the ECL. Under that definition, all of the exceptions to the ban listed in **Section C** (Which Pesticides are Allowed) above are classified by DEC as pesticides and are subject to applicable regulations that relate to pesticide use.<sup>4</sup>
- Sections 33-0905 and 33-0907 of the ECL and related regulatory requirements in 6 NYCRR Part 325 contain pesticide applicator certification and business or agency registration requirements.<sup>4</sup> (Under the regulation, certification is not required when using antimicrobials, except where used in cooling towers (exist at some schools) or other processes not present at schools.)
- Pesticide reporting requirements under Section 33-1205 of the ECL apply to all pesticides used, except antimicrobials and EPA-exempt pesticides (also referred to as EPA Minimum Risk Pesticides or 25(b) pesticides).
- Pesticide application notification requirements must be met when using pesticides on structures or grounds, under Section 409-h of the SEL and Section 390-c of the SSL.

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<sup>4</sup> See <http://www.dec.ny.gov/regulations/8527.html> for information on DEC pesticide requirements in law and regulation.

<b>ATTACHMENT A COUNTY HEALTH DEPARTMENT CONTACT LIST*</b>	
<b>County</b>	<b>Phone Number</b>
Albany	(518) 447-4620
Allegany	(585) 268-9254
Broome	(607) 778-2887
Cattaraugus	(716) 373-8050 Ex. 3437
Cayuga	(315) 253-1405
Chautauqua	(716) 753-4481
Chemung	(607) 737-2019
Chenango	(607) 337-1673
Clinton	(518) 565-4870
Columbia	(518) 828-3358
Cortland	(607) 753-5035
Delaware	(607) 432-3911
Dutchess	(845) 486-3404
Erie	(716) 898-6105
Essex	(518) 891-1800
Franklin	(518) 891-1800
Fulton	(315) 866-6879
Genesee	(585) 344-2580 x 5499
Greene	(607) 432-3911
Hamilton	(518) 891-1800
Herkimer	(315) 866-6879
Jefferson	(315) 785-2277
Lewis	(315) 785-2277
Livingston	(585) 243-7280
Madison	(315) 366-2526
Monroe	(585) 753-5461
Montgomery	(315) 866-6879
Nassau	(516) 227-9723
New York City	(212) 442-5222
	(in NYC 311)
	(212) 788-4646
Niagara	(716) 439-7444
Oneida	(315) 798-5064
Onondaga	(315) 435-6623
Ontario	(315) 789-3030
Orange	(845) 291-2331
Orleans	(585) 589-3278
	(585) 589-2770
Oswego	(315) 349-3557

<b>ATTACHMENT A COUNTY HEALTH DEPARTMENT CONTACT LIST*</b>	
<b>County</b>	<b>Phone Number</b>
Otsego	(607) 432-3911
Putnam	(845) 808-1390 x 2166
Rensselaer	(518) 270-2632
Rockland	(845) 364-2608
St. Lawrence	(315) 386-1040
Saratoga	(518) 793-3893
Schenectady	(518) 386-2818
Schoharie	(518) 295-8382
Schuyler	(607) 324-8371
Seneca	(315) 539-1925
Steuben	(607) 324-8371
Suffolk	(631) 852-5800
Sullivan	(845) 794-2045
Tioga	(607) 687-8565
Tompkins	(607) 274-6688
Ulster	(845) 340-3010
Warren	(518) 793-3893
Washington	(518) 793-3893
Wayne	(315) 789-3030
Westchester	(914) 813-5171
Wyoming	(585) 786-8894
Yates	(315) 789-3030

\*Source for the above list: New York State Department of Health. The applicable state DOH district office contact number is provided for certain counties.

