OLR RESEARCH REPORT

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UCONN RESEARCH FARM

By: Janet L. Kaminski Leduc, Senior Legislative Attorney

You asked a series of questions about the University of Connecticut Plant Science Research and Education Facility (i.e., the UConn Research Farm or facility). Professor Richard McAvoy, Head of UConn's Department of Plant Science and Landscape Architecture, has provided answers to your questions. The questions and answers follow.

Provide a brief description of the UConn Research Farm.

The UConn Research Farm is located on Route 195, approximately two miles south of UConn's campus in Storrs, Connecticut. The Department of Plant Science and Landscape Architecture (PSLA), within the College of Agriculture and Natural Sciences, manages the farm. The facility has supported the teaching, research, and public outreach responsibilities for PSLA for more than 95 years and is the sole field research site for all plant-related research in the college.

The 153-acre facility is partially wooded with slightly less than 39 acres under active cultivation. The facility also includes two teaching classrooms; the Hicks-Burr teaching nursery for woody ornamental crops; three greenhouses; and several barns and buildings used for program support, staff, equipment maintenance, and storage. The university has invested in the necessary physical support infrastructure, including irrigation systems, access roads, deer exclusion fencing, and buildings.

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The facility's teaching, research, and outreach activities are conducted in the areas of ecology, entomology, florticulture, forages, soils, sustainable agriculture, vegetables, weed ecology and control, turfgrass and athletic field management, and woody and herbaceous ornamental crops. Courses taught at the facility allow students to gain hands-on practical experience and discipline-specific skills used in commercial trade.

In a typical year, the facility hosts a number of educational events that address the needs of both the general public and agricultural commodity groups (e.g., Connecticut Master Gardeners, Connecticut Nursery and Landscape industry).

What type of research is conducted at the facility?

Research objectives vary widely with grant funding, investigator interests, and year. Most projects relate to integrated pest management; horticultural crops; golf course and athletic field management; genetics; plant ecology, such as invasive species management; and vegetable trials, including the annual All-American selection trials. Most projects involve multi-year studies, so the specific activities during any one year will vary.

Is the research funded by private or public sources?

Grants from public agencies, private foundations, and private businesses support the facility's research, with the total value of research generally exceeding $2 million. Most of the research support comes from federal sources.

What are the specific sources of funding and how much does each source provide in funding?

See Attachment A.

What is the aggregate amount of private research funding for projects at the facility? What percentage of the total value of research projects conducted is this?

Privately supported field research for 2011 to 2012 totaled about $245,000, or about 7.8% of all funded research during this period, which was about $3,139,000. The facility also receives in-kind support in the form of donated equipment and cash donations.

Are agreements entered into with private sources subject to the Freedom of Information Act (FOIA)?

Generally, agreements between UConn and private parties are public records governed by FOIA and subject to disclosure. Under FOIA, certain categories of records are exempt from disclosure (e.g., trade secrets). Whether a particular agreement comes within an exemption would be determined on a case-by-case basis.

What fertilizers, pesticides, and herbicides are used at the facility? Does UConn keep records of all applications?

As required by law, UConn maintains pesticide application records. The facility's farm manager compiles pesticide application records annually for public disclosure. (The most recent list was compiled in Spring 2012, and covers applications made during the 2011 season.) Fertilizer usage is based on standard crop management practices or as required to meet the objectives of the research study.

See Attachments B and C for pesticide applications made in 2010 and 2011.

Additionally, pesticide applications made to assess turfgrass disease control in research trials can be found at http://www.turf.uconn.edu/reports.shtml.

See Attachment D for information on all proprietary material used in efficacy trials from 2009 to 2011.

Are all of the fertilizers, pesticides, and herbicides used fully approved for public use by the federal and state government agencies responsible for permitting the use of such material?

All non-proprietary material used at the facility are labeled for public use, such as use on residential lawns, ornamental plants, or crop plants. In most cases, the active ingredient applied is available for general use by homeowners and can be purchased at any garden supply store. The purchase and application of some material require a private or commercial applicator license.

Of the proprietary compounds used, all material is subject to the U.S. Environmental Protection Agency's (EPA) health, safety, and environmental impact testing and approval process before the facility can conduct field testing on target crops. Applications are made at the facility with oversight by the Connecticut Department of Energy and Environmental Protection's licensed Demonstration and Research Supervisory applicators.

Most of the proprietary material applied at the facility is already labeled for commercial use. The contracted research primarily investigates the use of existing products in proprietary trials to expand label recommendations of registered pesticides to other commodities.

