



Independent coverage of composting, wood recycling and organics management

Composting News

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Agrilab President Brian Jerose is a composting consultant and innovator who pioneered energy recovery from compost. (Photo: Erica Housekeeper)

Compost for a cleaner planet

By Geoff Robertson

Anyone who composts knows that if you mound up leaves, animal bedding and food scraps, you end up with a big, hot pile of compost. While most people see the nutrient-dense material as the finished product for fields and gardens, Brian Jerose also sees renewable energy and a cleaner Lake Champlain.

President and co-founder of Agrilab Technologies, Jerose is a compost consultant and innovator who pioneered energy recovery from compost, building one of the first compost aeration and heat recovery systems in the U.S. at Terry and Joanne Magnan's farm, Diamond Hill Custom Heifers, in Enosburg Falls, Vt., in 2004.

"The French and Chinese had used

(See *Energy*, page 13)

Compost use nets 10 percent gain in yield on farm

A California almond farm reported a yield improvement of 20 percent - half of which was attributed to the use of compost. Okuye Farms, of Merced County, Calif., was featured this month in a case study from the USDA Natural Resources Conservation Service (NRCS) and the American Farmland Trust that highlights the economic benefits of implementing soil health management practices.

Of the four case studies published, Okuya Farms was the only one that cited the land application of compost as a factor in increased production.

By using compost and other nutrient management practices, Okuye Farms improved its bottom line by \$657 per acre, and \$76,155 over 116 acres last year, the



(See *Yield*, page 15)

New Jersey governor conditionally vetoes food waste bill

Saying that the bill has been "weakened" by amendments, New Jersey Gov. Phil Murphy has conditionally vetoed A3726, which would require large food waste generators to separate and recycle food waste and amend the definition of "Class I renewable energy."

Murphy returned the bill to the legislature with recommendations to remove the exemptions that allow food waste to be sent for final disposal to incinerators and sanitary landfills.

"While the bill provides an admirable

framework for solving the food waste challenge, several amendments added throughout the legislative process severely weakened the effectiveness of the legislation," Murphy wrote in the conditional veto. "Specifically, the bill

(See *New Jersey*, page 5)

Highlights

- n **Washington considers permit to control nutrients**
- n **National compost prices**

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Legislation/regulation

Washington state considers general permit to control nutrients

The Washington Department of Ecology (DOE) said it is considering a general permit to control nutrients in Puget Sound.

DOE said excess levels of nutrients from human sources are harming Puget Sound's water quality. Excess nutrients can cause too much plant and algae growth that ultimately leads to low levels (below natural levels) of dissolved oxygen in many parts of Puget Sound.

These low levels of dissolved oxygen are causing stress on marine life and making it difficult for aquatic organisms

to thrive, DOE said. Many areas in Puget Sound have dissolved oxygen levels below the state's water quality criteria and DOE is required to take action, it said.

"To improve and protect water quality in Puget Sound, we are focused on finding solutions for improving levels of dissolved oxygen in Puget Sound," DOE said. "Domestic wastewater treatment plants (WWTPs), or sewage treatment plants, are a major human source of nutrients to Puget Sound and are significantly contributing to low oxygen levels. With our region's growing population, and recognizing that WWTP improvements to limit nutrients will take time, we need to start work now to protect and restore Puget Sound. To keep Puget Sound clean, Ecology must require WWTPs to control nutrients and we have made a preliminary determination to use a General Permit to accomplish this."

DOE is accepting comments until

(See *Nutrients*, page 5)



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Legislation/regulation

Nutrients

From page 3

October 21, 2019 about its preliminary determination to develop a Nutrients General Permit. No draft permit language has been issued. For more information or to submit a comment, visit <https://ecologywa.blogspot.com/2019/08/ecology-considers-general-permit-to.html> or scan this QR code:



New Jersey

From page 1

was amended to add two glaring exceptions to the bill’s mandate for certain food waste generators to send source separated food waste to an authorized food waste recycling facility. The amended bill provides exceptions that allow certain food waste generators to send food waste to sanitary landfills

and incinerators. Not only does EPA’s Food Recovery Hierarchy designate landfilling and incineration as a last resort for food waste disposal, but I am also concerned that these exemptions will disproportionately impact environmental justice communities that are already overburdened by waste facilities, especially incinerators which emit significant amounts of greenhouse gases contributing to global warming.”

He said his recommended changes will ensure that more food waste is properly recycled and will also protect disadvantaged communities, which are disproportionately located near landfills and incinerators, from the harmful environmental effects of food waste that is improperly disposed.

“I will continue to work with my partners in the legislature to battle the food waste epidemic in a manner that is fair to the communities most affected by food waste,” Murphy said.

The bill, which was introduced in March 2019, passed both houses of the

New Jersey legislature, passing the assembly on June 27 by a vote of 42-26-12. The bill was supported by democrats, who votes 40-1 in favor, compared to republicans, who voted 23-3 against the measure.

