



**Highfields**  
CENTER FOR  
**COMPOSTING**

*Closing the Loop*

ANNUAL REPORT  
2010-2011





## *Love food? Nourish the soil. Compost!*

**Our work is creating soil and food security for all Vermonters while protecting air, water, soil, and family farms.**

Vermonters across the state are participating.

Through Highfields affiliated programs:

- 1,766 tons of food scraps were composted or used as chicken feed this year
- 36 schools are participating statewide, with over 4,000 new students this year

### **Improving the climate**

- 5 gallons of food scraps, composted instead of landfilled, prevents greenhouse gas emissions equivalent to burning over 1 gallon of gasoline
- The reduction in greenhouse gas emissions through Highfields affiliated programs this year is equivalent to not burning over 152,000 gallons of gasoline!

### **Mission**

Our mission at Highfields Center for Composting is to Close the Loop on community-based, sustainable food and agricultural systems, thus addressing soil health, water quality, solid waste, farm viability and climate change.

We research, educate, and provide technical services for composting and comprehensive food scrap recycling programs.

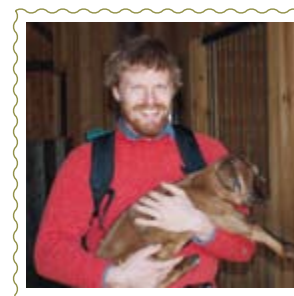
*from the director* .....

Friends and Partners,

As I write, Richard Hudak and Marie Frey are completing construction of a composting facility on their farm in Swanton, Vermont. Once their composting site is complete, they will receive food scraps from schools and businesses in surrounding communities for composting, enabling them to meet the nutrient and organic matter requirements of their 30-acre mixed vegetable farm with locally available nutrients and carbon. Richard and Marie, along with the Northwest Solid Waste District, Waste Not Resource Solutions, Bellows Free Academy, and the Highfields team have been building the Close the Loop St. Albans program over the last 18 months. The Hudak Farm and this program are part of the growing composting infrastructure spreading across Vermont through the statewide movement to close the loop on local food systems.

As we work toward our Close the Loop Vermont! campaign goal of building the statewide infrastructure to recycle all of Vermont's food scraps by 2017, we are excited that Highfields' new Compost Research and Education Facility will contribute to that effort in the Northeast region of the state. At the new site we will have the capacity to compost 1,000 tons of food scraps annually, recycling those nutrients to be used again by local farmers and gardeners. Our new facility will expand its role providing food scrap recycling and high quality compost to our community, while also providing six distinct platforms on which to build our invigorated and expanded compost research program in partnership with the University of Vermont. We are thrilled to bring vermiculture and aerated static pile composting systems to Highfields, as well as thermal recovery technology to harness heat from the composting process. This facility, and the research it will enable, will provide meaningful contributions to mitigate toxins and fossil fuel use in food production.

We are honored by your partnership in this work and are constantly reminded, and exhilarated by, the community required and available to rebuild local food systems throughout Vermont and beyond.



With gratitude,  
For soil,  
In partnership,

*Tom Gilbert*  
Executive Director

*Healthy Soil grows healthy food.  
Healthy food is good for everyone.*



## Close the Loop programs are growing!

**Close the Loop:** We are making our food systems whole again by diverting food scraps from landfills for composting or chicken feed.

**A**s our organization and programming have evolved, much of our previous programming now feeds into our broader Close the Loop Vermont campaign. From providing technical services to farmers, to giving workshops, to working with haulers, to training kindergarteners about composting food scraps, all of our programming feeds back into itself.

If farmers don't have the permits needed to compost food scraps, the kindergartener's apple core from her school lunch will have no where to go other than the landfill. Without the food scraps from the school, the farmer loses the opportunity to recycle locally produced nutrients and use them to build healthy soils and produce more food. Close the Loop programming bridges those gaps, creating sustainable, community-based systems that reconnect all the participants in our food system, making it whole.

This programming builds the foundation for sustainable food systems and robust food supply chains. This programming also reduces solid waste, reduces greenhouse gas emissions, reduces use of toxic agrochemicals and fertilizers, protects water quality, increases farm viability, increases soil health, increases plant health and resistance to diseases, weeds, and drought, and builds soil security. We have been building this program community-by-community around Vermont for ten years, and are now working to scale it up into an integrated statewide effort.

