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energy

# Dedicated Energy Crops as a Feedstock Strategy for Biofuels and Biochemicals

**Bio Pacific Rim**  
*Vancouver, Canada*  
*October 10 - 12, 2012*

crop  
company<sup>®</sup>



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# Safe Harbor Statement

**This presentation contains forward-looking statements.** All statements, other than statements of historical facts contained in this presentation, including statements regarding our efforts to develop and commercialize our products, our short-term and long-term business strategies, market and industry expectations, future operating metrics, product yields and future results of operations and financial position, are forward-looking statements. In many cases, you can identify forward-looking statements by terms such as “may”, “will”, “should”, “expect”, “plan”, “anticipate”, “could”, “intend”, “target”, “project”, “contemplate”, “believe”, “estimate”, “potential”, “continue” or other similar words.

We based these forward-looking statements largely on our current expectations and projections about future events or trends that we believe may affect our business and financial performance. These forward-looking statements involve known and unknown risks and uncertainties that may cause our actual results, performance or achievements to materially differ from any future results, performance or achievements expressed or implied by these forward-looking statements. We have described in the “Risk Factors” section and elsewhere in our filings with the Securities and Exchange Commission, the material risks and uncertainties that we believe could cause actual results to differ from these forward-looking statements. Because forward-looking statements are inherently subject to risks and uncertainties, some of which we cannot predict or quantify, you should not rely on these forward-looking statements as guarantees of future results, performance or achievements.

The forward looking statements in this presentation represent our views as of the date of this presentation. We undertake no obligation to update publicly, except to the extent required by law, any forward-looking statements for any reason after the date of this presentation to conform these statements to actual results or to changes in our expectations.



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# Ceres overview



Ceres is an **integrated research & seed company** focused on developing and marketing energy crop varieties for **biofuel**, **biochemical** and **biopower** production

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3  
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# Ceres overview



Trait Development



Agronomy



Plant Breeding



Seed Production

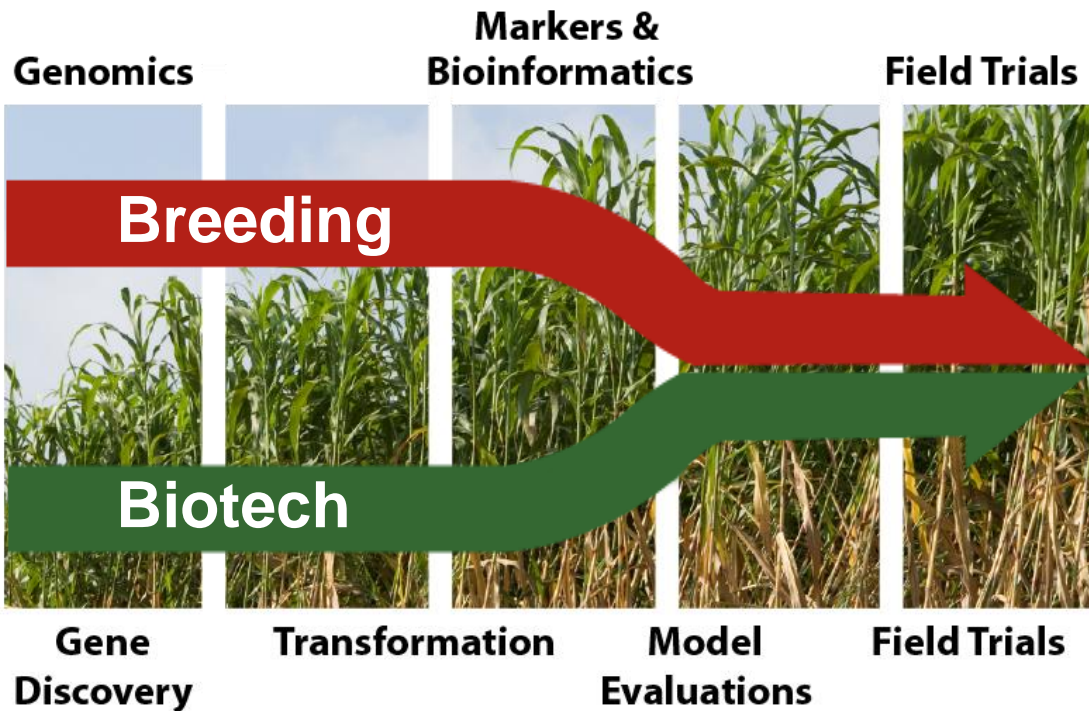
# Combining Germplasm and Traits to Produce Exceptional Products