On the same day, the senate approved the legislation 25-15, with democrats voting 19-2 in favor and republicans voting 4-2 opposed. Four democrats and nine republicans did not vote.

Ten democrats and two republicans did not vote. Murphy also is a democrat.

Sen. Bob Smith (D), a sponsor of the bill, hedged his bet by voting for passage and also supporting the conditional veto.

“I commend my partners in the legislature for their efforts to combat the proliferation of food waste, including the enactment of bills establishing a public awareness campaign for combating food waste and creating a Food Waste Task Force to identify strategies, policies and legislative and

(See New Jersey, page 8)

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National Compost Prices

The prices listed below are intended to indicate the value of mature compost products sold by compost producers and retailers in noted regions. Prices listed are based on surveys and publicly posted prices.

Your input on published prices is encouraged. Contact Ken McEntee, editor, at (440) 238-6603. Fax: (440) 238-6712. EMail: ken@recycle.cc. Address: 9815 Hazelwood Avenue, Cleveland, OH 44149. Notes on listings.

- Each listing includes a high price obtained, a low price obtained and an average of all prices obtained within a particular market.

- Market areas: Thirteen market areas have been targeted to provide a cross section of compost product markets in

the U.S. Where regions are not identified by a specific city, "Chesapeake" refers to the region stretching between Norfolk, Va. to Baltimore, Md. "Texas" incorporates several major cities in the state. "Northwest" represents the Seattle and Portland, Ore areas. "SF-Bay" refers to the San Francisco Bay area. SoCal is Southern California, including the Los Angeles and San Diego areas. Denver includes Colorado, Wyoming and Montana.

- "Food waste" compost: This category refers to compost products that include food waste, regional specialties and other feedstocks not specifically covered in other categories.

- Manures: Chicken manures may include other poultry

manures, such as turkey and duck manure. Cow manures may include manures marketed as steer and dairy manure. Horse manure is included in this category as well.

- Absence of a regional listing within a given category indicates not enough information for a valid listing.

Additional data will be added as more information is obtained.

- Bulk retail prices do not include municipal operations that give compost away for free.

Bulk Retail (yard)

Yard waste compost	Average	High	Low
NE	\$ 32.55	\$ 77.00	\$ 17.50
Chesapeake	\$ 24.50	\$ 30.00	\$ 17.00
SE	\$ 21.88	\$ 29.95	\$ 16.00
Florida	\$ 16.42	\$ 26.00	\$ 10.50
Cleveland	\$ 19.90	\$ 28.00	\$ 12.50
Iowa	\$ 21.57	\$ 53.00	\$ 7.50
Minneapolis	\$ 17.09	\$ 28.00	\$ 8.00
Texas	\$ 29.71	\$ 40.00	\$ 15.00
Denver	\$ 20.31	\$ 31.00	\$ 12.00
Northwest	\$ 24.05	\$ 55.00	\$ 10.00
SF-Bay	\$ 21.92	\$ 30.00	\$ 10.00
SoCal	\$ 14.75	\$ 24.00	\$ 8.00

Food waste compost	Average	High	Low
NE	\$ 39.12	\$ 64.00	\$ 17.50
Chesapeake	\$ 23.00	\$ 30.00	\$ 15.00
SE	\$ 28.11	\$ 35.00	\$ 24.00
Florida	\$ 17.50	\$ 22.00	\$ 13.00
Iowa	\$ 25.00	\$ 65.00	\$ 15.00
Minneapolis	\$ 12.33	\$ 16.00	\$ 9.00
Texas	\$ 30.21	\$ 48.95	\$ 15.00
Denver	\$ 15.00	\$ 15.00	\$ 15.00
Northwest	\$ 20.55	\$ 30.00	\$ 15.00
SF-Bay	\$ 23.61	\$ 38.00	\$ 14.00
SoCal	\$ 30.50	\$ 45.00	\$ 16.00

Leaf humus	Average	High	Low
NE	\$ 24.98	\$ 30.00	\$ 19.95
Chesapeake	\$ 27.49	\$ 30.00	\$ 23.95
Cleveland	\$ 19.27	\$ 26.00	\$ 8.00

Composted biosolids	Average	High	Low
NE	\$ 30.00	\$ 40.00	\$ 20.00
Chesapeake	\$ 24.98	\$ 35.00	\$ 12.00
SE	\$ 12.14	\$ 28.00	\$ 4.00
Florida	\$ 13.14	\$ 22.00	\$ 8.00
Cleveland	\$ 24.77	\$ 30.00	\$ 19.50
Iowa	\$ 12.67	\$ 21.00	\$ 8.00
Texas	\$ 21.28	\$ 30.00	\$ 10.00
Denver	\$ 9.00	\$ 10.00	\$ 7.00
Northwest	\$ 17.91	\$ 26.00	\$ 7.00
SoCal	\$ 13.36	\$ 22.00	\$ 3.50

