

# COMPOSTING HORSE BEDDING IN KENTUCKY'S BLUEGRASS REGION

*Supplier of straw and hay to the thoroughbred horse industry completes cycle by composting used horse bedding.*

Sean Clark

**F**EW agricultural industries are as closely associated with a specific geographic area as the thoroughbred horse industry is with Kentucky's Bluegrass region. Kentucky's equine industry accounts for nearly a quarter of the state's agricultural economy. In addition to the income generated from horse sales and breeding, horse farms are also important tourist attractions.

Vast quantities of straw and hay are shipped into the region from other states for bedding and feed to support the tens of thousands of horses located around Lexington. What is often overlooked is that this straw and hay eventually become organic waste. What is the fate of the massive amounts of used horse bedding generated each year? And how can this waste be turned back into a resource?

## WASTE TO RESOURCE

Tom Creech of Creech Services, Inc. in Lexington, Kentucky began addressing this issue 15 years ago when horse farms he supplied with straw and hay started asking him to haul away the used bedding. Initially, Creech thought the horse bedding might have a role in coal mine reclamation in eastern Kentucky. However, the timing wasn't right. Most of the used horse bedding was generated during the winter months while coal mine reclamation work occurred in the warmer months of the year.

Soon Creech identified and pursued two markets for the untreated used bedding: roadside reclamation and mushroom production. Both of these markets affected the price of straw, a material always in high de-

mand and sometimes in short supply in the horse industry. By supplying these markets with used horse bedding, a cheaper material, more straw would be available to the horse industry. Not only was Creech turning a waste back into a resource, he was also reducing competition for straw.

Creech set up rebaling facilities to package the used horse bedding for transport to local roadside reclamation sites and mushroom farms in the eastern U.S., including Pennsylvania, Indiana, Illinois, Michigan, Wisconsin, Ohio, Tennessee, Georgia, Florida and Texas. One rebaling facility is located at the Thoroughbred Center, a large public training facility in Lexington that houses up to nearly 1,000 horses. There, used horse bedding is packaged into 4 ft by 4 ft by 5 ft bales, each weighing about a ton, and loaded onto flatbed trucks for transport to mushroom farms. For the past 15 years, Creech has supplied about 30,000 tons of used horse bedding annually to the mushroom production industry.

## COMPOSTING USED HORSE BEDDING

Mushroom production and roadside reclamation used a significant fraction, but not all, of the used horse bedding Tom Creech was collecting from horse farms around Lexington. Moreover, Creech has experienced first hand what can happen to a business when it depends upon a limited and narrow market for its product. An unstable mushroom industry prompted Creech to diversify his market for the bedding. In order to accomplish that he had to diversify his product.

Creech saw composting as a way to add value to the used horse bedding and expand the market for it. He visited over 40 commercial composting facilities as he planned the development of his own facility. According to Creech, almost all of the com-

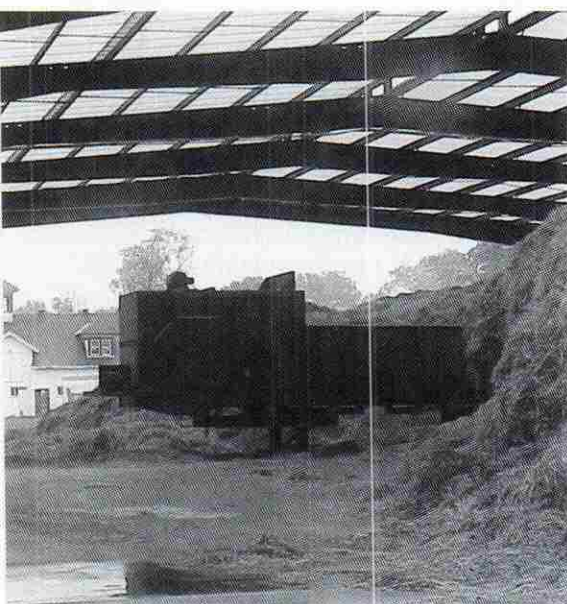


**Thoroughbred horses require vast amounts of straw and hay for bedding and feed — which eventually make great feedstock for composting.**

posting facility operators he met were very helpful and cooperative in discussing the pros and cons of different designs and technologies. In the spring of 2001, Creech began pouring concrete on 20 acres of land leased from the city of Lexington. So far, Creech Services has invested over \$2 million into the facility.