A Cost Comparison of  
Conventional (Chemical) Turf Management  
and Natural (Organic) Turf Management  
for School Athletic Fields

A report prepared by  
Grassroots Environmental Education  
*A non-profit organization*

*Written by*  
Charles Osborne  
& Doug Wood

**March, 2010**

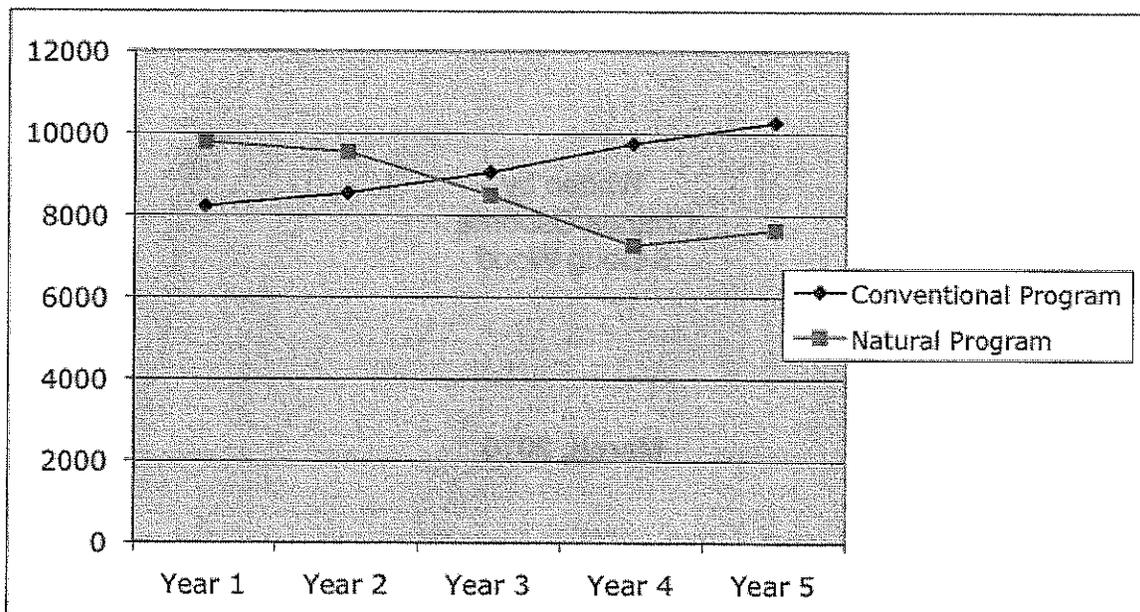
## A Cost Comparison of Conventional (Chemical) Turf Management and Natural (Organic) Turf Management for School Athletic Fields

### Introduction

The mounting scientific evidence linking exposure to pesticides with human health problems, especially in developing children, has increased the demand for non-chemical turf management solutions for schools. One obstacle commonly cited by chemical management proponents is the purported higher cost of a natural turf program.

This report compares the annual maintenance costs for a typical 65,000 square foot high school football field using both conventional and natural management techniques. Both programs are mid-level turf management programs, typical of those currently being used at many schools across New York State.<sup>1</sup>

The analysis of data demonstrates that once established, a natural turf management program can result in savings of greater than 25% compared to a conventional turf management program. (Fig. 1)



**Figure 1: A Comparison of Costs for Conventional and Natural Turf Programs Over A Five-Year Period**

<sup>1</sup> We recognize that some schools will spend considerably less for field maintenance than our example, and some will spend much more. The turf management programs chosen for this comparison are designed to yield similar aesthetic results.

## Background

Prior to 1950, all school playing fields were maintained organically. The widespread use of chemical pesticides to control weeds, insects and turf diseases on school playing fields began in the post-World War II era, when chemical companies sought to establish markets for their products in the agricultural, consumer and municipal sectors. By the mid-1990s, former New York State Attorney General Robert Abrams estimated that 87% of public schools in the state were using chemical pesticides on their fields.<sup>2</sup>

As awareness of the risks associated with pesticides has grown and demand for non-toxic solutions has increased, manufacturers and soil scientists have responded with a new generation of products and technologies that have changed the economics for natural turf management. Product innovation has resulted in more effective products, and advances in soil science have increased understanding of soil enhancement techniques. Virtually all major turf chemical manufacturers now offer an organic product line. Professional training and education have also increased, with most state extension services and professional organizations now offering training courses in natural turf maintenance.