**Our goal is to build the infrastructure capable of recycling all of Vermont's food scraps by 2017.**





## Close the Loop Vermont Status Update

**H**ighfields' Close the Loop Vermont campaign is gaining ground. We continue to increase the tonnage of food scraps being recycled in Vermont, reduce greenhouse gas emissions, expand composting infrastructure, and train new students and adults to participate.

### Close the Loop St. Albans!

Over the last year we have made significant progress on Close the Loop St. Albans. With all town and state permits in hand, construction on the compost site at the Hudak farm is nearing completion. This will allow us to greatly expand the volume of food scraps we can collect in the region. As of March 2011, students at Bellows Free Academy (the first program participant) had sent 25,760 pounds of food scraps to the farm. This represents a reduction in greenhouse gas emissions equivalent to not burning 1,227 gallons of gasoline! This past spring we brought 800 elementary students from St. Albans City School into the program. The combined 2,100 students in St. Albans are making a great contribution to reducing greenhouse gas emissions in the region. In the coming weeks the Northwest Solid Waste Management District will expand food scrap collection and hauling services to a core group of area businesses that have committed to program participation – including the hospital and two grocery stores. An estimated 250 tons of food scraps/year will be sent to the farm for composting through this program. The partnership of the District, the Hudak Farm, and Bellows Free Academy has been integral to the success of this program.

The new composting facility at the Hudak farm, a 30 acre mixed vegetable operation, is designed to handle 500 tons of food scraps per year. Recycling local food scraps will help meet the farm's nutrient requirements and improve soil health, thereby offsetting use of imported fertilizers.

In addition to our work in the St. Albans region, we are also expanding Close the Loop services in Stowe, Waterbury, Morrisville, St. Johnsbury, the Northeast Kingdom, Addison County, and all of the schools in the Washington West Supervisory Union in the Waterbury/Mad River Valley area. We look forward to recycling ever more food scraps and implementing sustainable food systems in communities throughout Vermont.

### Local Partners Make Composting Happen!

We continue to be inspired by the hard work, capacity and dedication of our partners in each of our local composting programs, including composters and farmers, solid waste districts, businesses, schools and haulers. Some of the great folks closing the loop every day include: GROW Compost, Vermont Compost Company, Chittenden Solid Waste District, Cookeville Composting, Tamarlane Farm, Hudak Farm, Rockville Market Farm, Wise Worm Composting, Waste Not Resource Solutions, Central Vermont Solid Waste Management District, Northeast Kingdom Solid Waste District, Northwest Solid Waste Management District, Vermont Natural Ag Products, and Ducharme Logging.

Additionally, we deeply appreciate the vision and support of our many other partners including the Vermont Agency of Natural Resources, Vermont Agency of Agriculture, the Composting Association of Vermont, Lamoille Regional Solid Waste Management District, Mad River Resource Management Alliance, Greater Upper Valley Solid Waste Management District, Addison County Solid Waste Management District, the Southern Windsor/Windham Counties Solid Waste District, USDA, Natural Resource Conservation Service, Natural Resource Conservation Districts, Whole Systems Design, Valley Food and Farm, Center for an Agricultural Economy, Rutland Area Farm and Food Link, Green Mountain Farm to School, Food Works at Two Rivers Center, NOFA-VT, and many schools and businesses.



### Ferrisburgh Central School

Thanks to the incredible dedication, thoughtfulness, and leadership of Nick Patch (FCS parent) and Judy Elson (FCS parent and teacher), as well as a school-wide community invested in sustainability, the FCS composting system completes the school's closed loop food model – from garden to kitchen to cafeteria to compost and back to garden.

below: Tyler Buswell as Captain Compost at Highfields' separation station at the Growing Local Fest in Montpelier.

## Close the Loop! School Composting Programs

**E**ducators and students are leading the way in Close the Loop programming around the state. Thanks to generous funding from the Harris and Frances Block Foundation, as well as support from individuals, we helped a number of schools set up food scrap recycling systems this year. Whether it be sending food scraps to a local composter or chicken farmer, or composting it on site to use on school gardens, we helped each school build a system that works best for them.