The composting facility currently consists of a ten-acre concrete pad on a one percent slope for drainage into a 1.5 million gallon concrete retention pond. Used horse bedding is brought in by trucks daily where it is laid out to form windrows over 1,000 ft long. The windrows are aerated with a self-propelled windrow turner and combined as they lose volume during the composting process. According to Creech, the material loses about three-quarters of its original volume during the six- to eight-week period of turning. To provide moisture to the windrows, water

To provide moisture to the windrows, water from the retention pond is sprayed through a sprinkler system able to pump 20,000 gallons per hour.



**Composting will add value to the used horse bedding, which for 15 years has been rebaled by Tom Creech for use in the mushroom industry and at roadside reclamation sites.**

from the retention pond is sprayed through a sprinkler system capable of pumping 20,000 gallons per hour. The facility was designed so that runoff from unfinished windrows would not come in contact with finished material, minimizing risk of contamination.

At present, two full-time employees operate the entire composting facility. In addition, three trucks, each operated by a single employee, collect and deliver used bedding to the composting site. It takes the trucks two weeks to make their rounds collecting the used bedding from the dozens of farms that pay Creech for this waste removal service. Drier bedding is still rebaled to supply mushroom and reclamation markets, while wetter material is brought in as compost feedstock. About 5,000 cubic yards of used bedding, most of which is straw, are delivered to the facility weekly. No other materials are currently being mixed into the bedding for composting.

The compost windrows reach peak temperatures of about 160°F. Finished compost is put through a trommel with a half-inch

screen to clean out the small amounts of trash or debris present in the used horse bedding when it arrives at the facility. Laboratory analyses show that the finished compost contains 2-2.5 percent nitrogen (dry weight) and has a C:N ratio of about 12:1, indicating the probability of a rather rapid release of nitrogen to plants.

#### **PLANS FOR SUCCESS**

As an experienced businessman, Creech understands the importance of marketing in any enterprise and acknowledges that he has work to do. He has focused his marketing efforts on the landscaping and plant nursery industries in the Lexington area under the brand name "Thoroughbred Compost." Unfortunately, vegetable and fruit production, an application for which this compost would be ideal, is a very minor part of the agricultural economy of the region.

Creech believes he has a high-quality product with multiple possible applications. The finished compost is suitable as a soil amendment to improve heavy clay and/or compacted soils after construction activities. Mixtures of his compost and bark may work well as a landscaping mulch that keeps its dark, attractive color and doesn't induce nitrogen deficiencies in plants due to nitrogen immobilization by soil microbes. He is currently working with a wholesale plant nursery in the area to evaluate a 50:50 mixture of finished compost and pine bark as a potting medium. So far the results look promising.

Unfortunately, Creech's composting venture isn't profitable yet, but he has a number of plans to remedy this problem. He has started using radio advertising to reach landscapers and gardeners. He also has plans to begin accepting the city of Lexington's biosolids which currently are land-filled. This will be mixed in with some of the used horse bedding for composting. The tipping fees he receives for taking this material should cover most of the operating costs for the entire facility. As he expands his product line to include biosolids/horse-bedding compost and mixtures of pine bark/horse-bedding compost, in addition to the horse-bedding compost he currently sells, he plans to reevaluate his pricing. Currently he charges \$15 per cubic yard plus transportation costs to volume distributors, with a 30-cubic-yard minimum order. He may have to increase his prices.

In the meantime, Tom Creech continues researching the intricacies of composting while he tirelessly attempts to develop and respond to markets. He seems to really enjoy the challenge of the work and is proud of his accomplishments so far in turning thoroughbred horse waste into Thoroughbred Compost. For more information on his composting operation, see [www.thoroughbredcompost.com](http://www.thoroughbredcompost.com). ■

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