## Sources of Data

The products, costs, application rates and other data for our analysis have been obtained from various sources, including the Sport Turf Managers Association<sup>3</sup>, Iowa State University<sup>4</sup>, bid specifications from a coalition of public schools on Long Island,<sup>5</sup> bids and proposals from conventional turf management companies, and documented costs for existing natural programs.

## Economic Assumptions

This analysis is based on the cost of operating in-house turf programs. Sub-contracted programs typically cost 30-35% more. Both programs include fertilization, seeding and aeration. All product costs are based on quantity institutional purchases, with a calculated 7% annual cost increase. Labor costs have been calculated based on a municipal employee @ \$40,000 including

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<sup>2</sup> *Pesticides in Schools: Reducing the Risks*, Robert Abrams, Attorney General of New York State, March 1993.

<sup>3</sup> "2009 Field Maintenance Costing Spreadsheet" published by the STMA. Available online at [www.stma.org/\\_files/\\_items/stma-mr-tab6-2946/docs/field%20maintenance%20costing%20spreadsheet.pdf](http://www.stma.org/_files/_items/stma-mr-tab6-2946/docs/field%20maintenance%20costing%20spreadsheet.pdf)

<sup>4</sup> "Generic Football Field Maintenance Program" by Dr. Dave Minner. Department of Horticulture, Iowa State University.

<sup>5</sup> "Invitation to Bid, Organic Lawn Care Field Maintenance and Supplies," Jericho Union Free School District, Jericho, NY on behalf of 31 school districts.

benefits, calculated at \$20 per hour. Indirect costs for pesticide applicator licenses, training, storage/security and DEC compliance costs have been estimated at \$500 per year. Fertilization for both programs has been calculated at the rate of 5 lbs of nitrogen (N) per 1000 SF. Grub and/or insect controls may or may not be necessary. Compost has been calculated at a cost of \$40 per yard. Seeding rate is calculated at 5 lbs/1000 SF. Cost of water is estimated at \$0.003212/gal.<sup>6 7</sup>

## **Irrigation**

Irrigation costs for turf maintenance are considerable, but are generally less for naturally maintained fields due to deep root growth and moisture retention by organic matter. Estimates of irrigation reduction for natural turf programs range from 33% to more than 50%. This analysis uses a conservative diminishing factor for irrigation reduction for the natural management program, starting with 100% in the first year as the field gets established down to 60% in the third year and beyond. Some school districts may experience greater savings.

## **Soil Biology**

One of the most critical factors in the analysis – and the one most difficult to assess - is the availability and viability of microbiology on fields that have been maintained using conventional chemical programs. The microbiology that is essential for a successful natural turf management program can be destroyed or severely compromised by years of chemical applications. In this analysis, we have assumed a moderate level of soil biology as a starting point; the compost topdressing in years 1-3 is part of the rehabilitation process required to restore the soil to its natural, biologically active state.