Composted chicken manure	Average	High	Low
NE	\$ 45.00	\$ 50.00	\$ 40.00
Chesapeake	\$ 25.00	\$ 25.00	\$ 25.00
SE	\$ 42.00	\$ 42.00	\$ 42.00
Minneapolis	\$ 17.00	\$ 17.00	\$ 17.00
Texas	\$ 37.23	\$ 47.50	\$ 26.95
Denver	\$ 25.65	\$ 28.00	\$ 24.00
SF-Bay	\$ 16.00	\$ 16.00	\$ 16.00
SoCal	\$ 44.00	\$ 75.00	\$ 27.00

Composted cow manure	Average	High	Low
NE	\$ 45.50	\$ 46.00	\$ 45.00
SE	\$ 31.33	\$ 45.00	\$ 12.00
Cleveland	\$ 24.00	\$ 24.00	\$ 24.00
Iowa	\$ 42.00	\$ 60.00	\$ 16.00
Minneapolis	\$ 29.33	\$ 32.00	\$ 26.00
Texas	\$ 29.33	\$ 47.50	\$ 15.00
Denver	\$ 21.71	\$ 30.00	\$ 12.00
Phoenix	\$ 20.00	\$ 20.00	\$ 20.00
Northwest	\$ 23.85	\$ 33.75	\$ 17.45

SF-Bay	\$ 26.00	\$ 26.00	\$ 26.00
SoCal	\$ 17.25	\$ 24.00	\$ 12.00

Wood waste mulch	Average	High	Low
NE	\$ 21.35	\$ 38.00	\$ 12.50
Chesapeake	\$ 21.13	\$ 28.00	\$ 12.00
SE	\$ 18.78	\$ 34.95	\$ 12.00
Florida	\$ 17.50	\$ 18.00	\$ 17.00
Cleveland	\$ 25.56	\$ 36.25	\$ 14.00
Iowa	\$ 32.50	\$ 40.00	\$ 25.00
Minneapolis	\$ 26.00	\$ 35.00	\$ 20.00
Texas	\$ 16.19	\$ 27.00	\$ 9.00
Denver	\$ 18.74	\$ 25.00	\$ 12.48
Phoenix	\$ 17.61	\$ 22.95	\$ 10.00
Northwest	\$ 19.00	\$ 35.00	\$ 7.50
SF-Bay	\$ 18.14	\$ 30.00	\$ 8.00
SoCal	\$ 20.50	\$ 50.00	\$ 6.00

Colored wood mulch	Average	High	Low
NE	\$ 28.00	\$ 28.00	\$ 28.00
Chesapeake	\$ 28.67	\$ 33.00	\$ 25.00
SE	\$ 27.13	\$ 42.00	\$ 15.00
Florida	\$ 20.33	\$ 22.00	\$ 19.00
Cleveland	\$ 24.87	\$ 28.99	\$ 21.95
Iowa	\$ 30.00	\$ 30.00	\$ 30.00
Minneapolis	\$ 36.80	\$ 49.00	\$ 30.00
Texas	\$ 26.08	\$ 32.50	\$ 18.00
Denver	\$ 33.28	\$ 33.28	\$ 33.28
Northwest	\$ 35.00	\$ 35.00	\$ 35.00
SF-Bay	\$ 34.00	\$ 36.00	\$ 28.00
SoCal	\$ 32.50	\$ 35.00	\$ 30.00

Bulk wholesale (yard)

Yard waste compost	Average	High	Low
NE	\$ 21.50	\$ 48.00	\$ 11.00
Chesapeake	\$ 13.39	\$ 16.00	\$ 8.00
SE	\$ 16.66	\$ 25.00	\$ 8.65
Florida	\$ 9.75	\$ 13.00	\$ 8.00
Cleveland	\$ 12.50	\$ 15.00	\$ 10.00
Iowa	\$ 14.00	\$ 19.00	\$ 8.00
Minneapolis	\$ 12.00	\$ 17.00	\$ 7.00
Texas	\$ 17.25	\$ 24.00	\$ 9.00
Denver	\$ 13.05	\$ 14.10	\$ 12.00
Northwest	\$ 14.79	\$ 35.00	\$ 7.50
SF-Bay	\$ 13.71	\$ 22.00	\$ 7.00
SoCal	\$ 7.33	\$ 10.00	\$ 6.00

Food waste compost	Average	High	Low
NE	\$ 25.79	\$ 48.00	\$ 11.00
Chesapeake	\$ 10.50	\$ 15.00	\$ 8.00
SE	\$ 20.65	\$ 30.00	\$ 15.00
Florida	\$ 10.50	\$ 13.00	\$ 8.00
Iowa	\$ 13.40	\$ 20.00	\$ 10.00
Minneapolis	\$ 12.00	\$ 12.00	\$ 12.00
Texas	\$ 17.50	\$ 24.00	\$ 8.50
Denver	\$ 11.33	\$ 15.00	\$ 7.00
Northwest	\$ 17.25	\$ 20.00	\$ 15.00
SF-Bay	\$ 12.67	\$ 26.00	\$ 5.00