When educators or students call us for support, the school often becomes the springboard for larger programming in a region. We always appreciate the opportunity to train students as program participants, teaching them about the food system and their role in making it sustainable. Kids do such a great job and grasp the simple beauty of this program so quickly – they often voice wonder that we have not been doing this all along. As food scrap recycling becomes common practice in schools, students take this habit with them to their homes and broader community – acting as change agents for good.

School composting program achievements for 2010-2011:

- Ten new school composting programs developed.
- Two new compost pilot projects completed.
- Eight additional schools interested in compost programs next school year.
- 4,200 new students started participating in programming.
- One on-site composting system completed.

## Volunteer Program

With 35 new volunteers this year, we are thrilled to see the Compost Crew grow and have a rottin' good time providing resource capture and education services at events and schools around Vermont. Our volunteers are essential to the success of our event services, workshops and Close the Loop programs. It's been a great year for the Compost Crew – thanks for your stewardship and partnership! To join the compost crew, please contact our office.

We are thrilled to be partnering with the UVM Master Gardener and Master Composter programs. Students from these programs can now gain program credits through action based volunteer activities at Highfields. MG and MC volunteers have been a great asset to our programming, helping with resource recovery efforts at events around the state. Thanks to everyone who has participated!

## Event Services

Highfields offers food scrap recycling services for events around the state. Last year we ran separation and education stations at five events including: Kingdom Farm and Food Days, Growing Local Festival, Northeast Animal Power Field Days, Farm to Plate Day at the Vermont State House, and the Hardwick Spring Festival. Please contact our office for inquiries into event services – we can help make your event as close to zero waste as possible.



top: Robert Sandberg at Cookeville Composting

middle: Students from Bellows Free Academy, and teachers Molly Godin and Jeff Rouleau, help assemble 75 compost totes for the Close the Loop St. Albans program

bottom: Harvest time at the Hudak Farm



### Event Services Highlight

#### Northeast Animal Power Field Days (NEAPFD)

Event organizers teamed up with the Highfields Center for Composting to collect food scraps, animal bedding and manure to be composted at Cookeville Compost in Corinth, Vermont. Volunteers from surrounding towns, and several UVM Master Composter students, helped run resource recovery stations. Over the course of the three-day event nearly 16 yards of material were collected for composting.



New on-site compost system developed for the Craftsbury Outdoor Center. Center staff, from left: Hannah Dreissigacker, Brian Gluck, Corey Cochran.

## Technical Services for On-farm Composting

Our Compost Specialist, James McSweeney, has traveled all over the state this year working with farmers, composters and schools to develop and manage high quality, on-site composting systems. James has worked on everything from permitting to site design, management plans, recipe development, bedded pack barns, and mortality composting – providing each site the services they need to be successful.

- Technical services were provided to 23 entities, including 16 farms, 8 new composters, and 5 operations handling food scraps for composting or poultry feed.
- Mortality composting services were provided to a farm in Walden that suffered a devastating barn fire and lost 150 animals.
- On-site composting technical services were provided to three businesses, one community entity, and seven schools and institutions.

- Technical materials on our website continue to be accessed by farmers and composters in the US, Canada, and abroad. These materials are available as free downloads.

### Build-it-yourself Compost Turner

Interest in our build-it-yourself compost windrow turner continues to grow, with folks around the world downloading the turner designs for free off our website. This turner was originally developed with generous support from NE SARE and the Canaday Family Charitable Trust. This year we provided technical assistance to two farms and one paper company in the process of building a turner, and received pictures of a completed turner from a farm in Turkey. A new blog site will soon be launched where people can share tips and modifications of the design with others in the industry.



Compost 101 workshop participants

## Compost Research and Education Site

### Compost Access Fund

Through the support of generous community members Highfields continues to be able to provide compost to families with low incomes, community gardens, schools and non-profits at no cost, helping our local community maintain healthy soils and grow healthy food. We believe building soil is the first step to achieving food sovereignty in our communities. Last year 11 yards of compost, valued at \$528, were donated through our Compost Access Fund. Donations towards this fund can be sent to Highfields at any time.

