The Watershed Partnership, Inc.

Monday, March 11, 2015

From Jerry Silbert, M.D. in qualified support of SB-366 (with revisions).

Honorable members of the Committee:

Bill 366 provides more products that can be used for control of grubs and other insects. I have suggested revisions (attached) that makes this even stronger and more practical.

Bill 366 extends the lawn pesticide ban to include high schools and this is a good thing. However, I may be interpreting the bill incorrectly, but it seems to do away with IPM at schools altogether. If so, this is grave mistake. ALL schools public and private should have an IPM plan for the application of toxic pesticides in areas not subject to the lawn pesticide ban. I have suggested revisions that accomplish this objective. I hope you will consider them.

Extending the ban to state parks, playgrounds, and athletic fields within state parks will provide even more protection to the most vulnerable people. But this section requires revisions to make it practical. As it stands, the bill is far too broad. It would be much more practical to narrow its scope. I have attached suggestions on how this might be done.

The evidence is clear. Lawn pesticides can harm children. This conclusion is found in numerous peer reviewed scientific studies. A recent review of the scientific literature by the American Academy of Pediatrics emphasized this fact. The principle authors of this review commended Connecticut's school pesticide ban as more protective of children than the "Integrated Pest Management" (IPM) that is advocated by the ban's opponents (See attached Appendix 2 with references).

Dr. Philip Landrigan, an internationally recognized expert on the environment and children's health, has praised Connecticut for it's policy on protecting children from toxic lawn pesticides. Dr. Landrigan said, "I am particularly concerned by the suggestion that the existing very highly protective pesticide law be replaced with newer, weaker legislation that is less highly protective of children's health under the rubric of "Integrated Pest Management" or "IPM..."

What the Environment Committee has proposed to protect children in grades K-12 should be applied equally to state parks, playgrounds, and athletic fields within state parks that children and pregnant women frequent.

Jerome A. Silbert, M.D., Executive Director • 155 White Birch Drive, Guilford, CT 06437
Telephone: (203) 453-8537 • Email: waterpartnership@sbcglobal.net

The Watershed Partnership, Inc.

Children and the child *in utero* are particularly vulnerable to toxins such as lawn pesticides. Children eat more food, drink more fluids, breath more air and have more skin area per pound of body weight than adults. Children cannot defend against toxic chemicals as well as adults.

The child *in utero* is exquisitely sensitive to toxic chemicals and endocrine disrupters that can cause irreversible harm to the development of the brain and other organs.

In the medical profession there is an important principle – First do no harm. I believe it is a moral duty to prevent harm to children from these toxic chemicals.

What stands in the way of doing what is so obviously right?

You may hear testimony from opponents of this bill saying that without toxic pesticides it is not possible and too costly to maintain safe, playable athletic fields. **THIS IS SIMPLY NOT TRUE**.

There are many school fields in CT and NY that are not using toxic lawn pesticides. They look fine and are perfectly playable. The reason some fields do not do well is because of lack of knowledge or lack of motivation or both. With the right knowledge and the right motivation, perfectly playable fields are definitely possible. I have included with this testimony photographs of eight playing fields I am personally familiar with, that have been maintained without toxic lawn pesticides for many years. (See Appendix 1) They are pesticide free and perfectly playable

Is non-toxic care too costly? It is not. Actually, it can be less costly than conventional care using toxic pesticides once the health and productivity of the soil is restored. (see Appendix 3)

But ultimately, this is not about grass. This is about children with cancer. This is about children with leukemia. This is about children with birth defects, This is about children with learning disabilities.

Honorable members of the Committee, you did the right thing to consider this bill and you will do the right thing if you vote for it WITH THE NECESSARY REVISIONS. You may never know the children you are protecting from harm, but rest assured, your vote can save lives and preventing the suffering of many of Connecticut's children and their families.

Respectfully,

Jerry Silbert, M.D.

Jerome A. Silbert, M.D., Executive Director • 155 White Birch Drive, Guilford, CT 06437
Telephone: (203) 453-8537 • Email: waterpartnership@sbcglobal.net

Attachment 1
Photos of Nontoxic Athletic Fields

Submitted by Dr. Jerry Silbert for Bills 1063 and 366

Attachment 1
Photos of Nontoxic Athletic Fields

Submitted by Dr. Jerry Silbert for Bills 1063 and 366


Lacross Field 02, Old Lyme, May 2012 - before nontoxic care


Lacross Field 02, Old Lyme, May 2014 - after nontoxic care


Hockey and Baseball field, Cheshire HS, July 2014 - 7 years nontoxic care

The Watershed Partnership, Inc.

