



Mascenic High School



Compost Temperature



Ipswich, MA curbside pickup



## 2017 FALL NEWSLETTER

The temperatures and leaves are changing, the nights are cooling off and the push to wrap up projects is in full effect before the first snow flake falls. With the change in season comes a look back at what has been done and a look forward to what still needs to be. In this newsletter we look at the progress of Mascenic High School with a compost topdressing program on their athletic fields, dive into the ideal compost temperature and look at the curbside food waste recycling by the town of Ipswich, MA.

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## **Composting Temperatures; Why it can be hard to make compost in the back yard.**

**A defining characteristic of the composting process is hot temperatures. The raw organic matter that is used to build a compost pile serves as food for the growth of microorganisms. As the microbes break down the organic matter they create heat energy; the same way our bodies get hot when we exercise. When the heat energy is trapped within the pile, the temperatures in the pile will rise. The hot temperatures we measure in the compost pile are the direct result of the buildup of the microbial generated heat energy. A well-constructed compost pile is “self- insulating” meaning the heat energy is trapped in the pile and over time the pile will get hotter and hotter. The initial microbes that can grow at what we consider normal ambient temperatures will die off and be replaced with microbes that can grow best at higher temperatures (i.e. thermophilic microbes).**

**Over time when the food for the microbes is used up, the amount of microbial activity and heat energy that they produce starts to decline and thus the temperatures in the pile will slowly drop. But the compost temperature drops only when the loss of heat is greater than the amount of heat that is being generated. Because a big pile of dry compost can trap a lot of heat, compost piles can stay hot for a very long time. Thus the temperatures measured in large piles are not always a good measure of whether the composting process has been completed.**

**Compost piles that are small (like the piles you build in your back yard) may get hot in the very center but because they have a relatively large surface area they have trouble efficiently trapping the heat energy and thus will not get as hot nor stay hot as a larger pile. Heat is quickly lost from the small pile even though there may be a high level of microbial activity.**

**Can compost piles get too hot?**

**We want to manage the composting process to insure that the temperatures throughout the process are elevated to the point that pathogens and weed seeds are destroyed. It**



**has been well documented that by maintaining temperatures above 131 F (55 C) in the core of the pile for at least three consecutive days that compost will be safe for use. Of course the piles also need to be turned so the outer cooler areas are also exposed to high temperatures. Maintaining compost temperatures in excess of 131 F and turning piles may be a challenge for the home composter.**

**However we also know that as temperatures approach 131 F microbial activity will decrease and that the breakdown of organic matter also slows down. Thus cooling the compost pile will facilitate microbial activity and the rapid breakdown of organic matter.**

**Although microbial growth will slow down significantly as temperatures get hotter, compost piles may get hot to the point that they can catch on fire. This continued rise in temperature can be the result of ongoing chemical reactions that generate heat energy and continue after microbes have stopped growing. Compost fires can be easily avoided by keeping piles small and turning the piles on a regular basis to reduce the buildup of heat energy.**

## **Mascenic High School – New Ipswich, NH**



**Mascenic High School in New Ipswich, NH has been on a compost topdressing program for the last several years after the school decided it was time to take their worn out field hockey field and turn it into something that was not only safe and functional for the athletes, but aesthetically pleasing to the fans on the sidelines. This was the test plot for what has become a program for all the fields the school maintains.**

**Working alongside Atlantic Golf and Turf, building and grounds manager Gary Somero has initiated a program that has turned the field around. Coupling best management practices for weed eradication, cultural practices such as aeration and aggressive seeding with new/enhanced turfgrass varieties, Mascenic HS has added compost topdressing. This not only provides slow release organic nutrients (less need for synthetic fertilizer), but increases water holding capacity (less irrigation needed), soil cation exchange capacity (CEC, the ability to hold nutrients in the soil), decreases overall soil bulk density (improves water movement and rooting) and stimulates microbial activity in the soil (wakes up the bugs that do the work).**

**The topdressing compost comes from Merrimack, NH. It is a biosolid compost (solids from wastewater treatment) that has been amended with saw dust, composted indoors and screened to 3/8 inch. This provides a consistent, nutrient rich material that is easy to apply and the results speak for themselves.**

**The facility in Merrimack, NH uses an agitated bed composting system that is all indoors. The mixed solids and saw dust amendment is pushed into a large trough/bay that has a blower system below, thermocouples in the walls and a mechanical agitator that rides on rails above. The temperature is monitored throughout the composting process and material is cooled by blowers when getting too hot and agitated to insure complete incorporation throughout the process. Compost must maintain a temperature over 131 degrees Fahrenheit for three consecutive days and above 104 degrees Fahrenheit for fourteen consecutive days to meet the EPA standards of pathogen reduction and vector attraction reduction. Once the compost has completed its twenty-one days indoors it is windrowed outside for another thirty day minimum before being marketed and sold. The material is tested and approved as a type 1, class A biosolid with unrestricted use granted.**

**The combination of best mangament practices, using improved varieties of turfgrass, compost topdressing and the willingness to change and adapt to new environments and expectations has made Mascenic HS one of the places to look towards for the future of high use responsible turfgrass management.**



## **Residential Curbside Composting In the Town of Ipswich**

**What started as a pilot program in 2011 has grown over the years with more than 400-500 households now participating in this voluntary program. In the past 12 months over 170 tons of organics have been collected and turned into compost at the Ipswich Compost facility operated by Agresource Inc.**

**Residents who sign up for the program receive a 12-gallon, wheeled collection cart with a locking lid which is picked up once per week. In addition to food scraps (including meat and bones) and soiled paper products (napkins, tissues, paper towels and plates), residents can put out herbicide-free grass, weed and vegetative plant material for collection. Certified compostable plastic bags, service ware and containers are allowed provided they meet the ASTM standards for compostability.**



**The Town enforces a strict limit for solid waste allowing residents a single 35 gallon container for disposal and charges \$2.00 for additional containers. Residents can participate in the curbside residential program for only \$1.00 per week fee and there are no limits on the quantity of food wastes that can be put out for collection. Collection of the food wastes and compostable organics reduces the quantity of trash sent by the Town to the North Andover incinerator which costs the Town \$63.55 per ton.**