If any material used at the facility is not fully approved for public use, are there other non-secure open air sites where similar materials are used?

As described above, all material used at the facility are fully approved for public use or used only with appropriate permitting from the U.S. EPA.

Does UConn perform similar research at other sites?

The answer is no. The UConn Research Farm is the only UConn field research and education site for plant science-related research.

Does UConn know if other state or private universities conduct similar research?

UConn has no direct knowledge of whether other universities conduct similar research, but considers it unlikely.

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Attachment A

Grant Funded Research: Active projects 2011/2012

Sponsor Name	Project Title	Award Increment Total Sponsor Costs
University of Vermont	Management of Basil Downy Mildew using Organic Fungicides and Nitrogen Fertilization Rate	$6,705.00
USDA/National Institute of Food and Agriculture	Perennial Grasses for Bioenergy: Pollen Aerobiology, Biocontainment and Plant Genetics	$306,023.00
USDA Biological Risk Assessment Grant Program	Characterization of environmental hazards and exposure from herbicide-resistant bentgrass	$300,000.00
University of Vermont	Aronia Berries: A Profitable Nutraceutical Crop for the Northeast	$151,821.00
AECOM, Inc. dba AECOM Environment	Crocanthemum dumosum Bushy Rocknose Genetics	$7,000.00
Connecticut Dept. of Agriculture	Bringing Deep Zone Tillage to CT/New England Vegetable Farms	$34,394.00
USDA/Animal and Plant Health Inspection Service	Biological Control of Mile-a-minute Weed (Persicaria perfoliata) with Rhinoncomimus latipes	$22,792.00
Industry Grant-in-aid	Traffic Effects During Establishment on Regenerative Perennial Ryegrass	$6,500.00
Industry Grant-in-aid	Evaluation of Rhizomatous Tall Fescue	$2,400.00
University of Rhode Island	Pilot Testing of Objective Methods to Guide Nitrogen Fertilization of Turf Sod	$4,000.00
USDA/Natural Resources Conservation Service	Sensor-Based Nitrogen Fertilization Recommendations for Sod Producers to Enhance Economic and Environmental Benefits	$37,985.00
USDA/Natural Resources Conservation Service	Sensor-Based Nitrogen Fertilization Recommendations for Sod Producers to Enhance Economic and Environmental Benefits	$33,914.00
USDA	Soil Amino-Sugar Nitrogen and Active Carbon as a Predictor of Turf Growth and Quality	$40,000.00

Sponsor Name	Project Title	Award Increment Total Sponsor Costs
USDA	Fall Verdure Sap Nitrate as a Predictor of Turf Quality Response	$36,000.00
Co-sponsors: New England Regional Turfgrass Foundation/CT Department of Environmental Protection	Determining the Effectiveness of Leaf Compost Topdressing and Core Cultivation when Managing Athletic Fields Organically	$34,362.00
Co-sponsors: New England Regional Turfgrass Foundation/Tri-State Turf Research Foundation, Inc	Impact of Fairway Topdressing on Soil Physical Properties, Turfgrass Quality, Disease Severity and Earthworm Castings	$8,227.00
Industry	Portable Roadway Systems Evaluated Using Simulated Traffic on Playing Surfaces for Non-Sporting Events	$12,000.00
New England Regional Turfgrass Foundation	Improving Nitrogen Management of Anthracnose using a Field Technique to Determine Foliar Nitrate-N	$9,817.00
USDA	Biology, ecology and management of emerging pests of annual bluegrass on golf courses	$13,799.00
Proprietary Industry - 2012	Evaluation of commercially available and novel plant protectants for turfgrass disease control	$73,200.00
Proprietary Industry -2011	Evaluation of commercially available and novel plant protectants for turfgrass disease control	$63,300.00
New England Regional Turfgrass Foundation	Optimizing Pregermination Techniques for Four Turfgrass Species	$8,000.00
Noer(O.J.) Research Foundation	Quantifying Sand Particle Shape and Particle Size Distribution: Resultant Effects of Root Zone Stiffness and Root Viability	$10,000.00
New England Regional Turfgrass Foundation	The Effect of Natural Playing Surfaces on Athletic Performance	$10,000.00