### Tours and Field Trips

Our Compost Demonstration and Research Site continues to be an exciting place to learn about compost in action. Last year ten school and community groups throughout Vermont, the US, and foreign countries toured the Highfields facilities, totaling 185 participants.

### Workshops

To meet the demand for our workshops, as well as help composters meet the compost facility operator training requirements in the new Vermont Solid Waste Management Rules, we have partnered with the Vermont Agency of Natural Resources and the Vermont Agricultural Innovation Center to develop two new workshops. These workshops will be offered in October 2011 at our new Compost Research and Education Facility.

- 1) Vermont Agency of Natural Resources (ANR) Compost Operator Certification Course, which will be recognized by the state of VT and required for composters handling food scraps.
- 2) Aspiring Farmers Compost Operator Certification Course, through which students in agricultural programs can earn certification recognized by the Vermont Agency of Natural Resources to operate a composting facility.

We will continue to offer our popular Compost 101 workshop, which is a great

place to learn the basics of farm-scale composting and get started on, or improve, your on-farm composting system. Last year this workshop was attended by 35 people from Vermont and across the US.

In an effort to spread the practice of proper livestock mortality composting on Vermont farms, we partnered with eight organizations to offer our Mortality Composting Workshops in three locations around the state last year. 35 farmers and agricultural professionals attended these workshops.

In addition to these offerings, Highfields' staff provided composting and food system workshops and lectures at over a dozen conferences and events last year.

*The certification workshops were funded by the Vermont Agency of Natural Resources, a Supplemental Environmental Program by the Chittenden Solid Waste District in agreement with the Vermont Agency of Natural Resources, Vermont Agency of Agriculture Food and Markets—Agricultural Innovation Center, and USDA Rural Development.*

*The Compost 101 Workshop was funded by the Vermont Agency of Agriculture Food and Markets—Agricultural Innovation Center and USDA Rural Development.*

### Compost Research

Highfields is leading the way in compost research in Vermont. We now have a formalized Memorandum of Understanding with the University of Vermont to pursue shared research goals in compost science. This last year we partnered with the Plant and Soil Department at UVM to conduct research on the effectiveness of compost in the suppression of Septoria Leafspot, a common soil-borne plant pathogen. In the first year of this two-year project, funded by Northeast Sustainable Agriculture Research & Education, Highfields produced multiple replicates of three distinct compost recipes to assess their effectiveness and foster specific decomposer communities. This spring, these various treatments and a control were applied to field trials at both Riverside Farm (East Hardwick) and the Intervale Community Farm (Burlington). UVM staff and students are presently capturing data on these trials.

*Continued next page*

### Farm Technical Services Highlight – Jasper Hill Farm

## “Green Machine” Integrated Waste Management System with Energy and Nutrient Recovery

In 2010, Highfields technical staff began design work with a team at Jasper Hill Farm in Greensboro, Vermont, to develop a highly integrated, biologically mediated, waste management, renewable energy, and nutrient recovery system for their dairy and cheese making operations. This system, known as the “Green Machine,” is slated to be fully functional in 2012. This will be the ultimate closed loop system for the farm.

**How it will work:** When manure comes out of barn the solids will be incorporated into a static, aerated compost system which will produce approximately 800 cubic yards of finished compost per year. Waste heat from the compost pile will be captured through a

heat recovery system, which will generate an estimated 350 Million BTUs in the form of hot water, and another 165 Million BTUs in the form of hot air per year. Whey from the cheese house will be blended with manure liquids and then go into an anaerobic digester, which will be warmed with heat recovered from the compost piles through a heat exchange system. Methane produced by the anaerobic digester will be used to heat wash water for the cheese house.

Used wash water, along with processed digestate fluids, will be filtered through an Advanced Botanical System, designed by EcoSolutions, in the greenhouse for waste water treatment. The greenhouse will also be heated with heat captured from the compost pile as well as passive

solar heating. This treated water will be used to irrigate pastures and an orchard. Compost will be used to amend the soils in the pastures and orchard as well. Animals will benefit from the crops from the fields and will return those nutrients and energy to the system in the form of milk, manure and whey.

This project is being funded by the farm as well as the USDA National Resource Conservation Service, Northern Community Investment Corporation, USDA Rural Development, and the Vermont Agency of Agriculture Food and Markets. This innovative project will serve as a highly visible and replicable model for waste management on farms and at food processing facilities.