**Germplasm**



**Traits**



Parallel technologies come together to create a package of benefits





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# Portfolio of crops enable greater flexibility



Switchgrass



Miscanthus



High-Biomass & Sweet Sorghum

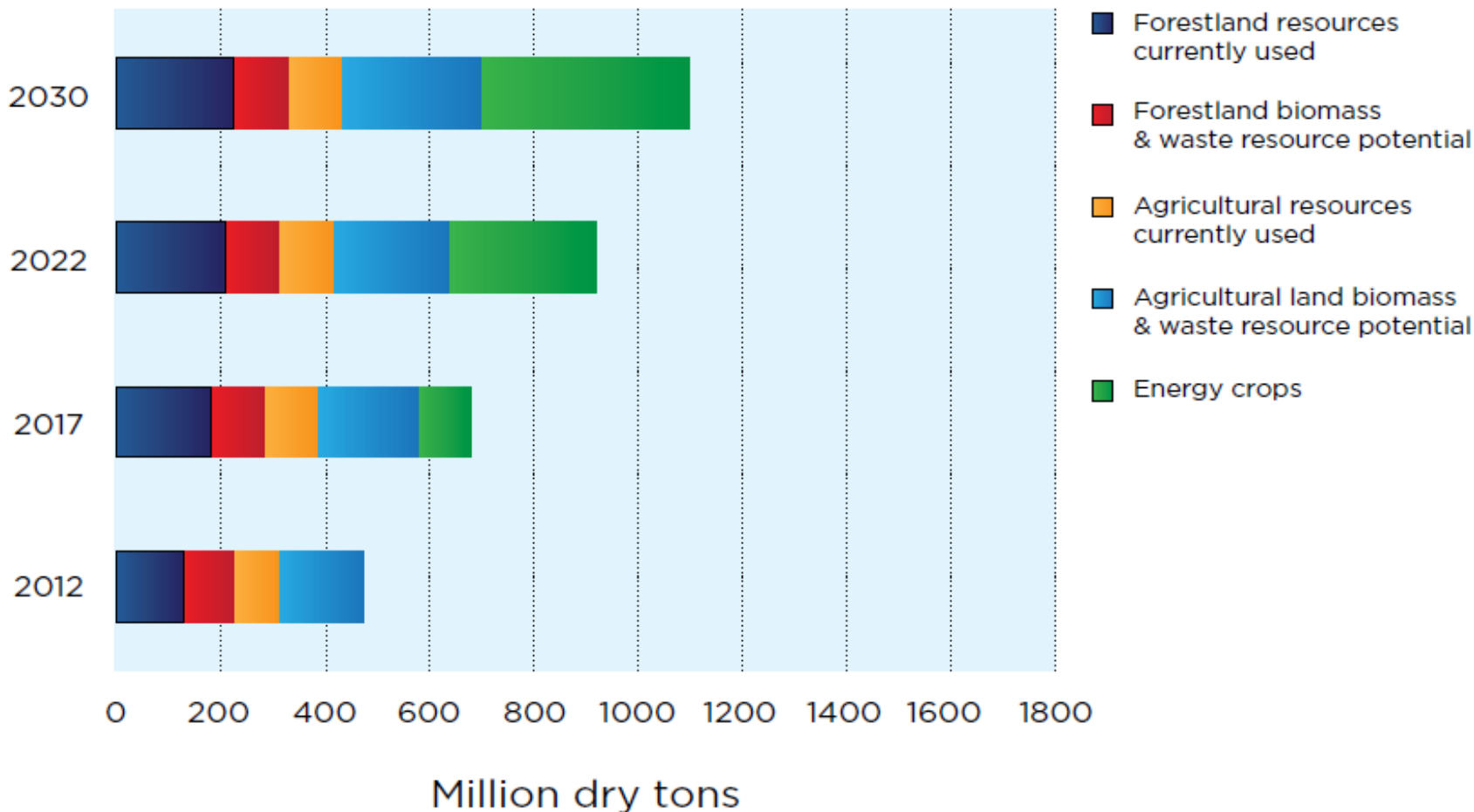


- **Scalability**
- **Cost**
  - High yielding today, significant upside
  - Leverage existing infrastructure
- **Sustainability**
  - Performance under adverse conditions
  - Marginal Land
- **Stability**
  - Long term supply
  - No competing interests (e.g. corn stover)
  - Limited commodity volatility

# Biomass Potential

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## Currently Used and Potential Resources at \$60/ dry ton, baseline assumptions

