Pioneering Sustainable Pulp & Packaging

Biomass Canada Cluster Webinar Series

June 17, 2021

GENERA

Introduction to Genera

GENERA

Pioneering Sustainable Pulp and Packaging Company Rooted in the Rural Economy

Who We Are

- **Experienced team** with 100+ years of agribusiness, manufacturing, and pulp and packaging experience
- **Unique** expertise understanding attributes of and how to grow **rapidly renewable agricultural fibers**
- **Unmatched ability to scale** as a domestic manufacturer of fiber-based products
- **Rural economic development and environmental impact** are core to our business

Where We Are Today

Focused

Selling high demand sustainable pulp and packaging into large consumer markets

Operational

Fiber mill and thermoforming production

Executing

Our growth strategy towards additional sites

Our Vision

✓ **Leading Manufacturer of Sustainable Pulp & Packaging**
- High-quality, innovative products
- Selling into large, explosive market

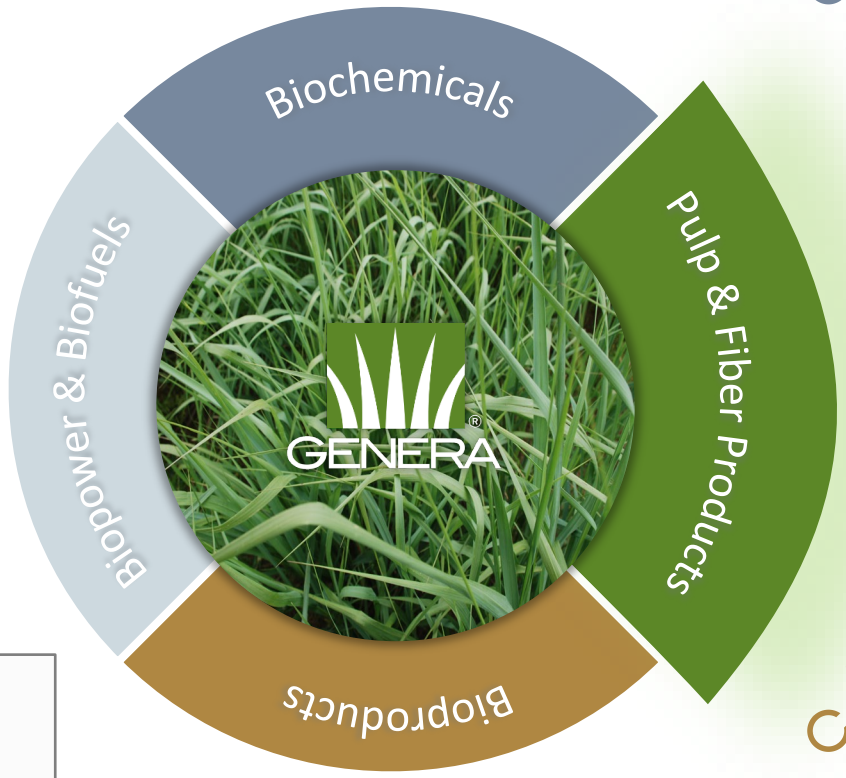
✓ **Ambitious Growth Plans**
- Scale at current site
- Replicate multiple greenfield sites

✓ **Innovative New Markets**
- Develop additional value for currently manufactured products
- Build on successful R&D to unlock potential of domestic-sourced fiber

Understanding the Potential of Agricultural Fibers

GENERA

Virtually every product made from oil can be made from Genera agricultural fibers



- Binders & Agglomerates
- Dispersants
- Towel & Tissue
- Foodservice Disposables
- Food Packaging
- Paperboard
- CPG Packaging
- Specialty Papers
- Medical Disposables
- Pharmaceutical Packaging
- Textiles & Fabrics
- Absorbents & Adsorbents
- Animal Feed