Sponsor Name	Project Title	Award Increment Total Sponsor Costs
New England Regional Turfgrass Foundation	Cultivation and Manganese Application Effects on Summer Patch Severity in Compacted and Non-compacted Turfgrass Areas	$17,604.00
USDA/National Institute of Food and Agriculture	From Problem to Resource: An Integrated Training Approach to Biologic Systems Management	$120,000.00
University of South Dakota	Willow Biomass Crop Feedstock Development Plan for the Northeast and Midwest U.S.	$30,000.00
USDA	New England Invasive Plant Center	$276,120.00
DOE/Department of Energy	BioEnergy Initiative for Connecticut	$388,042.00
USDA [subproject to Univ. of Maine]	Enhancing Floral Resources for Conservation Biological Control in Urban Landscapes	$30,000.00
CT Department of Agriculture	Evaluating Landscape Adaptability of Novel Native Shrubs as Alternatives to Invasive Exotics for the Nursery Industry	$33,809.00
University of Connecticut Research Foundation(UCRF)	Effect of nutrient supply on production of mixed species green roof systems	$22,551.00
USDA/CREES	A Multi-Scale Approach to the Forecast of Potential Distributions of Invasive Plant Species	$545,000.00
NSF/BIO	Spatiotemporal Models of Phenology - Integrating the Effects of Climate Change in Plants and Animals	$59,497.00
Multi-state Hatch projects	Several projects: (1) Conservation, Management, Enhancement and Utilization of Plant Genetic Resources (2) Biological Control of Arthropod Pests and Weeds (3) Commercial Greenhouse Production: Component And System Development (4) Management of Annual Bluegrass on Golf Courses: Improved Practices for Maintenance, Pest Control, And Viable Techniques for Transition to More Desirable Grasses	$111,414.00

Sponsor Name	Project Title	Award Increment Total Sponsor Costs
USDA Hatch projects		$272,534.00
	Several projects: (1) Characterizing gene flow between cultivated and Feral Agrostis plant populations to support Ecological risk assessment (2) Influence of Soil Chemical and Physical Characteristics on Growth of Short-rotation Woody Crops (3) Organic Fertilization for Greenhouse Crops (4) Soil Carbon Cycling in Cool-Season Turf Lawns In Relation to Management Practice (5) Switchgrass (Panicum virgatum) distribution and gene flow in New England	
	Total Funding	$3,138,810.00
	Total from priavte foundations and industry	$245,229.00

Attachment B

RESEARCH AND EDUCATION FARM					
FIELD USAGE AND PESTICIDE APPLICATION, 2010					
FIELD NAME*	AREA (sq. feet)	ACREAGE	USE	PESTICIDES USED IN 2010?	TYPES USED**
G1	42,000	0.96	low maintenance turfgrass	yes	LH, LI, LH
G2	30,600	0.7	beneficial insect IPM study	yes	LF
G3	45,600	1.05	low maintenance turfgrass	yes	LH
G4	28,200	0.65	beneficial insect IPM	yes	LH
G5	30,600	0.7	willow biofuel production	yes	LH
G6	33,000	0.76	fallow / unused	no	
G7	57,000	1.3	low maintenance turfgrass	yes	LH. LF
G8	79,200	1.82	ecology of invasive species	yes	LH
G9	52,000	1.19	willow biofuel production	yes	LH
G10	70,200	1.82	vegetable IPM	yes	LH
G11	46,200	1.06	Living structures & riparian buffer	no	
G12	65,000	1.5	beneficial insect IPM	no	
G13	43,560	1	future organic studies	no	
G14	65,000	1.5	fallow / unused	no	
G15	65,000	1.5	fallow / unused	no	
W3 *irr.	36,000	0.83	low maintenance turfgrass	yes	LH. LF, LI
W4E	42,000	0.96	ecology of invasive species	yes	LH
W4 *irr.	65,700	1.51	turfgrass disease	yes	LH, LF, LI, FA
W5 *irr.	56250	1.29	turfgrass disease	yes	LH, LF, FA
W21	38,000	0.87	low maintenance turfgrass	yes	LH
W22	38,000	0.87	turfgrass compaction	yes	LH, LI
W23	38,000	0.87	multi-purpose field day site	yes	LH
W11	38,000	0.87	beneficial insect IPM	no	
W12	38,000	0.87	turfgrass topdressing	yes	LH, LI
S1	37,800	0.87	willow biofuel production	yes	LH
S2	29,000	0.66	willow biofuel production	yes	LH
S3	20,300	0.47	weed ID area	no	
A Area	40,870	0.94	silage corn yield	yes	LH
P1	36,500	0.84	vegetable variety trials	yes	LH
P2	36,500	0.84	multi-purpose field day site	yes	LH
P3	37,500	0.86	ecology of invasive species	yes	LH
P4	37,500	0.86	Superberry orchard	yes	LH
P5	35,000	0.8	willow biofuel production	yes	LH
P6	35,000	0.8	fallow / unused	no	
P7	35,000	0.8	beneficial insect IPM	no	
P8	35,000	0.8	fallow / unused	no	
Lawn *irr.	33,300	0.76	future turfgrass work	yes	LH
Burr Fields	12,000	0.28	living structures	no	LH
Burr Nursery	55,700	1.28	teaching nursery	yes	LH
Brand Bed	5,460	0.13	ecology of invasive species	yes	LH
Hi Tunnel	960	0.02	willow biofuel production	yes	LH
GHSE 2	2,688	0.62	mixed use	yes	LH, LI
GHSE 3	1,360	0.03	mixed use	yes	LH. LI
Total Farm Acreage is 153 acres					
*irr.= in ground irrigation					
**key to types of pesticides used:					
LH = labeled herbicide used as needed for weed control (e.g. Roundup, Surflan)					
LI = labeled insecticide used as needed for insect control (e.g. Merit, M-Pede)					
LF = labeled fungicide used as needed for disease control (e.g. Heritige, Banner MAXX)					
FA = fungicide applications, timing and rates varied; individual plots typically 3 X 5 ft.					