## **Reducing Fertilization Costs**

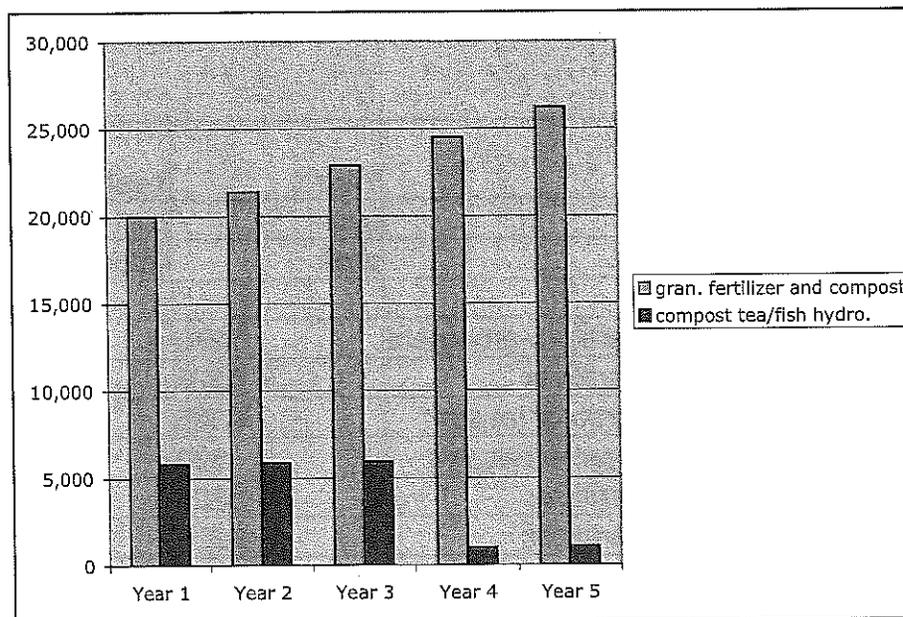
Once playing fields have been converted to a natural program and the percentage of organic matter (%OM) has reached the desired level (5.0-7.0), additional significant reductions in fertilization costs can be realized using compost tea and other nutrients (humic acid, fish hydrolysates) applied as topical spray, rather than using granular fertilizers.

The following chart shows the product cost benefits of switching to an organic nutrient spray program, and amortizing the \$10-12,000 capital cost for equipment over three years. (Fig. 2)

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<sup>6</sup> Water usage computed using STMA recommended irrigation rate of one inch/week for Junior High football field. Iowa State University recommends 1.75 inches per week for football fields.

<sup>7</sup> Price computed using NUS Consulting International Water Report for 2008 average US water cost per m3 adjusted for inflation.



**Figure 2:** Cost comparison of granular fertilizer and compost compared to spraying compost tea and fish hydrolysates in Marblehead, MA.<sup>8</sup>

## Conclusion

This analysis demonstrates that the cost of a natural turf management program is incrementally higher in the first two years, but then decreases significantly as soil biology improves and water requirements diminish. Total expenditures over five years show a cost savings of more than 7% using natural turf management, and once established, annual cost savings of greater than 25% can be realized.

## About the authors:

**Charles Osborne** is a professional turf consultant, working with municipalities and school districts in the Northeast to help them develop effective natural turf management programs. A professional grower with more than thirty years of experience in greenhouse and turf management, Mr. Osborne is the Chairman of the Town of Marblehead Recreation, Parks, and Forestry Commission where he oversees the management of the Town's school and municipal fields.

**Doug Wood** is the Associate Director of Grassroots Environmental Education, an environmental health non-profit organization which developed the EPA award-winning program, "The Grassroots Healthy Lawn Program." He is also the director and producer of the professional video training series "Natural Turf Pro."

<sup>8</sup> To address concerns over the potential phosphorus content of compost tea (contained in the bodies of microbes) only high-quality vermicompost should be used for tea production. Animal manure teas, popular with farmers for generations, are not suitable for use on lawns or playing fields.