Composted biosolids	Average	High	Low
NE	\$ 15.33	\$ 20.00	\$ 10.00
Chesapeake	\$ 9.31	\$ 15.00	\$ 5.00
SE	\$ 10.93	\$ 15.00	\$ 5.00
Florida	\$ 10.50	\$ 13.00	\$ 8.00
Texas	\$ 15.99	\$ 20.00	\$ 9.00

Denver	\$ 13.00	\$ 13.00	\$ 13.00
Northwest	\$ 16.75	\$ 21.00	\$ 12.00
SoCal	\$ 10.50	\$ 17.00	\$ 3.00

Composted cow manure	Average	High	Low
NE	\$ 36.00	\$ 36.00	\$ 36.00
SE	\$ 21.38	\$ 31.50	\$ 7.00
Iowa	\$ 35.00	\$ 35.00	\$ 35.00
Texas	\$ 25.00	\$ 25.00	\$ 25.00
Denver	\$ 12.05	\$ 14.10	\$ 10.00
Northwest	\$ 22.00	\$ 22.00	\$ 22.00
SF-Bay	\$ 34.25	\$ 34.50	\$ 34.00
SoCal	\$ 5.00	\$ 6.00	\$ 4.00

Wood waste mulch	Average	High	Low
NE	\$ 15.75	\$ 33.00	\$ 8.00
Chesapeake	\$ 15.80	\$ 17.00	\$ 13.00
SE	\$ 14.60	\$ 24.95	\$ 5.00
Florida	\$ 14.00	\$ 15.00	\$ 13.00
Iowa	\$ 30.00	\$ 40.00	\$ 20.00
Minneapolis	\$ 18.50	\$ 20.00	\$ 17.00
Texas	\$ 10.83	\$ 14.00	\$ 8.00
Denver	\$ 7.66	\$ 8.32	\$ 7.00
Northwest	\$ 15.00	\$ 15.00	\$ 15.00
SF-Bay	\$ 12.33	\$ 14.00	\$ 9.00
SoCal	\$ 9.25	\$ 15.00	\$ 5.00

Colored wood mulch	Average	High	Low
NE	\$ 22.00	\$ 22.00	\$ 22.00
Chesapeake	\$ 20.50	\$ 22.00	\$ 19.00
SE	\$ 19.00	\$ 25.00	\$ 15.00
Florida	\$ 16.00	\$ 16.00	\$ 16.00
Iowa	\$ 25.00	\$ 25.00	\$ 25.00
Minneapolis	\$ 27.00	\$ 35.00	\$ 19.00
Texas	\$ 20.67	\$ 24.00	\$ 18.00
Denver	\$ 17.66	\$ 21.32	\$ 14.00
Northwest	\$ 22.00	\$ 22.00	\$ 22.00
SF-Bay	\$ 21.00	\$ 22.00	\$ 19.00
SoCal	\$ 22.50	\$ 25.00	\$ 20.00

Bag Retail

Compost (40# bag)	Average	High	Low
NE	\$ 6.87	\$ 8.00	\$ 4.50
Chesapeake	\$ 3.73	\$ 5.49	\$ 2.15
SE	\$ 4.00	\$ 4.00	\$ 4.00
Iowa	\$ 1.99	\$ 1.99	\$ 1.99
Cleveland	\$ 2.45	\$ 2.99	\$ 2.10
Iowa	\$ 3.12	\$ 7.99	\$ 1.50
Texas	\$ 4.25	\$ 6.99	\$ 1.99
Denver	\$ 3.59	\$ 4.75	\$ 1.73
Phoenix	\$ 4.71	\$ 5.99	\$ 2.77
Northwest	\$ 4.29	\$ 5.99	\$ 2.99
SoCal	\$ 5.39	\$ 6.25	\$ 3.90

Composted cow manure(40#bag)	Average	High	Low
NE	\$ 6.53	\$ 9.87	\$ 3.85
Chesapeake	\$ 5.97	\$ 7.95	\$ 3.99
SE	\$ 5.16	\$ 6.97	\$ 3.34
Florida	\$ 1.98	\$ 1.99	\$ 1.97
Cleveland	\$ 3.27	\$ 3.99	\$ 2.49
Iowa	\$ 2.18	\$ 2.49	\$ 1.75
Minneapolis	\$ 3.70	\$ 7.00	\$ 1.99
Texas	\$ 4.59	\$ 6.99	\$ 1.99
Phoenix	\$ 2.99	\$ 3.99	\$ 2.49
Northwest	\$ 3.99	\$ 3.99	\$ 3.99
SF-Bay	\$ 7.00	\$ 7.00	\$ 7.00

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Legislation/regulation

New Jersey

From page 5

executive actions that may be utilized to prevent food waste,” Murphy said.

