



CASE STUDY

Kiln Wood Ash Chemical and Market Assessment Performed by NYSP21

Curran Renewable Energy, LLC (Curran) was established in 2009 with a focus on renewable biofuel, building on their experience in the timber industry. Located in Massena, New York, Curran is a family owned and operated group that produces premium wood products from locally and sustainably harvested timber sourced in Upstate New York.

Challenge

Curran manufactures wood pellets for heating, utilizing green stems from timbering, which are then chipped, ground and dried. Curran extrudes sawdust from the process into pellets using pure compression and no additives. The manufacturing process utilizes a high efficiency furnace which generates 7-10 tons of kiln wood ash per week. To manage this excess amount of kiln wood ash, Curran is currently land applying the wood ash as a fertilizer and soil amendment. Curran requested assistance from New York State Pollution Prevention Institute (NYSP21) to analyze the chemical characteristics of the kiln wood ash and assist in exploring potential market applications.

Solution

NYSP21 conducted elemental compositional analysis, pH, and particle size distribution of the kiln wood ash from Curran's manufacturing process. The compositional analysis identified the elements and pH level within the ash that are consistent with commercial markets.

NYSP21 further researched regulatory requirements, to refine the list of potential market opportunities and New York State (NYS) companies. NYSP21 utilized the New York State Department of Environmental Conservation (NYSDEC) and the Environmental Protection Agency (EPA) published standards to determine NYS regulations for use of kiln wood ash.

Additionally, NYSP21 applied Lean Six Sigma methodologies to evaluate and prioritize the various market opportunities. Each individual use application was scored by multiplying the weight for the characteristics by the rating, and then summing the score for each application. NYSP21 marketing then performed a market assessment to identify NYS applications and companies with product needs that are aligned with kiln wood ash material properties. These were categorized by North American Industry Classification System (NAICS) codes.

Results

Based on NYSP21's research, it was determined that wood ash has a pre-approved Beneficial Use Determination (BUD) for land applying and additional applications. As a result, NYSP21 documented the list of potential use applications and summarized key rankings from the analysis. NYSP21 identified the following highest value applications that are consistent with kiln wood ash properties as produced by Curran:

- Fertilizer
- Compost filler
- Fertilizer additive (e.g. liming agent)
- Animal bedding

The results of this project will assist Curran with marketing their kiln wood ash. Success of this product line is forecasted to help create three NYS jobs over a three-year period.

Testimonial

"I would like to thank CITEC for giving us a direction to meet with the folks from NYSP21 at RIT that composed this wood ash market study. We would also like to thank NYSP21 for their hard work and diligence to give us a clear path to market our product. Their study found the potential market uses for our wood ash created in our new drying system at our pellet plant. We knew the ash came from pure forest residuals without any additives but needed the assistance from NYSP21 to verify the organic compounds and potential uses for this product. Their findings give us the opportunity to expand our product line and the possibility of creating new employment opportunities."

- Patrick Curran, President & CEO, Curran Renewable Energy, LLC

CHALLENGE

- NYSP21 was challenged with analyzing the chemical characteristics of the kiln wood ash and assist in exploring potential market applications

SOLUTION

- NYSP21 conducted elemental compositional analysis, pH, and particle size distribution of the kiln wood ash from Curran's manufacturing process
- NYSP21 researched regulatory requirements, to refine the list of potential market opportunities and NYS companies
- NYSP21 marketing performed a market assessment to identify NYS applications and companies with product needs that are aligned with kiln wood ash material properties

RESULTS

- Wood ash has a pre-approved Beneficial Use Determination (BUD) for land spreading and other applications
- NYSP21 identifies 4 leading market opportunities
- Success of this product line is forecasted to help create three NYS jobs over a three-year period

NYSP21 PARTNERS



New York Manufacturing Extension Partnership

Funding provided by the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation.

© 2017 Rochester Institute of Technology
Any opinions, results, findings, and/or interpretations of data contained herein are the responsibility of Rochester Institute of Technology and its NYS Pollution Prevention Institute and do not represent the opinions, interpretation or policy of the State.

For more information please contact us:

111 Lomb Memorial Drive, Bldg. 78
Rochester, NY 14623

Tel: 585-475-2512
Web: nysp21.rit.edu
e-mail: nysp2i@rit.edu