Attachment C

2011 Pesticide Application Records for the Plant Science Research and Education Farm							
Turfgrass research applications will be available in their Annual Report at Turf.uconn.edu/reports.shtml							
Field Designation	**Trade Name**	**EPA Number**	**Type**	**Amount applied**	**Date of Application**	**Rate**	
A area	Razor Pro	228-366	Herbicide	50 mls	5/12/2011	1.5 qts/ac	
	Roundup	524-537	Herbicide	1.4 qts	6/14/2011	1.5 qts/ac	
	Roundup	524-537	Herbicide	1.5 qts	7/1/2011	1.5 qts/ac	
G1	Triplet SF	228-312	Herbicide	29.4 oz	6/2/2011	1.5 oz/1000 sqft	
	Merit 2F	432-1312	Insecticide	20.1 oz	6/23/2011	0.6 oz/1000 sqft	
	Tenacity	100-1267	Herbicide	2.14 oz	7/27/2011	5 oz/ac	
	Propiconazole Pro	51036-403	Fungicide	20 oz	8/2/2011	2 oz/1000 sqft	
	Tenacity	100-1267	Herbicide	1.15 oz	8/12/2011	5 oz/ac	
	Razor Pro	228-366	Herbicide	227 mls	8/24/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	200 mls	9/12/2011	1.5% v/v	
G3	Razor Pro	228-366	Herbicide	675 mls	5/13/2011	1.5 qts/ac	
	Triplet SF	228-312	Herbicide	68.6 oz	6/3/2011	1.5 oz/1000 sqft	
G5	Milstop	70870-1068539	Fungicide	14.4 grams	7/27/2011	2.5 lbs/ac	
	Milstop	70870-1068539	Fungicide	14.4 grams	8/3/2011	2.5 lbs/ac	
	Milstop	70870-1068539	Fungicide	14.4 grams	8/10/2011	2.5 lbs/ac	
	Milstop	70870-1068539	Fungicide	14.4 grams	8/17/2011	2.5 lbs/ac	
	Milstop	70870-1068539	Fungicide	14.4 grams	8/25/2011	2.5 lbs/ac	
	Oxidate	70299-2	Fungicide	38 ml	7/27/2011	0.6 gal/ac	
	Oxidate	70299-2	Fungicide	38 ml	8/3/2011	0.6 gal/ac	
	Oxidate	70299-2	Fungicide	38 ml	8/10/2011	0.6 gal/ac	
	Oxidate	70299-2	Fungicide	76 ml	8/17/2011	1.2 gal/ac	
	Oxidate	70299-2	Fungicide	76 ml	8/25/2011	1.2 gal/ac	
	Actinovate	73314-1	Fungicide	5.3 grams	7/27/2011	10 oz/ac	
	Actinovate	73314-1	Fungicide	5.3 grams	8/3/2011	10 oz/ac	
	Actinovate	73314-1	Fungicide	5.3 grams	8/10/2011	10 oz/ac	
	Actinovate	73314-1	Fungicide	5.3 grams	8/17/2011	10 oz/ac	
	Actinovate	73314-1	Fungicide	5.3 grams	8/25/2011	10 oz/ac	