Amy Goldsmith, New Jersey state director of Clean Water Action, supported Murphy’s action.

“Common sense alone dictates that burying and burning food waste is an inferior option and not the same as recycling and composting,” Goldsmith said. “The governor’s conditional veto of A3726, supported by its sponsors, clarifies this and legislative intent to get food waste out of the solid waste stream and put it into productive reuse.”

Doug O’Malley, director of Environment New Jersey, said burying and burning food waste is not a sustainable solution.

“Incinerators have been a blight on our urban communities and governor Murphy’s conditional veto ensures these

communities will not be hurt by more air pollution,” O’Malley said.

The bill mandates that beginning January 1, 2020, each large food waste generator that is located within 25 road miles of an authorized food waste recycling facility and that individually generates an average projected volume of 52 or more tons per year of food waste at each individual establishment or location owned or operated by the large food waste generator shall source separate its food waste from other solid waste and send the source separated food waste to an authorized food waste recycling facility that has available capacity and will accept it.

If a large food waste generator is not located within 25 road miles of an authorized food waste recycling facility, or the authorized food waste recycling facility will not accept the generator’s food waste, the large food waste generator may send the food waste for final disposal at a solid waste facility as provided in the approved district solid

waste management plan for the solid waste management district in which the generator is located.

The bill allows large generators perform enclosed on-site composting or anaerobic or aerobic digestion of its source separated food waste or recycle food waste using an alternative authorized food waste recycling method, defined as treating food waste at the site at which it is generated pursuant to a permit issued by the department, sending food waste for offsite use for agricultural purposes, including as animal feed, sending food waste offsite for treatment with sewage sludge in an anaerobic digester for biogas recovery or any other method of recycling or reuse of food waste, as authorized by the New Jersey Department of Environmental Protection (DEP).

A large food waste generator may petition DEP for a waiver of the requirements if the cost of transporting

(See New Jersey, page 13)

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Product/Equipment and Services Guide

Odor Control



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Phone: 800.689.0714
Fax: 815.438.7028
YouTube: midwestbiosystems
Twitter: compostingil
Contact: Cary Richardson
info@midwestbiosystems.com

Screening Systems & Trommels



**Action Equipment
Company Inc.**
www.actionconveyors.com
2800 Hayes Street
Newberg, OR 97132
Phone: 503-537-1111
Fax: 503-537-1117
YouTube: Action Conveyors
Contact: Andrew LaVeine
sales@actionconveyors.com



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Fax: 770-433-2669
Contact: Rick Cohen
rick@GrinderCrusherScreen.com



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Facebook: West Salem Machinery
Twitter: West Salem Machinery
Contact: Scott Haynes
info@westsalem.com

Shredders



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Contact: Rick Cohen
rick@grindercrusherscreen.com

Thermometers & Monitoring Equipment



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Replacement Parts



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Product/Equipment and Services Guide

Wear Parts



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YouTube: CWMillHogZilla
Facebook: HogZilla Monster
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Contact: Brian Bergman
sales@armorhog.com



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Contact: Jason Haug
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Facebook:
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Contact: Tim Wenger, VP, Sales
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hogzilla@cwmill.com



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Windrow Turners



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Wood Grinders - Horizontal



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E. sales@banditchippers.com
Web. www.banditchippers.com
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Twitter: banditchippers
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Contact: Regional Sales Mgr.



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Product/Equipment and Services Guide

Wood Grinders - Horizontal (cont.)



DuraTech Industries

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Wood Grinders - Tub



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Contact: Tim Wenger,
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Shredders



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Facebook: GrinderCrusherScreen
Contact: Rick Cohen
rick@grindercrusherscreen.com



Featuring the industry's leading vendors

This listing of the industry's leading vendors of products, equipment and services essential to the compost manufacturing, wood recycling and organics management business also is **available online** at compostingnews.com.

Scan the QR code above with your mobile device to go there.

If your business is not listed, please contact ken@compostingnews.com

Legislation/regulation

New Jersey

From page 8

the food waste plus the fee charged by an authorized food waste recycling facility located within 25 road miles of the large food waste generator is at least 10 percent more than the cost of transporting the food waste for disposal as solid waste plus the disposal fee charged for solid waste disposal in the state for noncontract commercial waste by a properly licensed transfer station, sanitary landfill facility, incinerator or resource recovery facility located within 25 road miles of the large food waste generator; and a large food waste generator shall be deemed in compliance if it sends its food waste for final disposal to a sanitary landfill facility that delivers the landfill gas to a gas-to-energy facility as fuel for the generation of electricity.

Applications

Energy

From page 1

methods to recover heat from compost piles,” said Jerose. “We created a negative aeration system that actively pulls vapors out of the compost and draws heat up through a hot water loop. That hot water can then be used for radiant heat, wash water or to heat a barn or greenhouse.”