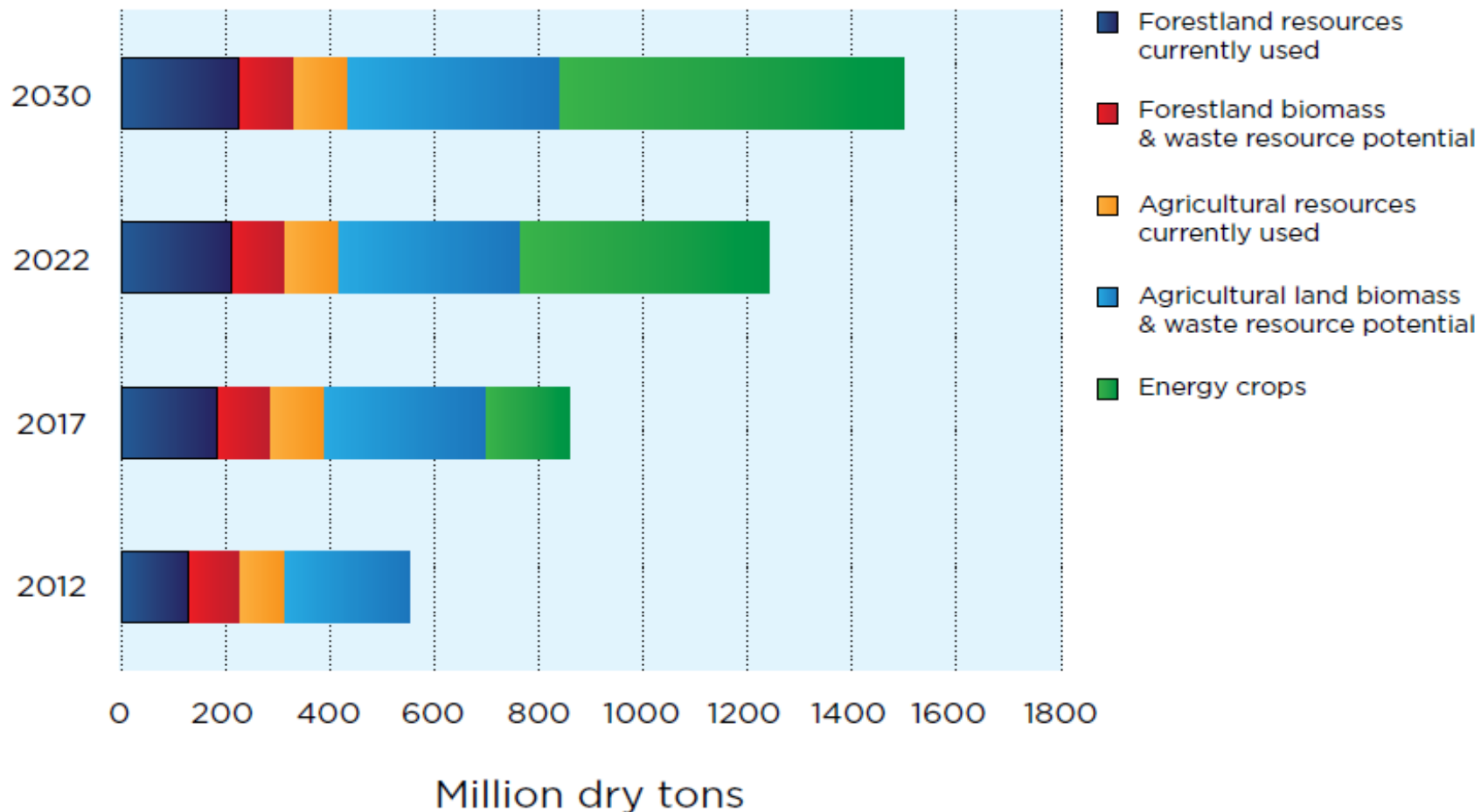




# Biomass Potential

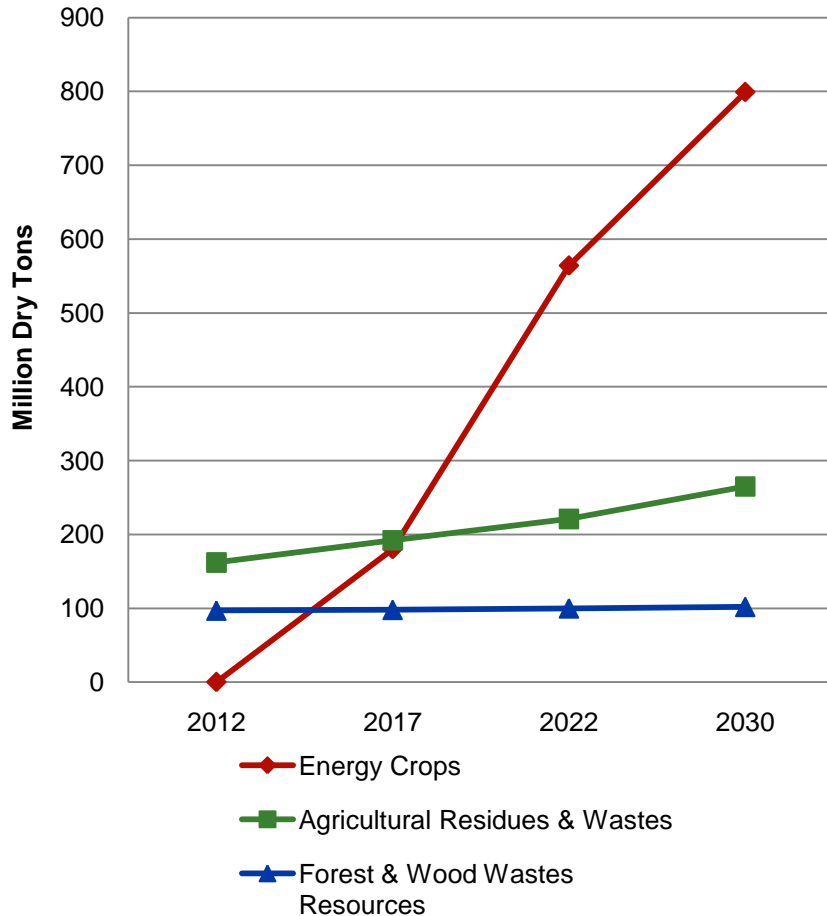
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## Currently Used and Potential Resources at \$60/ dry ton, high yield assumptions