Attachment 2
Lawn Pesticide Fact Sheet

- Of 30 commonly used lawn pesticides, 19 have studies linking them with cancer, 13 are linked with **birth defects**, 21 with **reproductive effects**, 15 with **neurotoxicity** or **abnormal brain development**.[1]
- **Children are particularly susceptible** because of their rapid growth and decreased ability to detoxify toxins.[2, 3]. This is particularly true for the developing child *in utero.*
- **Studies link some lawn pesticides to hyperactivity, developmental delays, behavioral disorder, and motor dysfunction.**[4, 5, 6]
- A Study in the Journal of the National Cancer Institute found that home and garden use of pesticides **can increase the risk of childhood leukemia by almost seven times.**[7]
- **The lag time between environmental exposure and the development of lymphoma can be as long as 20 years.**[8]
- **Lawn pesticides can be tracked inside of schools** where they can persist for long periods of time contaminating air, dust, surfaces, and carpets and exposing children to these toxic chemicals even if they are not in contact with the grass.[9]
- There is **provision for pesticide use if there is a condition that threatens the health and safety of the children**. For example, an underground wasp nest or an infestation of ticks.
- There are **significant gaps in the safety testing** of toxic lawn pesticides.[10]
    - **Lawn pesticides are not tested for long term toxicity** unless they are also used on food crops.
    - Lawn pesticides are **not tested in the combinations and formulations in which they are actually used**. Yet, these combinations and formulations can be more toxic than the pure active ingredient.[15]
    - **It is the chemical companies themselves that provide the safety testing data to the Environmental Protection Agency.**
    - **The official protocol used to test pesticides is no guarantee of scientific reliability and validity.**[14]
- **Lawn pesticides can contaminate well water**. 11% of residential wells tested in a Connecticut town showed the presence of one or more lawn pesticides.[11]
- **There are safe, effective, affordable alternatives** to using toxic lawn pesticides. A number of towns in Connecticut have successfully switched to pesticide-free organic lawn care.[12, 13]
- With so many unknowns and with plausible evidence of harm to children, **it makes no sense for our children to be involuntarily exposed to the unnecessary use of these toxic chemicals especially when there are safe, effective, affordable alternatives.**

References

1 Beyond Pesticides: http://www.beyondpesticides.org/lawn/factsheets/30health.pdf (accessed 12-20-2013)

2 National Research Council, National Academy of Sciences. 1993. Pesticides in the Diets of Infants and Children, National Academy Press, Washington, DC: 184-185.

3 US EPA, Office of the Administrator, Environmental Health Threats to Children, EPA 175-F-96-001, September 1996. See also: www.epa.gov/pesticides/food/pest.htm. (accessed 12-20-2013)

4 National Research Council. 2000. Scientific frontiers in developmental toxicology and risk assessment. http://dels.nas.edu/Report/Scientific-Frontiers-Developmental-Toxicology/9871 (accessed 12-20-2013)

5 Washington, DC: National Academy Press. Physicians for Social Responsibility, The National Environmental Trust, and The Learning Disabilities Association of America. 2000. Polluting our future: Chemical pollution in the U.S. that affects child development and learning. http://grconnect.com/reports/pollutingourfuture.pdf (accessed 12-20-2013)

6 Cox C. 2004. Journal Of Pesticide Reform. Vol. 24 (4) citing: Garry, V.F. et al. 2002. "Birth defects, season of conception, and sex of children born to pesticide applicators living in the Red River Valley of Minnesota." Environmental Health Perspectives, 110 (Suppl. 3):441-449. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241196/ (accessed 12-20-2013)

7 Lowengart, R. et al. 1987. "Childhood Leukemia and Parent's Occupational and Home Exposures," Journal of the National Cancer Institute 79:39. http://www.ncbi.nlm.nih.gov/pubmed/3474448 (accessed 3-16-2014)

8 Spatial-temporal analysis of non-Hodgkin lymphoma in the NCI-SEER NHL case-control study Environmental Health, www.ehjournal.net/content/10/1/63 (June 2011) http://www.ehjournal.net/content/10/1/63 (accessed 12-20-2013)

9 Nishioka, M., et al. 1996. Environmental Science Technology, 30:3313-3320; Nishioka, M., et al. 2001. Environmental Health Perspectives, 109(11). http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240481/pdf/ehp0109-001185.pdf (accessed 12-20-2013)

10 EPA registration requires only that the pure chemical compound of the pesticide be tested.

11 A survey of Private Drinking Water Wells For Lawn and Tree Care Pesticides in a Connecticut Town, Environment and Human Health, Inc.1999.