COMPARISON OF CONVENTIONAL (CHEMICAL) AND NATURAL (ORGANIC)  
TURF MANAGEMENT PROGRAMS: YEAR ONE

<b>CONVENTIONAL PROGRAM</b>		Year 1	Year 1	Year 1
		cost	cost	total
		prod	labor	
April	fert/pre-emergent	\$250	\$95	\$345
May	fertilizer	\$225	\$95	\$320
June	grub or insect	\$325	\$95	\$420
June	post-emergent	\$90	\$150	\$240
July	fertilizer	\$225	\$95	\$320
Sep	fertilizer	\$225	\$95	\$320
Nov	fertilizer	\$225	\$95	\$320
June	seed	\$700	\$150	\$850
Sep	seed	\$700	\$150	\$850
aerate	3 times	\$0	\$375	\$375
	irrigation	\$3,212	\$150	\$3,362
	indirect costs			\$500
	<b>Total Cost</b>			<b>\$8,222</b>
<b>NATURAL PROGRAM</b>				
		Year 1	Year 1	Year 1
		cost	cost	total
		prod	labor	
April	fertilizer	\$610	\$115	\$725
June	fertilizer	\$610	\$115	\$725
June	liquid humate	\$120	\$100	\$270
July	fish/compost tea	\$100	\$100	\$250
Sep	fertilizer	\$610	\$115	\$725
Jun	seed	\$700	\$150	\$850
Sep	seed	\$700	\$150	\$850
	aerate 3x	\$0	\$375	\$375
Jun	topdress	\$1,300	\$350	\$1,650
	irrigation	\$3,212	\$150	\$3,362
	<b>Total Cost</b>			<b>\$9,782</b>

COMPARISON OF CONVENTIONAL (CHEMICAL) AND NATURAL (ORGANIC)  
TURF MANAGEMENT PROGRAMS: YEAR TWO

CONVENTIONAL PROGRAM		Year 2	Year 2	Year 2
		cost	cost	total
		prod +7%	labor	
April	fert/pre-emergent	\$267	\$95	\$362
May	fertilizer	\$240	\$95	\$335
June	grub or insect	\$347	\$95	\$335
June	post-emergent	\$96	\$150	\$246
July	fertilizer	\$240	\$95	\$335
Sep	fertilizer	\$240	\$95	\$335
Nov	fertilizer	\$240	\$95	\$335
June	seed	\$750	\$150	\$900
Sep	seed	\$750	\$150	\$900
aerate	3 times	\$0	\$375	\$375
	irrigation	\$3,436	\$150	\$3,586
	indirect costs			\$500
	<b>Total Cost</b>			<b>\$8,544</b>
<b>NATURAL PROGRAM</b>				
		Year 2	Year 2	year 2
		cost	cost	total
		prod+7%	labor	
April	fertilizer	\$653	\$115	\$768
June	fertilizer	\$653	\$115	\$768
June	liquid humate	\$128	\$100	\$228
July	fish/compost tea	\$107	\$100	\$207
Sep	fertilizer	\$653	\$115	\$768
Jun	seed	\$750	\$150	\$900
Sep	seed	\$750	\$150	\$900
	aerate 3x	\$0	\$375	\$375
Jun	topdress	\$1,390	\$350	\$1,740
	irrigation	\$2,749	\$150	\$2,899
	<b>Total Cost</b>			<b>\$9,553</b>

**COMPARISON OF CONVENTIONAL (CHEMICAL) AND NATURAL (ORGANIC)  
TURF MANAGEMENT PROGRAMS: YEAR THREE**

<b>CONVENTIONAL PROGRAM</b>		Year 3	Year 3	Year 3
		cost	cost	total
		prod +7%	labor	
April	fert/pre-emergent	\$285	\$95	\$380
May	fertilizer	\$256	\$95	\$351
June	grub or insect	\$371	\$95	\$467
June	post-emergent	\$103	\$150	\$253
July	fertilizer	\$256	\$95	\$351
Sep	fertilizer	\$256	\$95	\$351
Nov	fertilizer	\$256	\$95	\$351
June	seed	\$775	\$150	\$925
Sep	seed	\$775	\$150	\$925
aerate	3 times	\$0	\$375	\$375
	irrigation	\$3,676	\$150	\$3,826
	indirect costs			\$500
	<b>Total Cost</b>			<b>\$9,055</b>
<b>NATURAL PROGRAM</b>				
		Year 3	Year 3	Year 3
		cost	cost	total
		prod +7%	labor	
April	fertilizer	\$699	\$115	\$814
June	fertilizer	\$0	\$0	\$0
June	liquid humate	\$137	\$100	\$237
July	fish/compost tea	\$114	\$100	\$214
Sep	fertilizer	\$699	\$115	\$814
Jun	seed	\$775	\$150	\$925
Sep	seed	\$775	\$150	\$925
	aerate 3x	\$0	\$375	\$375
Jun	topdress	\$1,487	\$350	\$1,837
	irrigation	\$2,206	\$150	\$2,356
	<b>Total Cost</b>			<b>\$8,497</b>