***Non-exhaustive list**

Legend

- Current markets
- R&D in process
- Early-stage R&D

Our Process

GENERA

1 Annual Harvest of Perennial Conservation Grasses

2 Complement to Existing Farm Enterprises, Not Competing for Land Use

3 Distributed Field Edge Storage and Year-Round Delivery to pulp mill

Sustainable Production of Local Fiber Crops & Residues

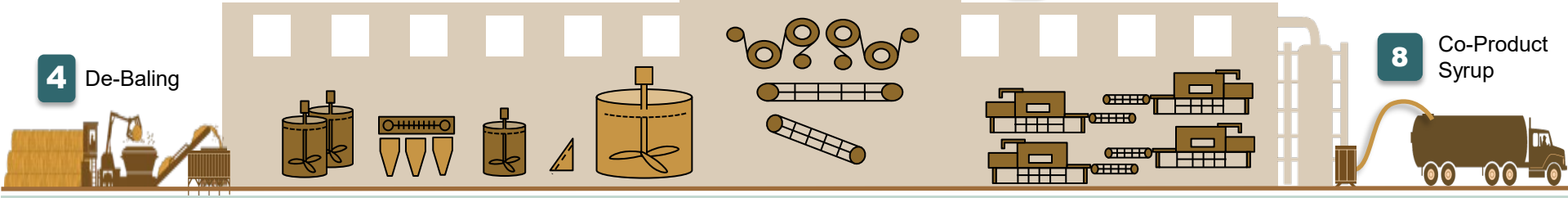
6 Wet Lap Bales of Market Pulp

5 Licensed Commercially Proven Process to Produce Non-Wood Pulp

7 Thermoformed Products

4 De-Baling

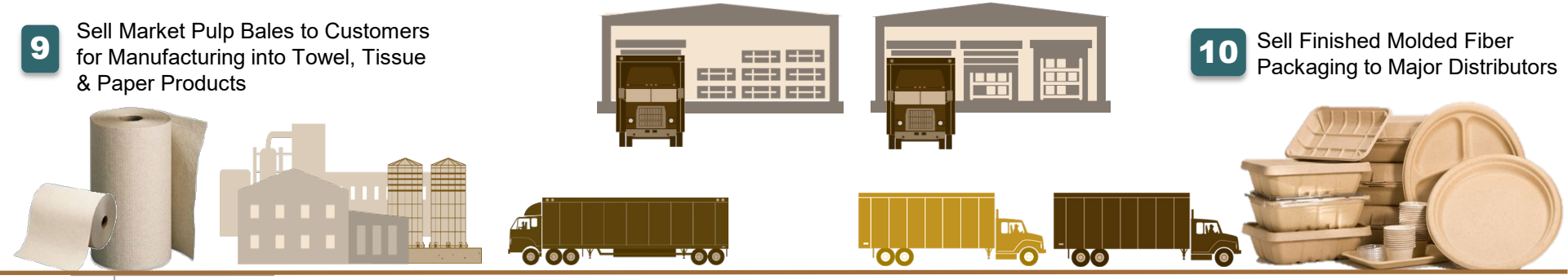
8 Co-Product Syrup



Non-Wood Mechanical Pulping & Integrated Thermoforming

9 Sell Market Pulp Bales to Customers for Manufacturing into Towel, Tissue & Paper Products

10 Sell Finished Molded Fiber Packaging to Major Distributors



Genera's Unique Ability to Work with Diverse Feedstocks

GENERA

Genera's Advantage is Rooted in Decades of Biomass Supply Chain Development

Diverse Biomass Feedstocks

Switchgrass

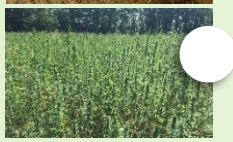
Miscanthus

Wheat Straw

Biomass Sorghum

Triticale

Hemp



Energy Cane

High Yielding

Drought Resistant

Year-Round Supply

No One-Crop Dependency

Regenerative

Minimal Management Intensity

Genera's Agricultural Fiber Advantage

Produces High Quality Pulp

- Virgin short or long fibers, depending on feedstock
- Consistent specifications and use
- Flexible in application
- Transparent and traceable production process

Yields Superior Product Performance

- Exceeds industry standards for tensile, tear, and burst
- High bulk allows higher strength using less fiber
- Good coarseness and freeness allow a wide range of product manufacturing

Achieves Sustainability Goals

- Crops sequester carbon and improve soil quality
- Preserves green space and wildlife habitat
- Fibers enable resource efficient pulping process