12 See the Northeast Organic Farming Association Connecticut Chapter's information on organic land care. www.ctnofa.org/OrganicLandCare/OLC.htm & http://osborneorganics.com/ (accessed 1-24-2014)

13 Managing Healthy Sports Fields: A Guide to Using Organic Materials for Low-Maintenance and Chemical-Free Playing Fields by Paul D. Sachs, January 2004

14 Why Public Agencies Cannot Depend on Good Laboratory Practices as a Criterion for Selecting data: The Case of Bisphenol A., Meyers, JP, vom Saal FS, et. al., Environmental Health Perspectives 117:309-315, http://dx.doi.org/10.1289/ehp.0800173 (accessed 12-20-2013)

15 Developmental Toxicity of a Commercial Herbicide Mixture in Mice: I Effects on Embryo Implantation and Litter Size. Cavieres, M, Jaeger, J, and Porter, W, Environmental Health Perspectives 110, Number 11, November 2002 http://www.zoology.wisc.edu/faculty/Por/pdfs/Cavieres_et_al_02.pdf (Accessed 12-20-2013)

For more information contact

The Watershed Partnership, Inc.
203-453-8537
WaterPartnership@SBCglobal.net

Attachment 3

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

Attachment 3

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.[1]

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)

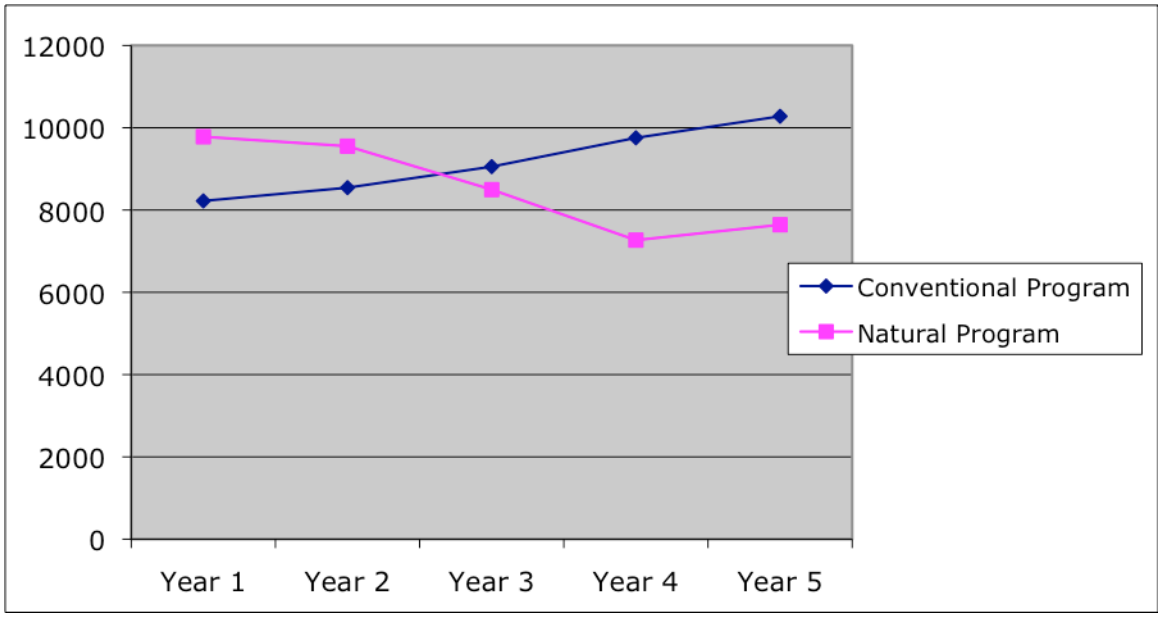

Figure 1: A Comparison of Costs for Conventional and Natural Turf Programs Over A Five-Year Period

[1] 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.

Attachment 3

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.[2]

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[3], Iowa State University[4], bid specifications from a coalition of public schools on Long Island,[5] 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

---

[2] *Pesticides in Schools: Reducing the Risks*, Robert Abrams, Attorney General of New York State, March 1993.

[3] "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

[4] "Generic Football Field Maintenance Program" by Dr. Dave Minner. Department of Horticulture, Iowa State University.

[5] "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.[6] [7]

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)

---

[6] 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.

[7] Price computed using NUS Consulting International Water Report for 2008 average US water cost per m3 adjusted for inflation.