Compost as renewable energy

Encouraged that the Magnan farm not only cut down on energy costs, but also reduced labor and operating costs and significantly sped up the composting process, Jerose and his late business partner, Joshua Nelson, founded Agrilab Technologies.

“Traditional methods of composting

are labor intensive and therefore expensive,” said Jerose. “Someone has to drive the tractor to turn the compost, which requires fuel and maintenance, and it’s often too cold during the winter months for the pile to generate adequate heat so the whole process slows down.”

Jerose and Nelson believed their system could solve those problems, and return real savings to the farms in the form of renewable energy.

The newly formed company was still in start-up mode when Nelson passed away unexpectedly in 2012.

“Josh was the entrepreneur. I was the tech,” said Jerose. “It was a huge loss to the business, and to me personally.”

Jerose buckled down on building a new team, tackling research and development over the next few years and attempting to take on the sales, marketing and innovation roles Nelson

(See Energy, page 14)

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Applications

Energy

From page 1

had left behind.

“Farmers were our first customer,” said Jerose. “But flux in the dairy and livestock community made business planning difficult. I knew there was an opportunity, but was not sure which direction to take the company.”

Jerose, along with engineer Jason McCune-Sanders and others, focused on developing lean, efficient modular composting systems and expanded his sales pitch to municipal and big facility composting producers.

“The rural challenge is uncertainty in the marketplace, especially dairy. The urban challenge is decentralized facilities,” said Jerose. “As cities and other communities begin to talk about mandatory composting, they are going to need infrastructure and our modular systems will let them scale over time.”

Agrilab has installed units at locations ranging from the Boston urban greenhouse at the Mattapan Ecovation Center and Public Works Composting Facility to the Foster Brothers Farms/VT Natural Ag Products in Middlebury, Vt. - now one of the largest manure-based compost companies in the Northeast.

“The Fosters’ site is a shining example of return on investment,” Jerose said.

Active composting time for aerated batches has been reduced by 50 percent from four or five months down to two at the farm, with annual labor savings of \$7,350 and energy savings of \$17,205 per year, he said.

Composting to clean up Lake Champlain

After 15 years developing and building Agrilab’s negative aeration composting systems, Jerose identified yet another problem his technology might help to solve—phosphorus pollution.

“Part of the Lake Champlain pollution problem is runoff from fields after manure has been spread,” said Jerose. “Our equipment stabilizes materials like manure, food scraps and other biomass that contain phosphorus and makes them easier to transport and store.”

Recognizing that the phosphorus enriched compost would have value as a soil additive, Jerose began to consider a facility network in Franklin County that would not only produce compost year-round, but also assist with the reduction of phosphorus into Lake Champlain.

It was right around this time that two opportunities presented themselves.

The first was Accel-VT 2018, an accelerator program run by the Vermont SustainableJobs Fund to support climate economy innovation.

“Accel-VT came about at exactly the right time,” said Jerose. “For a couple of years, we had been nose to the grindstone on installations and closing sales. The program gave us time, tools and resources for examining our existing business and potential opportunities.”

With access to an impressive array of business leaders and entrepreneurs in



the fields of agriculture and food technology, Jerose worked over three months to detail business strengths and weaknesses, analyze market opportunities and examine the company’s core value proposition.

“The staff, mentors and other participating entrepreneurs offered new ways to look at the value chain and solid advice on how to approach this new market,” said Jerose. “We were really able to take a hard look at business models going forward, not just focus on the technology.”

The second opportunity to present itself was the Governor’s Vermont Phosphorus Innovation Challenge. A recipient of \$50,000 in Stage Two funding, Jerose is currently in the process of exploring how Agrilab’s equipment and technology can help better distribute phosphorus around the watershed - in part by making composting more efficient.

“Transporting liquid manure around in trucks poses challenges,” said Jerose. “Our process dries, stabilizes and reduces the volume of manure and other biomass, making it easier to store, transport and redistribute back to farms.”

And, because the compost aeration and heat recovery systems can capture and redirect heat back into the compost pile, the process can continue even through the coldest Vermont winters.

“At this point, we are crunching the numbers to see what makes sense, but the core idea is a network of year-round composting facilities that reduce phosphorus pollution and provide a value-added product to farms and other

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growers during the planting season,” Jerose said.

Through the support of Accel-VT, and motivated by a social mission to reduce phosphorus pollution, Jerose believes his business can have an environmental impact in Vermont.

“We are examining economically viable facilities that redirect pollutants, allows people to swim and enjoy Lake Champlain, helps farmers, and creates jobs in the process,” he said.

Information about the Phosphorus Innovation Challenge can be found on the Agency of Agriculture website.

Managed by the Vermont Sustainable Jobs Fund, Accel-VT is a business accelerator program that supports entrepreneurs committed to climate economy innovation. Open to startups and seed stage ventures from Vermont, the U.S., and Canada, participants are guided through the VIRAL accelerator curriculum, developed by Village Capital, designed to test assumptions, expose and remediate business vulnerabilities,

prepare for significant investment, and provide a platform for rapid scale.