Nematophagous Fungi – *Arthrobotrys oligospora*. A fungus that traps and feeds on root-feeding nematodes. ©1997 J.D. Eisenback and Ulrich Zunke. From the CD, *NemaPix: A Journal of Nematological Images Volume 1* (1997) JD Eisenback & U Zunke (Eds).



## Highfields' New Composting Research and Education Facility

The Highfields Compost Research and Education Facility is moving and expanding! The new site will be in the Fischer Bridge Industrial Park in Wolcott – next door to the Vermont Food Bank and High Mowing Seeds. This move will enable us to increase our compost production by 1,000%, as well as process up to 1,000 tons of food scraps annually – recycling these nutrients for local food production.

We will have over 70,000 square feet of improved pads for windrow and mortality composting – expanding the services we can provide local farmers. In addition, we will gain the infrastructure needed to implement four composting strategies and expand our research platforms to six distinct areas of inquiry:

- aerated static piles
- vermiculture
- windrow composting
- heat recovery
- mortality composting
- small scale composting systems

Another exciting aspect of the new site will be a 40-foot continuous-flow vermiculture (worm composting) reactor, which will be heated with waste heat from 3 aerated static pile composting bays equipped with thermal recovery technology. The vermiculture system, the aerated bin system and the windrow pads will give us unique opportunities to work on developing composts with specific biological and chemical traits to maximize nutrient, pathogen and pest management in cropping systems.

We have a Memorandum of Understanding with the University of Vermont to pursue shared research goals at this dynamic facility. Our newly formed Research and Education Advisory Board, composed of compost and agricultural experts from around the region, will help to guide our research and education programs.

*Continued from page 7*

We continue to conduct trials on best management practices for food scrap composting at our working compost site where we process five tons of food scraps each week from schools and businesses in our community. Our findings are incorporated into our technical services, workshops, demonstrations and tours.

### Community Supported Compost Program

We deeply appreciate the support of our Community Supported Compost members, whose up front investments in our compost site support our educational programs and research, while ensuring our members compost for five years. Membership in our CSC has expanded and we look forward to increasing our base of committed members. Thank you! If you are interested in joining the CSC please call our office.



## Financial Report

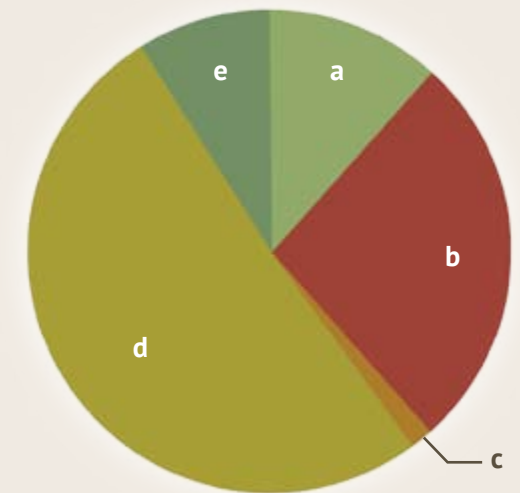
### HCC INCOME SOURCES FY2011

(a) Compost & Product Sales	\$33,828	12%
(b) Consulting Services	78,622	27%
(c) Workshop Income	3,715	1%
(d) Grant Income	148,756	51%
(e) Direct Public Support	26,444	9%
Interest Income	122	0%
<b>Total Income</b>	<b>\$291,487</b>	<b>100%</b>