Attachment 3

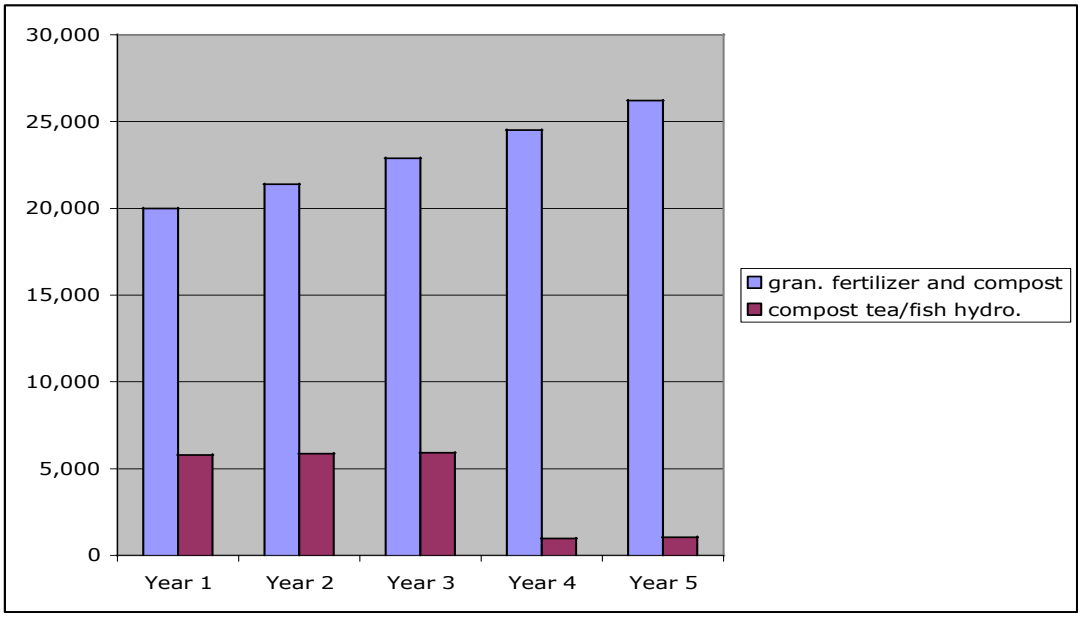

Figure 2: Cost comparison of granular fertilizer and compost compared to spraying compost tea and fish hydrolysates in Marblehead, MA.[8]

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."*

---

[8] *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.*

Attachment 3

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

CONVENTIONAL PROGRAM		Year 1	Year 1	Year 1
		cost	cost	total
		product	labor	
April	fert/pre-emergent	$250	$9	$345
May	fertilizer	$225	$9	$320
June	grub or insect	$325	$9	$420
June	post-emergent	$90	$15	$240
July	fertilizer	$225	$9	$320
Sep	fertilizer	$225	$9	$320
Nov	fertilizer	$225	$9	$320
June	seed	$700	$15	$850
Sep	seed	$700	$15	$850
aerate	3 times	$0	$37	$375
	irrigation	$3,212	$150	$3,362
	indirect costs			$500
	Total Cost			**$8,222**
NATURAL PROGRAM				
		Year 1	Year 1	Year 1
		cost	cost	total
		product	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
	Total Cost			**$9,782**

Attachment 3

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

CONVENTIONAL PROGRAM		Year 2	Year 2	Year 2
		cost	cost	total
		product +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	$3,43	$150	$3,58
	indirect costs			$500
	Total Cost			**$8,54**
NATURAL PROGRAM				
		Year 2	Year 2	year 2
		cost	cost	total
		product+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	$1,39	$350	$1,74
	irrigation	$2,74	$150	$2,89
	Total Cost			**$9,55**

Attachment 3

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

CONVENTIONAL PROGRAM		Year 3	Year 3	Year 3
		cost	cost	total
		product +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	$3,67	$150	$3,82
	indirect costs			$500
	Total Cost			**$9,05**
NATURAL PROGRAM				
		Year 3	Year 3	Year 3
		cost	cost	total
		product +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	$1,48	$350	$1,83
	irrigation	$2,20	$150	$2,35
	Total Cost			**$8,49**

Attachment 3

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

CONVENTIONAL PROGRAM		Year 4 cost product +7%	Year 4 cost labor	Year 4 total
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	$3,93	$170	$4,10
	indirect costs			$500
	Total Cost			**$9,75**
NATURAL PROGRAM				
		Year 4 cost product +7%	Year 4 labor	Year 4 total
April	fertilizer	$0	$0	$0
June	fertilizer	$0	$0	$0
June	liquid humate	$150	$120	$270
July	fish/compost tea	$500	$720	$1,22
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	$2,36	$170	$2,53
	Total Cost			**$7,26**

Attachment 3

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

CONVENTIONAL PROGRAM		Year 5	Year 5	Year 5
		Cost	cost	total
		product + 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
	Total Cost			**$10,279**
NATURAL PROGRAM				
		Year 5	Year 5	Year 5
		cost	labor	total
		product + 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
	Total Cost			**$7,642**