	Serenade MAX	69592-11	Fungicide	15.5 grams	7/27/2011	2 lbs/ac	
	Serenade MAX	69592-11	Fungicide	15.5 grams	8/3/2011	2 lbs/ac	
	Serenade MAX	69592-11	Fungicide	15.5 grams	8/10/2011	2 lbs/ac	
	Serenade MAX	69592-11	Fungicide	15.5 grams	8/17/2011	2 lbs/ac	
	Serenade MAX	69592-11	Fungicide	15.5 grams	8/25/2011	2 lbs/ac	
	Trilogy	70051-2	Fungicide	38 mls	7/27/2011	76.8 oz/ac	
	Trilogy	70051-2	Fungicide	38 mls	8/3/2011	76.8 oz/ac	
	Trilogy	70051-2	Fungicide	38 mls	8/10/2011	76.8 oz/ac	
	Trilogy	70051-2	Fungicide	38 mls	8/17/2011	76.8 oz/ac	
	Trilogy	70051-2	Fungicide	38 mls	8/25/2011	76.8 oz/ac	
G7	Dimension 2EW	62719-542	Herbicide	8 oz	5/6/2011	16 oz/ac	
	Triplet SF	228-312	Herbicide	41.8 oz	6/2/2011	1.5 oz/1000 sqft	
	Roundup	524-573	Herbicide	130 mls	6/14/2011	0.75 qts/ac	
	Roundup	524-537	Herbicide	640 mls	6/20/2011	0.75 qts/ac	
	Razor Pro	228-366	Herbicide	47 mls	7/11/2011	1.5 qts/ac	
G6	Safer Soap	42697-59	Insecticide	25 oz	7/13/2011	0.5 oz/sqft	
G9	Dimension 2EW	62719-542	Herbicide	8 oz	5/6/2011	16 oz/ac	
	Razor Pro	228-366	Herbicide	125 mls	5/12/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	50 ml	6/3/2011	1.5 qts/ac	
	Tenacity	100-1267	Herbicide	23 mls	8/26/2011	4 oz/1000 sqft	
G10	Strategy	34704-830	Herbicide	4 pts	6/6/2011	4 pts/ac	
	Sandea	81889-18-10163	Herbicide	0.5 oz	6/6/2011	0.5 oz/ac	
	Impact	5481-524	Herbicide	0.25 oz	6/27/2011	0.75 oz/ac	
	Impact	5481-524	Herbicide	3 ml	7/11/2011	0.75 oz/ac	
	Pristine	7969199	Fungicide	393 grams	8/12/2011	18.5 oz/ac	
	Quintec	62719375	Fungicide	1.4 oz	8/22/2011	5 oz/ac	
	Ridomil Bravo	100-658	Fungicide	1024 grams	8/22/2011	2 lbs/ac	
	Quintec	62719375	Fungicide	1.4 oz	8/26/2011	5 oz/ac	
	Ridomil Bravo	100-658	Fungicide	1024 grams	8/26/2011	2 lbs/ac	

G13	Razor Pro	228-366	Herbicide	2.1 qts	9/27/2011	1.5 qts/ac	
W3	Triplet SF	228-312	Herbicide	0.65 oz	6/2/2011	1.5 oz/1000 sqft	
	Roundup	524-537	Herbicide	710 mls	6/14/2011	1.5 qts/ac	
	Merit 2F	432-1312	Insecticide	7.3 oz	6/23/2011	0.6 oz/1000 sqft	
	Quinclorac 75DF	73220=15	Herbicide	107 grams	6/28/2011	0.38 oz/1000 sqft	
	Razor Pro	228-366	Herbicide	445 mls	7/11/2011	1.5 qts/ac	
	Tenacity	100-1267	Herbicide	1.4 oz	7/27/2011	5 oz/ac	
	Razor Pro	228-366	Herbicide	142 mls	8/24/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	0.15 qts	9/27/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	100 mls	10/17/2011	1.5% v/v	
W4	Scimitar	100-1078	Insecticide	4.19 oz	5/12/2011	0.23 oz/100 sqft	
	Tenacity	100-1267	Herbicide	1.43 oz	5/25/2011	0.18 oz/1000 sq ft	
	Dylox 80	432-1289	Insecticide	68 oz.	5/26/2011	3.75 oz/1000 sq ft	
	Emerald	7969-196	Fungicide	160.1 gr	5/31/2011	0.18 oz/1000 sqft	
	Tenacity	100-1267	Herbicide	1.43 oz	6/7/2011	1.43 oz/1000 sqft	
	Prostar 70	432-1477	Fungicide	74.8 oz	6/27/2011	3 oz/1000 sqft	
	Curalan EG	7969-224	Fungicide	202 grams	7/11/2011	1 oz/1000 sqft	
	Prostar 70	432-1477	Fungicide	304 mls	7/11/2011	1.5 oz/1000 sqft	
	Chipco Signature	432-890	Fungicide	1247 grams	7/11/2011	4 oz/1000 sqft	
	Daconil Ultrex	50534-202-100	Fungicide	1585 grams	7/11/2011	5.1 oz/1000 sqft	
	Razor Pro	228-366	Herbicide	50 mls	7/11/2011	1.5 % v/v	
	Curalan EG	7969-224	Fungicide	250 grams	7/11/2011	1 oz/1000 sqft	
	Razor Pro	228-366	Herbicide	246 mls	7/11/2011	1.5 qts/ac	
	Imidipro	42750-115-2217	Insecticide	4.8 oz	7/15/2011	0.6 oz/1000 sqft	
	Emerald	7969-196	Fungicide	36 grams	7/26/2011	0.18 oz/1000 sqft	
	Pro Star 70	432-1477	Fungicide	304 grams	7/26/2011	1.5 oz/1000 sqft	
	Daconil Ultrex	50534-202-100	Fungicide	1603 grams	7/26/2011	5.1 oz/1000 sqft	
	Chipco Signature	432-890	Fungicide	1247 grams	7/26/2011	4 oz/1000 sqft	
	Primo Maxx	100-937	Fungicide	1.38 oz	7/26/2011	0.125 oz/1000 sqft	
	Daconil Ultrex	50534-202-100	Fungicide	1132 grams	7/26/2011	5.1 oz/1000 sqft	
	Tempo GC	432-1452	Fungicide	12.48 oz	7/26/2011	0.23 oz/1000 sqft	
	Heritage TL	100-1191	Fungicide	9.8 oz	7/26/2011	1 oz/1000 sqft	
	Curalan EG	7969-224	Fungicide	7 oz	7/26/2011	1 oz/1000 sqft	