Robertson is the business assistance director at the Vermont Sustainable Jobs Fund.

Agriculture

Yield

From page 1

case study reported.

The farm is operated by Ralf Sauter and his family, which grows almonds on 116 acres of flat, sandy loam soil. The land has been in the family for more than 100 years and is protected from development by a conservation easement.

Fourteen years ago, Sauter took over the operations from his mother-in-law, Jean Okuye, when he and his wife moved their family from Germany to the San Joaquin Valley. Jean Okuye, the president of the East Merced Resource Conservation District, pioneered the use

of cover crops, compost and micro-sprinkler irrigation at Okuye Farms, as well as owl boxes, hedgerows and solar energy.

Since taking over in 2005, Sauter has grown the farm from 80 to 116 acres and extended these efforts throughout the orchard. Sauter credits increased adoption of soil health practices to the inspiration he gained from attending grower workshops. He learned about the dual opportunity to cut cost and increase yield by implementing nutrient management, conservation cover, mulching and compost application.

Sauter has realized multiple financial benefits from soil health, including higher yield and lower cost.

His approach to nutrient management (leaf sampling and fertigation) resulted in greater fertilizer use efficiency. He observed an increase in beneficial insects from conservation cover, which led to fewer miticide applications. Sauter

(See Yield, page 16)

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Agriculture

Yield

From page 15

decreased his pruning cost and believes he increased soil organic matter by transitioning from burning to chipping prunings within the orchard alleyway.

Finally, Sauter credits part of the increase in yield to compost application, which he believes improves microbial activity and water holding capacity.

In the 14 years since Sauter took over the orchard, he said experienced a 20 percent increase in yield, which he attributes to a combination of nutrient management and improved soil health from the use of compost as a nutrient source.

Sauter's nitrogen management plan, a requirement of the state's Irrigated Lands Regulatory Program, includes an annual nitrogen budget. Sauter uses leaf sampling (about \$3 per acre) to determine tree nutrient status. He then

estimates his compost rate and supplements with synthetic fertilizer through his irrigation fertigation system.

Sauter applies compost at a rate of 5 tons per acre.

Placing compost in the tree row adds organic matter to feed soil microbes and provides essential nutrients for tree uptake.

Sauter attributes half of his yield increase to compost use, but these benefits come at a cost. Delivered compost costs \$21 per ton and an additional \$5 per ton to spread. At five tons per acre, compost costs Sauter \$130 per acre. Fertigation facilitates delivery of the right fertilizer rate in the right location at the right time. Increased yield from fertigation as a nutrient management strategy more than offsets the cost of the micro-irrigation system and the added \$60 cost per acre of switching potassium forms from granular to liquid.

Sauter allows native vegetation to grow as conservation cover over winter

and mows the orchard floor in spring and summer. The cover also provides habitat for beneficial insects. Since adopting this practice, Sauter has reduced miticide sprays from four times to one time every five years, saving him \$30 per acre per year.

Sauter also hires a brush shredder to chop and mulch the orchard prunings.

This practice replaced burning that required a tractor to push prunings to the end of the orchard row where they were piled and burned, costing \$75 per acre. The brush shredder costs \$13.50 per acre, saving him \$48 per acre.

Sauter believes that mulching has led to increased soil organic matter, greater microbial activity and improved water holding capacity.

To estimate the water quality and climate benefits experienced on one of Sauter's 11-acre fields, USDA's Nutrient Tracking Tool was used, which found that Sauter's use of nutrient management, conservation cover, mulching and compost application

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reduced nitrogen losses by 98 percent.

On the same 11-acre field, USDA's COMET-Farm Tool estimates that Sauter's soil health practices resulted in a 16 percent reduction in total greenhouse gas emissions, which corresponds to taking 3/4 of a car off the road.

Partial budgeting analysis was used to estimate the benefits and costs of adopting nutrient management, conservation cover, mulching and compost application for the Okuye farm. The study limited its focus to variables affected by the adoption of these soil health practices.

Sauter improved his bottom line by \$657 per acre and by \$76,155 on all 116 of his orchard acres by adopting the soil health practices.

Those numbers include \$455.40 per acre from improved yield due to compost application and the same amount of increased net income from improved yield due to nitrogen management. Costs dropped by \$78 per acre due to pesticide

savings and the switch from burning orchard prunings to mulching.

Increased income and decreased costs, calculated before the costs of implementing the practices, showed an improvement of \$989 per acre.

That gain was reduced by such costs as applying compost (\$130.42 per acre), an annualized cost of an irrigation system (\$130 per acre) and an increased nutrient cost due to nutrient management (\$60 per acre).