**COMPARISON OF CONVENTIONAL (CHEMICAL) AND NATURAL (ORGANIC)  
TURF MANAGEMENT PROGRAMS: YEAR FIVE**

<b>CONVENTIONAL PROGRAM</b>		Year 5	Year 5	Year 5
		Cost	cost	total
		prod + 7%	labor	
April	fert/pre-emergent	\$326	\$115	\$441
May	fertilizer	\$294	\$115	\$409
June	grub or insect	\$445	\$115	\$560
June	post-emergent	\$117	\$170	\$287
July	fertilizer	\$294	\$115	\$409
Sep	fertilizer	\$294	\$115	\$409
Nov	fertilizer	\$294	\$115	\$409
June	seed	\$856	\$170	\$1,026
Sep	seed	\$856	\$170	\$1,026
aerate	3 times	\$0	\$425	\$425
	irrigation	\$4,208	\$170	\$4,378
	indirect costs			\$500
	<b>Total Cost</b>			<b>\$10,279</b>
<b>NATURAL PROGRAM</b>				
		Year 5	Year 5	Year 5
		cost	labor	total
		prod + 7%		
April	fertilizer	\$0	\$0	\$0
June	fertilizer	\$0	\$0	\$0
June	liquid humate	\$160	\$120	\$280
July	fish/compost tea	\$535	\$720	\$1,255
Sep	fertilizer	\$800	\$135	\$935
Jun	seed	\$856	\$170	\$1,026
Sep	seed	\$856	\$170	\$1,026
	aerate 3x	\$0	\$425	\$425
Jun	topdress	\$0	\$0	\$0
	irrigation	\$2,525	\$170	\$2,695
	<b>Total Cost</b>			<b>\$7,642</b>

COMPARISON OF CONVENTIONAL (CHEMICAL) AND NATURAL (ORGANIC)  
TURF MANAGEMENT PROGRAMS: YEAR FOUR

<b>CONVENTIONAL PROGRAM</b>		Year 4	Year 4	Year 4
		cost	cost	total
		prod +7%	labor	
April	fert/pre-emergent	\$305	\$115	\$420
May	fertilizer	\$274	\$115	\$389
June	grub or insect	\$416	\$115	\$531
June	post-emer	\$110	\$170	\$280
July	fertilizer	\$274	\$115	\$389
Sep	fertilizer	\$274	\$115	\$389
Nov	fertilizer	\$274	\$115	\$389
June	seed	\$800	\$170	\$970
Sep	seed	\$800	\$170	\$970
aerate	3 times	\$0	\$425	\$425
	irrigation	\$3,933	\$170	\$4,103
	indirect costs			\$500
	<b>Total Cost</b>			<b>\$9,755</b>
<b>NATURAL PROGRAM</b>				
		Year 4	Year 4	Year 4
		cost	labor	total
		prod +7%		
April	fertilizer	\$0	\$0	\$0
June	fertilizer	\$0	\$0	\$0
June	liquid humate	\$150	\$120	\$270
July	fish/compost tea	\$500	\$720	\$1,220
Sep	fertilizer	\$748	\$135	\$883
Jun	seed	\$800	\$170	\$970
Sep	seed	\$800	\$170	\$970
	aerate 3x	\$0	\$425	\$425
Jun	topdress	\$0	\$0	\$0
	irrigation	\$2,360	\$170	\$2,530
	<b>Total Cost</b>			<b>\$7,268</b>