	Razor Pro	228-366	Herbicide	227 mls	8/24/2011	1.5 qts/ac	
W4E	Roundup	524-537	Herbicide	100 mls	4/15/2011	1.5% v/ v	
	Razor Pro	228-366	Herbicide	75 mls	5/12/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	100 mls	5/13/2011	1.5 qts/ac	
	Roundup	524-537	Herbicide	600 mls	6/15/2011	1.5% v/v	
	Roundup	524-537	Herbicide	600 mls	6/29/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	200 mls	7/15/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	400 mls	8/19/2011	1.5% v/v	
W5	Razor Pro	228-366	Herbicide	225 mls	5/13/2011	1.5 qts/ac	
	Sevin SL	432-1227	Insecticide	87 oz	6/27/2011	2 oz/1000 sqft	
	Razor Pro	228-366	Herbicide	227 mls	7/11/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	25 mls	7/11/2011	1.5 % v/v	
	Curalan EG	7969-224	Fungicide	7 oz	7/26/2011	1 oz/1000 sqft	
	Tempo GC	432-1452	Fungicide	10.04 oz	7/26/2011	0.23 oz/1000 sqft	
	Razor Pro	228-366	Herbicide	204 mls	8/24/2011	1.5 qts/ac	
W21	Dithiopyr 40WSB	73220-13	Herbicide	3 oz	5/6/2011	10 oz/ac	
	Triplet SF	228-312	Herbicide	6.4 oz	6/3/2011	1.5 oz/1000 sqft	
	Compass	423-1371	Fungicide	85 grams	6/7/2011	0.18 oz/1000 sqft	
	Tenacity	100-1267	Herbicide	1.46 oz	7/27/2011	5.0 oz/ac	
W22	Dithiopyr 40WSB	73220-13	Herbicide	6 oz	5/6/2011	10 oz/ac	
	Razor Pro	228-366	Herbicide	407 mls	7/11/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	25 mls	7/11/2011	1.5 % v/v	
	Imidipro	42750-115-2217	Insecticide	9.2 oz	7/19/2011	0.6 oz/1000 sqft	
	Tenacity	100-1267	Herbicide	86.7 mls	8/26/2011	8.0 oz/ac	
	Lesco 3-Way	10404-43	Herbicide	65 oz	12/16/2011	1.5 oz/1000 sqft	
W12	Dithiopyr 40WSB	73220-13	Herbicide	11 oz	5/6/2011	10 oz/ac	
	Heritage	100-1191	Fungicide	95.8 oz	6/9/2011	2 oz/1000 sqft	
	Heritage	100-1191	Fungicide	95.8 oz	7/15/2011	2 oz/1000 sqft	
	Imidipro	42750-115-2217	Insecticide	24.8 oz	7/19/2011	0.6 oz/1000 sqft	