Sauter's experience in agriculture for 14 years has centered on implementing soil health practices in collaboration Okuye. Sauter's early adoption and expansion of soil health practices, including nutrient management, conservation cover, mulching of prunings and use of compost resulted in reduced cost and higher yield. He firmly believes that these practices have made his trees and soils healthier, all the while protecting groundwater from nitrate pollution. Though many soil health practices are more expensive to

implement than conventional practices, Sauter has found the increase in yield and other benefits far outweigh these costs.

For more information, or to read the other three case studies, visit farmland.org/soilhealthcasestudies.

Anaerobic digestion

Bioenergy to expand anaerobic digestion

Bioenergy DevCo, said it has received its first institutional investment of \$106 million, which will be used to develop anaerobic digestion facilities that "naturally transform organic waste into renewable

(See Bioenergy, page 18)

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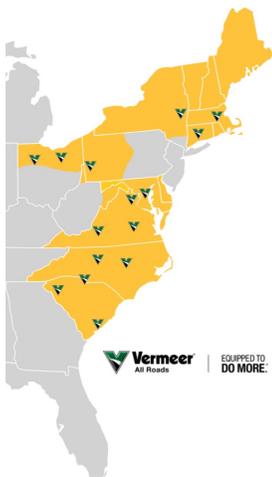
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Vermeer Mid Atlantic makes acquisition, will rebrand

Vermeer Mid Atlantic, an All Roads company, has acquired Vermeer Northeast, a Pinnacle Award-winning dealer partner of Vermeer Corp., with locations in New York, Massachusetts and Connecticut.

In conjunction with the acquisition, and as a reflection of the changing geographic footprint of the organization, Vermeer Mid Atlantic and Vermeer Northeast will adopt Vermeer All Roads as its new brand name. The change aligns the company's branding to better represent the markets it serves, which now span the Mid-Atlantic, Northeast, and Ohio Valley, the company said.

With the acquisition, Vermeer All Roads continues its expansion into the industrial equipment industry. The addition of the three locations makes the combined entity one of the largest Vermeer dealer partners in the country with 15 locations covering a service area that includes South Carolina, North Carolina, Virginia, Maryland, Delaware, Pennsylvania, West Virginia, Ohio, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont and Maine.



“Vermeer Mid Atlantic’s demonstrated market leadership is greatly enhanced by the addition of Vermeer Northeast,” said Mark Boyle, president of Vermeer Atlantic. “Vermeer

Northeast is a highly talented team with deep expertise and a passion for delivering results to its first-rate customer base. We look forward to delivering exceptional service and building on the success the Vermeer Northeast team has established in the market over the last 50-plus years.”

Vermeer All Roads plans to invest in additional expansion locations, on-the-road service trucks and customer service representatives in the Northeast to drive growth and better serve its customers in core industries including underground construction, surface mining, utility installation, tree care, equipment rentals, landscaping and organic recycling, the company said.

Cullen named dealer manager at McCloskey

McCloskey International has appointed Daragh Cullen dealer manager, primarily responsible for dealer relations and recruitment for the Eastern United States and Caribbean. Cullen brings an extensive knowledge of the marketplace and more than two decades in the industry to the position, working with major OEMs overseeing the Americas and the Caribbean, McCloskey said.

“The opportunity to work with one of the most recognized brands in the world – a leader in crushing and screening – is one that I am very excited about,” Cullen said. “McCloskey’s reputation for quality is one that I am proud to stand behind as a member of the team. I look forward to working with the dealers as we deliver the exceptional service the brand has become well-known for.”

In the position of dealer manager, Cullen will continue the close working relationship McCloskey enjoys with its distribution partners, as well as identify and recruit prospective dealers, the

company said.

“Daragh’s hands-on understanding of the equipment and the customer’s requirements allows him to foster key relationships, which will allow our sales organization to keep pace with the demand for McCloskey equipment,” said John O’Neill, vice president, sales and marketing for McCloskey. “This is a great opportunity for him, and for our company, to contribute to the growth and success of dealers in the region.”



McCloskey designs and manufactures innovative crushers, screeners, stacking conveyors and washing systems, serving the aggregate, mining, construction & demolition, waste management & recycling, landscaping and composting industries.

Anaerobic digestion

Bioenergy

From page 17

natural gas and an organic soil amendment, reducing landfill waste and carbon emissions.”

Bioenergy, a global developer of anaerobic digestion facilities with more than 200 plants throughout the world, received the investment from Newlight Partners LP, a New York investment firm which is associated with George Soros and appears to have no website.

“The support from Newlight Partners, allows Bioenergy DevCo to offer a full turnkey solution to cities and corporations challenged by incineration, already crowded landfills and the cost of disposing of organic waste,” said Shawn Kreloff, CEO of Bioenergy. “In working with Newlight, we address the strong and increasing demand for our anaerobic digestion technology, which is proven to naturally transform organic waste into clean, renewable natural gas, in a way that meets the unique needs of municipalities and companies around the country.”

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