



## Bioenergy Feedstock Library

*Cataloging bioenergy feedstock quality, performance data and samples for research and commercial use*

*With samples representing over 100 unique biomass resource types and data from well over 100 government, industry and academic institutions, the library is an extensive source of information on biomass variability.*

**B**ioenergy feedstock properties present challenges for integrated biorefineries. Chief among those challenges is biomass variability — differences in physical or chemical characteristics among biomass samples. Problems resulting from biomass variability range from microbial degradation in storage and clogged conversion processing equipment to potential health hazards and incomplete conversion — all of which increase conversion costs for biofuel and bioenergy producers.

The Bioenergy Feedstock Library (BFL) helps fill the gaps in understanding biomass variability by providing a centralized,

publicly available location that is readily and easily accessible and understandable to bioenergy researchers and industry stakeholders. The BFL is both a physical sample repository and digital database tracking metadata (i.e., harvest information, sample details, operational data) and analytical data (i.e., physical, chemical, conversion performance characteristics) for biomass feedstocks and intermediates.

The library is quickly becoming the most comprehensive, actively managed database of its kind, with sample data for more than 100,000 biomass samples and bioenergy characterization data for more than 50,000 samples. With

samples representing over 100 unique biomass resource types and data from well over 100 government, industry and academic institutions, the library is an extensive source of information on biomass variability.

### PROJECT MANAGEMENT

Electronic sample and data management is a primary function of the BFL. The library's remote project management database and barcode system provides researchers tools to securely upload, store, edit and track biomass samples, analytical data and sample results from anywhere. Samples and data can be accessed, managed, and exported through our [Sample Database](#).

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### PARENT-CHILD TRACKING

It is often important to maintain the relationship of feedstock characteristics from single-source materials and their process intermediates in a hierarchical format through preprocessing and conversion testing. The parent-child tracking and [Visualization Tool](#) support collaborations by allowing researchers to build upon previous analyses and relate their results to the parent sample.

### RESEARCH TOOLS

- The [Analysis Summary](#) tool shows an overview of the library's analysis results by displaying averages of all analyses performed for each bioenergy feedstock type.
- [Attribute Graphs](#) show the characteristics of various bioenergy feedstock types. Users enter the bioenergy feedstock types and

the analysis type for the desired graph, allowing a look at the variability of analysis results, files and citation associated with samples and GIS mapping for sample origin and analytical data.

- The [Least-Cost Formulation](#) tool is a mapping interface that allows users to explore the regional distribution and availability of biomass crops and blends based on cost per ton, harvest radius and harvest year.
- The [DataSet](#) feature contains downloadable datasets that include associated database samples, relevant citations, and files. Researchers have used this feature to track meaningful groups of samples and data associated with publications, reports, or other databases.

### PHYSICAL SAMPLES

The library's Physical Sample Repository houses and tracks more than 60,000 samples. Samples come from projects funded by the Department of Energy's Bioenergy Technologies Office and other contributors. Many of these samples, along with their data, are made publicly available to bioenergy researchers.

### REFERENCE MATERIALS

The library's physical sample collection includes commercially harvested industrial relevant feedstocks for use as reference materials that can be requested through our [Request Biomass](#) portal. Each reference material comes with a data sheet providing a snapshot of the physical and chemical characteristics along with details about origin, genetics, harvest/collection, and preparation. These materials ensure that researchers have standardized, characterized industrial feedstock resources readily available for their research needs.

### FUNDING AND SUPPORT

The Bioenergy Feedstock Library is part of the BFNUF, a DOE Office of Energy Efficiency & Renewable Energy facility managed at Idaho National Laboratory and sponsored by DOE's Bioenergy Technologies Office

*Battelle Energy Alliance manages INL for the U.S. Department of Energy's Office of Nuclear Energy. INL is the nation's center for nuclear energy research and development, and also performs research in each of DOE's strategic goal areas: energy, national security, science and the environment.*

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