S1	Goal 2xl	62719-424	Herbicide	1040 mls	5/13/2011	2.0 qts/ac	
	Razor Pro	228-366	Herbicide	300 mls	7/6/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	150 mls	8/3/2011	1.5% v/v	
S3	Razor Pro	228-366	Herbicide	473 mls	7/11/2011	1.5 qts/ac	
P3	Roundup	525-573	Herbicide		6/14/2011	1.5 qts/ac	
P4	Surflan A.S.	62719-112	Herbicide	400 mls	7/18/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	400 mls	7/18/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	450 mls	11/7/2011	1.5% v/v	
P5	Goal 2xl	62719-424	Herbicide	1248 mls	5/6/2011	2 qts/ac	
	Roundup	524-537	Herbicide	200 mls	5/26/2011	1.5 %v/v	
	Roundup	524-573	Herbicide	651 mls	6/14/2011	1.5 qts/ac	
	Razor Pro	228-366	Herbicide	150 mls	7/6/2011	1.5% v/v	
	Razor Pro	228-366	Herbicide	150 mls	8/2/2011	1.5% v/v	
P8	Razor Pro	228-366	Herbicide	1600 mls	8/24/2011	1.5 qts/ac	
Sand Green / LW	Emerald	7969-196	Fungicide	31.6 gr	5/31/2011	0.18 oz/1000 sqft	
	Curalan EG	7969-224	Fungicide	49 grams	7/11/2011	1 oz/1000 sqft	
	Heritage TL	100-1191	Fungicide	1.7 oz	7/26/2011	1 oz/1000 sqft	
GHSE 2 & 3	M-Pede	62719-515	Insecticide	14 mls	1/10/2011	2% v/v	
	M-Pede	62719-515	Insecticide	150 mls	3/25/2011	2% v/v	
	Malation 5E	51036-104	Insecticide	12 mls	4/15/2011	6 mls/gal	
	M-Pede	62719-515	Insecticide	222 mls	5/19/2011	2% v/v	
	Scythe	62719-529	Herbicide	1520 mls	5/20/2011	10% v/v	
	Scythe	62719-529	Herbicide	1520 mls	9/8/2011	10% v/v	
	Compass	432-1371	Fungicide	0.2 grams	12/2/2011	0.6 grams/gal	
Burr GHSE	Malation 5E	51036-104	Insecticide	12 mls	4/28/2011	6 mls/gal	

	Malation 5E	51036-104	Insecticide	12 mls	5/5/2011	6 mls/gal	
Building perimeters	Roundup	524-537	Herbicide	150 mls	5/5/2011	1.5% v/v	
	Surflan A.S.	62719-112	Herbicide	270 mls	5/5/2011		
Deer Fence	Crossbow	62719-260-34704	Herbicide	1.350 mls	7/11/2011	4% v/v	
Note: v/v is volume (amount) of product to volume (amount) of water, used in spot application, not blanket broadcast.							
Note: Razor Pro has the same active ingredient as Roundup, just different trade names / manufacturers							

Attachment D

Proprietary Plant Protectants Applied at the UCONN Plant Science Research Facility in 2009 - 2011

Field efficacy trials of plant protectants have routinely been conducted at the UCONN Plant Science Research and Education Facility. All materials tested at UCONN have already been subjected and passed preliminary environmental fate and toxicological testing required by the U.S. Environmental Protection Agency for registration of new pesticides. Efficacy trials are an important component of research and extension programs at universities throughout the United States to develop geographically relevant fungicide efficacy data. These data are subsequently used by researchers and extension personnel to develop recommendations for the responsible use of fungicides for control of common diseases of turfgrasses within the region.

In some cases, these trials are conducted in cooperation with manufactures to evaluate fungicides for potential use on turfgrasses. Some of these fungicides contain active ingredients not currently registered for turfgrass disease control. However, the active ingredients tested are already used in commercially available materials registered for use in crop, fruit, and vegetable systems. Trials conducted by UCONN researchers in cooperation with manufactures represent the final stages of development for new turfgrass fungicides prior to commercialization. If proven effective in university field trials across the country, a turf label could represent a new market and a competitive advantage for these companies.

Proprietary active ingredients evaluated at the UCONN Plant Science Research Facility are often given a code in agreement with cooperators to maintain confidentiality of new materials that may be introduced in to the marketplace in the near future. The specific objectives of trials containing these materials vary, but often include:

- Screening various application rates and intervals to optimize disease control.
- Comparison of new fungicides to preexisting materials commonly used in the industry.
- Evaluating mixtures of one or more fungicides to assess compatibility of materials applied in "tank mixes" or marketed as premixed (combination of 2 active ingredients in same product) products.
- Demonstration of how new fungicides can be incorporated into seasonal disease management programs.