✓ ***Vonore, TN Fiber Source*** ○ ***Potential Fiber Source***

Agricultural Fiber Supply is Core to Genera's Business

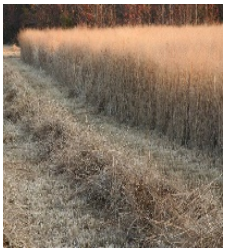
GENERA

Long-Term, Reliable Supply

- Multi-year, **fixed price production and supply contracts with local farmers** for perennial and annual crops and winter cover residues
- Farmers establish, manage, harvest (round bales), stage, and store feedstock at the field edge; **can be stored/ used over several years**
- **Management partnership** (e.g., varieties, bale format) and quality specifications (e.g., moisture content, purity)
- **Year-round delivery schedule** minimizes onsite inventory and storage footprint, evens out cash expenses, reduces risk

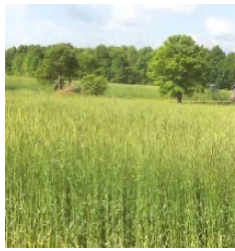
We are Valued Partners in our Rural Community

- Direct farmer recruitment centered on **activating marginal acreage** not in production for food crops
- Genera **pays farmers a storage premium** based on length of storage (in months) plus a separate fee for delivery to the Vonore plant
- **Take advantage of USDA conservation** programs offer switchgrass cost share establishment assistance, up to 75%, potentially incentivizing farmers to establish more switchgrass







How Does Genera's Market Fiber Perform?

GENERA

Earthable®
products meet or exceed industry-standards

Fiber performance in the manufacture of downstream products such as paper, tissue, towel, and containerboard is critical to providing consumers with high-quality goods.

Genera's Earthable® market fiber is made from high quality, virgin agricultural fiber that provides solid performance characteristics for a variety of applications. Genera's fiber is a short fiber and can be utilized in many similar applications to hardwood fibers. Our fiber's performance meets or exceeds industry-standards in the following categories:

- Freeness
- Tensile
- Tear
- Coarseness
- Bulk

How Does Genera's Molded Fiber Perform?

As much as consumers value sustainability, they also value performance. Foodservice products must be leak-free and able to withstand heat and moisture.

Genera's Earthable® fiber products are made from high quality, virgin agricultural fiber that provides high quality finishes and excellent strength performance. Genera's products utilize industry leading chemistries to achieve performance that meets or exceeds industry-standards in the following categories:

- Water holdout
- Oil/Grease resistance
- Compression strength
- Deflection testing

Earthable®

products meet or exceed industry-standards

Genera's Pulp is the Most Sustainable Substitute Available

GENERA

Grown on Non-productive Land, with Reduced GHG Emissions, Energy, and Water

Feedstock	Feedstock Production Sustainability	Pulping Process Sustainability		
		GHG emissions ($t\ CO_2e$ / ton fiber)	Energy consumption (MMBTU / ton fiber)	Water consumption (k gallons / ton fiber)
Genera ag fiber	• Flexible ability to work with multiple feedstock blends • Enhances soil stability and productivity • Utilizes non-productive land, increasing farmer revenue and engagement	0.25	4	1
Wood	• Not an annually renewable fiber source • Sustainability claims highly sensitive to management practices	1.75	11	14
Bagasse	• Byproduct of monoculture sugarcane cultivation • Majority of production in East Asia, with low transparency on sustainable farming practices	3.3	9	8
Bamboo	• Dramatic increase in Asian production has created problems for biodiversity and other environmental concerns • Majority of production in East Asia, with low transparency on sustainable growing practices	3.3	9	10
Deinked Recycled Fiber	• Subject to significant supply and demand disruptions (e.g. COVID) that dramatically impact pricing. • Few processors are certified to produced FDA-approved food grade fiber	1	5	2

Source: Das and Houtman (2004) Environmental Progress (23:4), Fluence Corp, Univ. of Minnesota, Man et al. (2020) Renewable and Sustainable Energy Reviews (131) Man, Zheng et al. (2019) Green Chemistry (21:5), VMI Group, Sustana 2021 Sustainability Report; Shi and Fang (2019) Water and Environment Journal

Genera's Vonore Manufacturing Facility

- **Established Agriculture Supply Chain**
- **Strategic Manufacturing Location**
- **Continuous Innovation**
- **Integrated Production Process**
- **Superior Product Performance**

Earthable® is produced by:

GENERA®

Genera Inc.
167 Tellico Port Road
Vonore, TN 37885
Phone: 423-884-4110
www.generainc.com

Follow us on social media at:

@generaenergy

@generainc

Genera Inc.