Overview

• The USDA BioPreferred® Program
  – Mandatory Federal Purchasing
  – Voluntary Labeling Program
  – 2014 Farm Bill Update

• Global Impact

• “Why Biobased?” Report

• Next Steps
The USDA BioPreferred® Program
U.S. Legislative Definition of a Biobased Product

- A product composed of recent biological components from agriculture, forestry, and marine
- Does not cover all things biobased; like bio-fuels, food, or feed

Our Working Definition

**Biobased Products are derived from plants and other renewable agricultural, marine, and forestry materials. Biobased products generally provide an alternative to conventional petroleum derived products and include a diverse range of offerings such as lubricants, detergents, inks, fertilizers, and bioplastics.**
The History of the BioPreferred Program

- Authorized initially in the 2002 Farm Bill
- Reauthorized and expanded in the 2008 and the 2014 Farm Bills
- Codified in the Federal Acquisition Regulation
- Part of Sustainable Acquisition in Presidential Order 13514
- Subject of 2012 Presidential Memo
Why the National Interest in Biobased Products?

• **Economic Security** – Spur economic development, create new jobs in Rural America, and provide new markets for farm commodities.

• **Energy Security** – Reduce dependence on fossil fuels, produce biofuels, solar, wind, water energy in rural America

• **Environmental Security** – Plants sequester carbon

• **Food Security** – Keep agriculture strong, cheapest, safest food supply in the world
Economic Impact Across the U.S.
USDA BioPreferred Program Initiatives

• Federal Purchasing
• Voluntary Labeling
Federal Purchasing of Biobased Products

- Requirement for:
  - Federal Agencies
  - Federal Contractors

- USDA identifies **product categories** that make sense for mandatory purchasing
Categories for Federal Purchasing

• Currently, 97 product categories
• Representing more than 10,000 products
• Product categories continue to be added
Examples of Product Categories and Associated Minimum Biobased Content

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Minimum Biobased Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countertops and Solid Surface Composites</td>
<td>89%</td>
</tr>
<tr>
<td>Gasoline Fuel Additives</td>
<td>92%</td>
</tr>
<tr>
<td>Paint Removers</td>
<td>41%</td>
</tr>
<tr>
<td>Crankcase Oil</td>
<td>25%</td>
</tr>
<tr>
<td>Floor Cleaners and Protectors</td>
<td>77%</td>
</tr>
<tr>
<td>2 Cycle Engine Oil</td>
<td>34%</td>
</tr>
<tr>
<td>Slide Way Lubricants</td>
<td>71%</td>
</tr>
</tbody>
</table>
What is the voluntary labeling program?
The USDA Certified Biobased Label

• Consumer focused

• Serve as an unbiased indicator of biobased content

• Independent third party certification partnership with ASTM International

• “Sun, sea, and soil” motif

• Biobased content percentage listed

• FP – included in Mandatory Federal Purchasing
### Label Certifications

<table>
<thead>
<tr>
<th>Category</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label Applications (from 634 companies)</td>
<td>~3,000</td>
</tr>
<tr>
<td>Certified Products</td>
<td>~2,020</td>
</tr>
<tr>
<td>Applications in Process</td>
<td>~100</td>
</tr>
</tbody>
</table>
Qualified

*as part of mandatory federal purchasing*

- Product fits within one or more of the 97 categories identified for federal purchasing
- Product meets program criteria and minimum biobased content for category

**AND**

Product may be both qualified for mandatory Federal procurement and certified

Certified

*through voluntary labeling*

- Product fits within one or more of the 97 categories identified for federal purchasing
- Product meets program criteria and minimum biobased content for category

**AND**

Product does not fall within one of the 97 categories but meets program criteria and is at least 25% biobased

**OR**

Product may be certified but is not qualified for mandatory Federal procurement

Exceptions may be granted for both minimum biobased content and product being qualified.
Sourcing Biobased Products: BioPreferred Catalog

BioPreferred Catalog

This catalog contains products in both BioPreferred initiatives:

- **FP** Federal Procurement Preference
  
  Products indicated by this symbol are eligible for preferred Federal procurement.
  
  These are products within categories that USDA has designated for the Federal Procurement Preference. Products within these categories are afforded preference by Federal agencies and their contractors when making purchasing decisions.

- **Certified Product Labeling**
  
  Products indicated by this symbol are USDA Certified Biobased Products.
  
  Products and packaging that have earned the USDA Certified Biobased Product Label.

**How to Use this Catalog:**

- **Search**
  
  Enter keywords into the Search box or use the Advanced Search

- **Browse**
  
  Select product categories under Browse by Subject

**Note:** You are not able to purchase products directly from this catalog. However, you should be able to find information about a particular product in order to purchase them.
Sourcing Biobased Product: For Federal Agencies
Prior to 2014 Farm Bill:
• products had to be “new and emerging”
• this provision in the law eliminated “mature market” products from participation in the program

In the 2014 Farm Bill, the legislative language was changed to:
• BioPreferred considers products “that apply an innovative approach to growing, harvesting, sourcing, procuring, processing, manufacturing, or application regardless of market entry”
Next Challenge: Intermediates and Complex Products

**Intermediate Ingredient** requires significant value added processing

- thermal
- chemical
- biological
- mechanical

**Complex product**

A multi-component assembled products with one or more component being made with biobased material (such as an automobile)
Biobased Products May Include Certified Biobased Intermediates

Agricultural Feedstock → Biobased Poly Lactic Acid (PLA) → [Container] → [Fibers] → [Shirt]
## BioPreferred® Program Certified and Labeled Plasticizers