The table below lists the coded materials that were applied to turfgrass research fields at the UCONN Plant Science Research and Education Facility during 2009, 2010 and 2011. Where possible, the active ingredient of the coded material has been provided. However, many of these materials are proprietary, and/or are subject to confidentiality agreements to protect the identity of the experimental materials. As stated above, the active ingredients in nearly all instances are EPA registered materials currently labeled for disease control in other diverse agricultural systems. Examples of a few of the other currently labeled uses of all of these materials can be found in the table below.

Non-Proprietary Plant Protectants Applied at the UCONN Plant Science Research Facility in 2009 - 2011

Compound	UCONN #	Active ingredient(s)	Fungicide class	Trade name	Currently registered for use on:
DPX-LEM17-089		penthiopyrad	carboximide	Vellsta	registration for turfgrass near complete
A13972A	UC11-3	chlorothalonil	nitrile	n/a	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
		difenoconazole	DMI		seed treatment cereals; apples
A19266A	UC11-12	chlorothalonil	nitrile	n/a	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
		difenoconazole	DMI		seed treatment cereals; apples
A9180	UC11-20	acibenzolar-S-methyl	SAR	ActiGard	chills, onions, tobacco, tomato, lettuce, spinach

Proprietary Plant Protectants Applied at the UCONN Plant Science Research Facility in 2009 - 2011

Compound	UCONN #	Active ingredient(s)	Fungicide class	Trade name	Currently registered for use on:
A12910	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
		proprietary a.i.	proprietary a.i.	proprietary a.i.	soybeans
A13703	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
		proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
A14212	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
A16841A	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
A17595	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
A17601	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
A6780	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
A8122	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; corn; sorghum; peach; almond; etc.
A9898	n/a	proprietary a.i.	proprietary a.i.	proprietary a.i.	soybeans

Continued from above.

Compound	UCONN #	Active ingredient(s)	Fungicide class	Trade name	Currently registered for use on:
proprietary a.i.	UC11-1	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
proprietary a.i.	UC11-2	proprietary a.i.	proprietary a.i.	proprietary a.i.	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
proprietary a.i.	UC11-4	proprietary a.i.	proprietary a.i.	proprietary a.i.	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
		proprietary a.i.	proprietary a.i.	proprietary a.i.	chilis, onions, tobacco, tomato, lettuce, spinach
proprietary a.i.	UC11-5	proprietary a.i.	proprietary a.i.	proprietary a.i.	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
proprietary a.i.	UC11-6	proprietary a.i.	proprietary a.i.	proprietary a.i.	unknown
proprietary a.i.	UC11-7	proprietary a.i.	proprietary a.i.	proprietary a.i.	pistachio, cherry, peach, pecan, almond, turfgrass
proprietary a.i.	UC11-8	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
proprietary a.i.	UC11-9	proprietary a.i.	proprietary a.i.	proprietary a.i.	soybeans
		proprietary a.i.	proprietary a.i.	proprietary a.i.	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
proprietary a.i.	UC11-10	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass
proprietary a.i.	UC11-11	proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.
		proprietary a.i.	proprietary a.i.	proprietary a.i.	soybeans
proprietary a.i.	UC11-13	proprietary a.i.	proprietary a.i.	proprietary a.i.	potato, cabbage, carrots, apples, legumes
proprietary a.i.	UC11-14	proprietary a.i.	proprietary a.i.	proprietary a.i.	soybeans
proprietary a.i.	UC11-15	proprietary a.i.	proprietary a.i.	proprietary a.i.	blueberries, peppers, beans, mango, mint, onion, tomato, turfgrass, etc....
proprietary a.i.	UC11-16	proprietary a.i.	proprietary a.i.	proprietary a.i.	proprietary a.i.
proprietary a.i.	UC11-17	proprietary a.i.	proprietary a.i.	proprietary a.i.	brassicas, cucurbits, eggplant, peppers, tomatoes, turfgrass
proprietary a.i.	UC11-18	proprietary a.i.	proprietary a.i.	proprietary a.i.	kiwi, apples, pears, peach, apricot, yams, turfgrass
proprietary a.i.	UC11-19	proprietary a.i.	proprietary a.i.	proprietary a.i.	seed treatment cereals; apples
		proprietary a.i.	proprietary a.i.	proprietary a.i.	turfgrass; cereals; brassica; asparagus; etc.