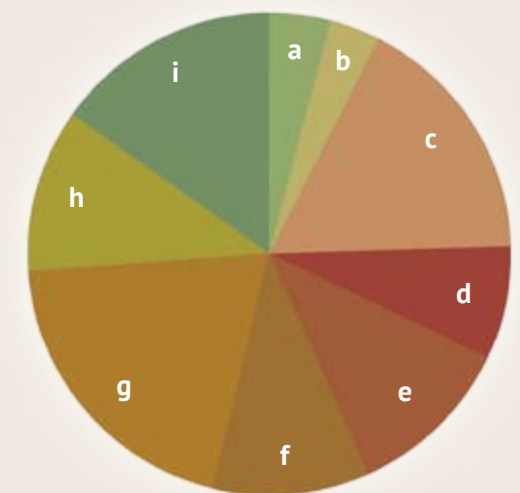
### HCC PROGRAM EXPENSES FY2011

(a) Free & Reduced Rate Consults	\$11,905	4%
(b) Workshops	9,962	3%
(c) Compost Research & Demo Site	49,348	17%
(d) Capacity Building	21,836	8%
(e) Close the Loop St. Albans	32,559	11%
(f) Close the Loop VT	30,607	11%
(g) Contracted Consults	58,297	20%
(h) Grants & Fundraising	31,910	11%
(i) Admin & Overhead	44,028	15%
<b>Total Expenses</b>	<b>\$290,454</b>	<b>100%</b>

### INCOME SOURCES FY2011



### PROGRAM EXPENSES FY2011



### Board of Directors PICTURED AT RIGHT

FROM LEFT: Mari Omland – Secretary,  
Tom Gilbert – Highfields' Executive Director  
Fletcher Dean  
Nick Comerchi – President  
Grace Gershuny  
David Healy  
Susan Alexander – Treasurer (MISSING)

### Staff

Tom Gilbert – Executive Director  
June Van Houten – Director of Marketing  
& Development  
Josh Kelly – Close the Loop Project Manager  
James Mc Sweeney – Compost Specialist  
Tyler Buswell – Outreach Coordinator  
Jim Rapp – Compost Site Manager  
Andy Purdy – Compost Site Assistant





**“I am thrilled to participate in these efforts as a member of Highfields’ Research and Education Advisory Board and strongly encourage all those committed to regenerative food systems to support this effort.”**

– Nora Goldstein, Editor  
*Biocycle Magazine and Journal of Compost Science and Utilization*

## **Supporters**

**We deeply appreciate the ongoing and generous support of our sponsors – Thank you!**

Anonymous, Ben & Jerry’s Community Action, Ben & Jerry’s Foundation, Burke Mountain Academy, Burke Mountain Resort, Canaday Family Charitable Trust, Central VT Solid Waste Management District, Chittenden Bank, Chittenden Solid Waste Management District, Community Capital of VT, Composting Association of Vermont, Concept 2, Cookeville Compost, David Greenewalt Foundation, Greater Upper Valley Solid Waste Management District, Green Mountain Coffee Roasters, Green Mountain Girls Farm, Hannafords, Harris and Frances Block Foundation, Heartbeat Lifesharing, High Meadows Fund, Holborn Foundation, Jan and David Blittersdorf Foundation, John Merck Foundation, Lamoille Regional Solid Waste Management District, Lintilhac Foundation, Lydia B. Stokes Foundation, National Life, Northeast Kingdom Waste Management District, Northeast Sustainable Agriculture Research and Education, Northwest Vermont Solid Waste Management District, Perkins Family Trust, Price Chopper’s Golub Foundation, Skidaway Island Foundation, United States Department of Agriculture–Rural Development, VT Agency of Agriculture, Food and Markets–VT Agricultural Innovation Center, VT Agency of Natural Resources, Vermont Community Foundation, VT Department of Labor, VT Sustainable Jobs Fund, Virginia Wellington Cabot Foundation, Whitewater Gallery, Windham Foundation.

We could not do all that we do without the generous support of our individual donors – Thank You! Your investment in our work makes all the difference.

Lastly, we send a big Thank You to the performers who made our annual Compost Cabaret a great success. David Budbill, Alan Greenleaf & the Doctor, Kris Gruen, Bret & Maya McCoy of Vermont Vaudeville, Patty Garbeck, Christina Michelson, David Gaillard, Linda Warnaar & the Drumatics, The Roaring Dandelions, and our MC like no other, Sylvia Fagan.

## **Partners**

Our programs would not be successful without the investment, dedication and vision of our partners. Highfields partners with 35 other organizations and agencies throughout the state, working together to advance sustainable food systems for Vermont. You Rot! Thank You!



PO Box 503 | 21 Mill Street, Suite #1  
Hardwick, Vermont 05843  
802-472-5138

[www.HighfieldsComposting.org](http://www.HighfieldsComposting.org)