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Certification</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioAmber, Inc. Plymouth, Minnesota</td>
<td>Succinic acid</td>
<td>Certified; 97% biobased</td>
<td>Used in plasticizers</td>
</tr>
<tr>
<td>Dow Chemical</td>
<td>Ecolibrium™</td>
<td>Certified, 98% biobased</td>
<td>Biobased plasticizer for PVC and other polymers</td>
</tr>
<tr>
<td>Archer Daniels Midland, Decatur, Illinois</td>
<td>Polymer grand aqueous and crystalline Isosorbide</td>
<td>Certified, 100% biobased</td>
<td>Used as a plasticizer</td>
</tr>
<tr>
<td>PolyOne Corporation Avon Lake, Ohio</td>
<td>reFlex ™</td>
<td>Certified, 94% biobased</td>
<td>PVC compounding, plastisols, adhesives</td>
</tr>
<tr>
<td>HallStar Chicago, Illinois</td>
<td>HallGreen®</td>
<td>Certified 38% biobased</td>
<td>Plasticizer from esters; provides impact resistance to biopolymers</td>
</tr>
</tbody>
</table>
Global Impact
Companies from Over 40 Countries Participating
Open-Bio European Union Report: BioPreferred Program Cited as “Best Practice”

“USDA BioPreferred shows that a focused governmental action makes it possible to set down clear rules of what can be considered a bio-based product, to award one clear label and compile a very comprehensive product list, combining it with a preferred procurement programme for public authorities.”
International Cooperation

- TEC Innovation Action Partnership focuses on commercialization of emerging technologies and sectors

- Collaboration on promoting the development and use of biobased products
  - Harmonization of Standards
  - Mutual Recognition of Labels
  - Best Practices
  - Linkages
Standard for Testing Biobased Content

- ASTM-D6866
  Standard Test Method for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples using Radiocarbon Analysis

- ASTM serves as independent 3rd party overseeing biobased content testing for the BioPreferred Program
- Labs are certified to conduct the tests
Why Standards ASTM-D6866

- ASTM D6866 consistent with this definition
- Mass is factored out
- Single value across industries

Renewably Sourced Carbon

Total Organic Carbon

50% biobased means 50% less petroleum carbon:
Consider marketing: “50% less petroleum carbon than our previous formulations”
New Report: Why Biobased?
BioPreferred Throughout the Supply Chain
Biobased Crosses Many Industries and Trending Up

<table>
<thead>
<tr>
<th>Industry</th>
<th>CAGR Projections*</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biopolymers</td>
<td>14.3%</td>
<td>Research and Markets, 2013</td>
</tr>
<tr>
<td>BioSurfactants</td>
<td>3.5%</td>
<td>Transparency Research, 2013</td>
</tr>
<tr>
<td>Biobased Lubricants</td>
<td>6.6%</td>
<td>Transparency Research, 2013</td>
</tr>
<tr>
<td>Biobased Succinic Acid</td>
<td>45.6%</td>
<td>Allied Market Research, 2014</td>
</tr>
<tr>
<td>Natural Fiber Composites</td>
<td>11.2%</td>
<td>Research and Markets, 2014</td>
</tr>
<tr>
<td>BioPlastics</td>
<td>19%</td>
<td>Fredonia, 2013</td>
</tr>
</tbody>
</table>

* CARG – Compounded Annual Growth Rate

This an attractive time for the biotech investor. DataFox, 2014

Overall, the biobased industry raised $1.318 billion in new capital in the past 12 months. Biofuels Digest, 2014
Study: Why Biobased? Overview of Existing Literature on the Economics of Biobased Products

- Sponsored by USDA BioPreferred Program
- Primary authors:
  - Dr. Jay Golden, Director, Duke Center for Sustainability and Commerce
  - Dr. Robert Handfield, Professor of Supply Chain Management, N.C. State

AMEC Environment & Infrastructure, Inc.
Durham, NC 27703
Benefits of the Bioeconomy Outlined in *Why Biobased?*

- **National value of the Bioeconomy at $1.25 trillion.** *(U.S. Biotechnology Industry Organization, 2012)*

- **Bioeconomy is worth over $2.7 trillion, providing 20 million jobs and accounting for 9% of total employment in 2009.** *(The European Commission, 2014)*

- **Shifting 20% of the current plastics produced in the U.S. into bioplastics could create about 104,000 jobs in the U.S.** *(Heinz and Pollin, 2011).*
Emerging Global Impact of Biobased Industry

• The European Commission on Innovation projects that *worldwide biobased product sales share will grow from 4% ($29.6 billion) in 2008 to 6% ($54.4 billion) in 2020.*

• The European Union has announced a new European Joint Undertaking on Bio-based Industries (BBI) to create a competitive market for biobased products and materials supporting sectors such as agriculture, agro-food, technology providers, forestry/pulp and paper, chemicals and energy. *Governments and industry will provide $3.7 billion in funding over the next 10 years.*
Biobased Chemicals Market Growing Rapidly

The volume for the global biobased succinic acid market is expected to grow at a CAGR of 45.6% between 2013 and 2020. Market revenue was estimated to be $115.2 million in 2013 and is expected to grow to $1.1 billion by 2020. Global volume is expected to reach 710 kilotons. Allied Market Research, 2014.
Economic Study Follow Up

• The U.S. Congress mandated a study in the 2014 Farm Bill.

• On the heels of the “Why Biobased?” completed study, the USDA BioPreferred program has awarded a contract for a more in-depth economic impact analysis of biobased products, including research on job creation and economic value.

• The BioPreferred program is working with the Duke University Center for Sustainability and the Poole College of Management at N.C. State University.

• It will be the first federally sponsored economic report of its kind targeting the biobased products industry.
Next Steps
Thank you!

Marie Wheat
USDA BioPreferred Program
202-239-4502
marie.wheat@dm.usda.gov

www.biopreferred.gov