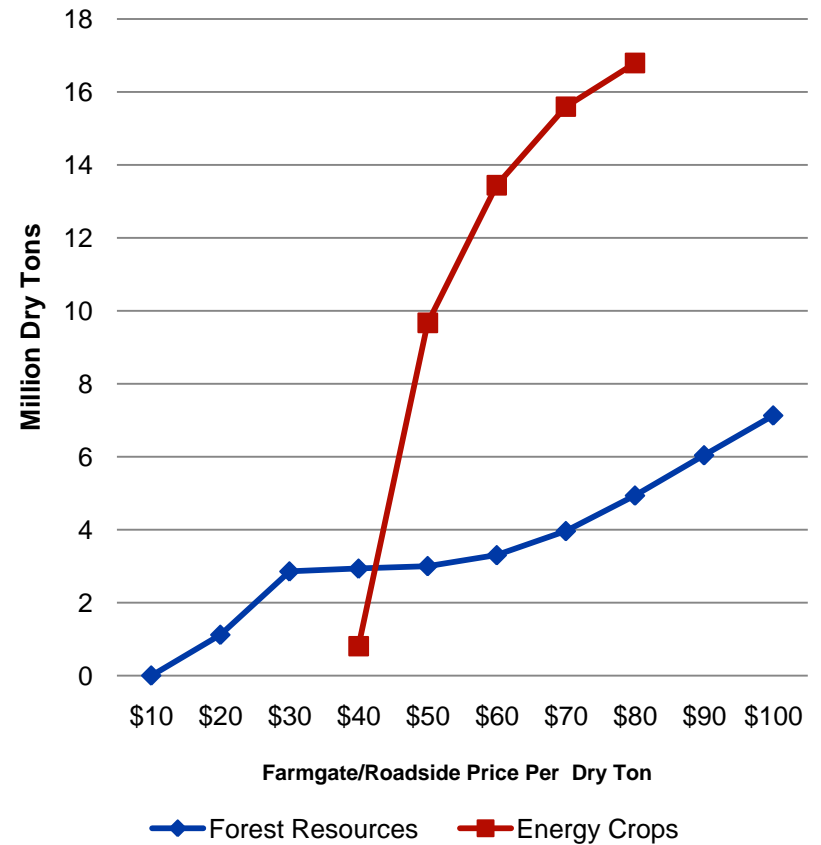


# Dedicated Sources Offer Greater Scale

Potential Biomass Supply in the U.S. at \$60/Dry Ton



Potential Energy Crops and Forest Resources in Mississippi – 2022

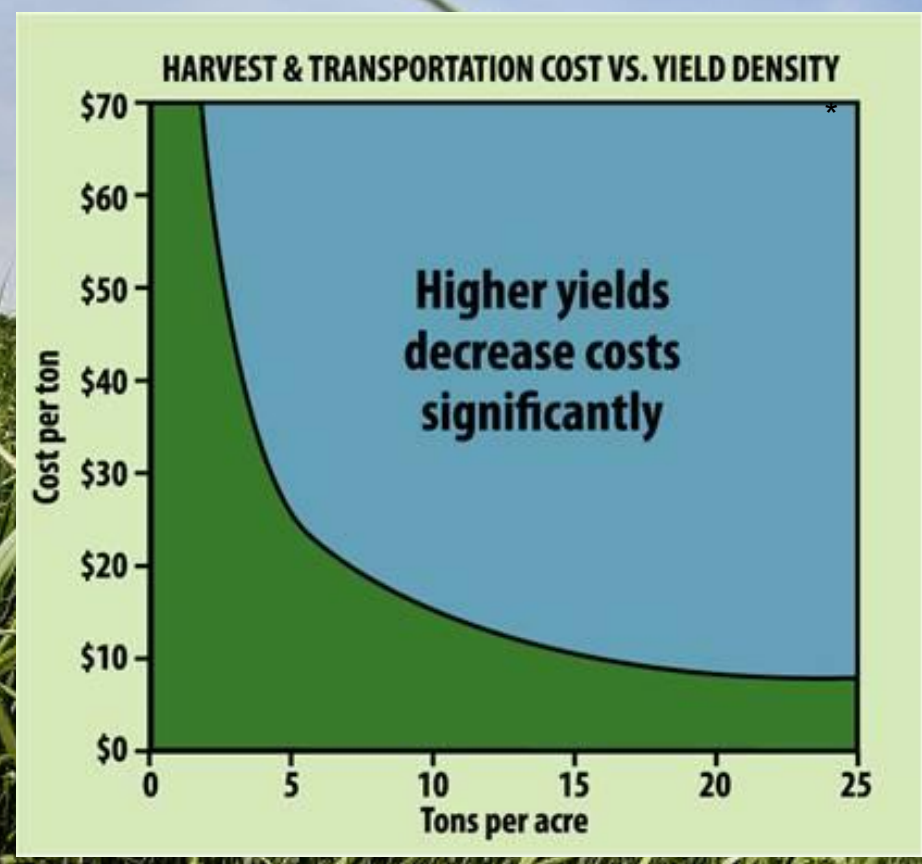
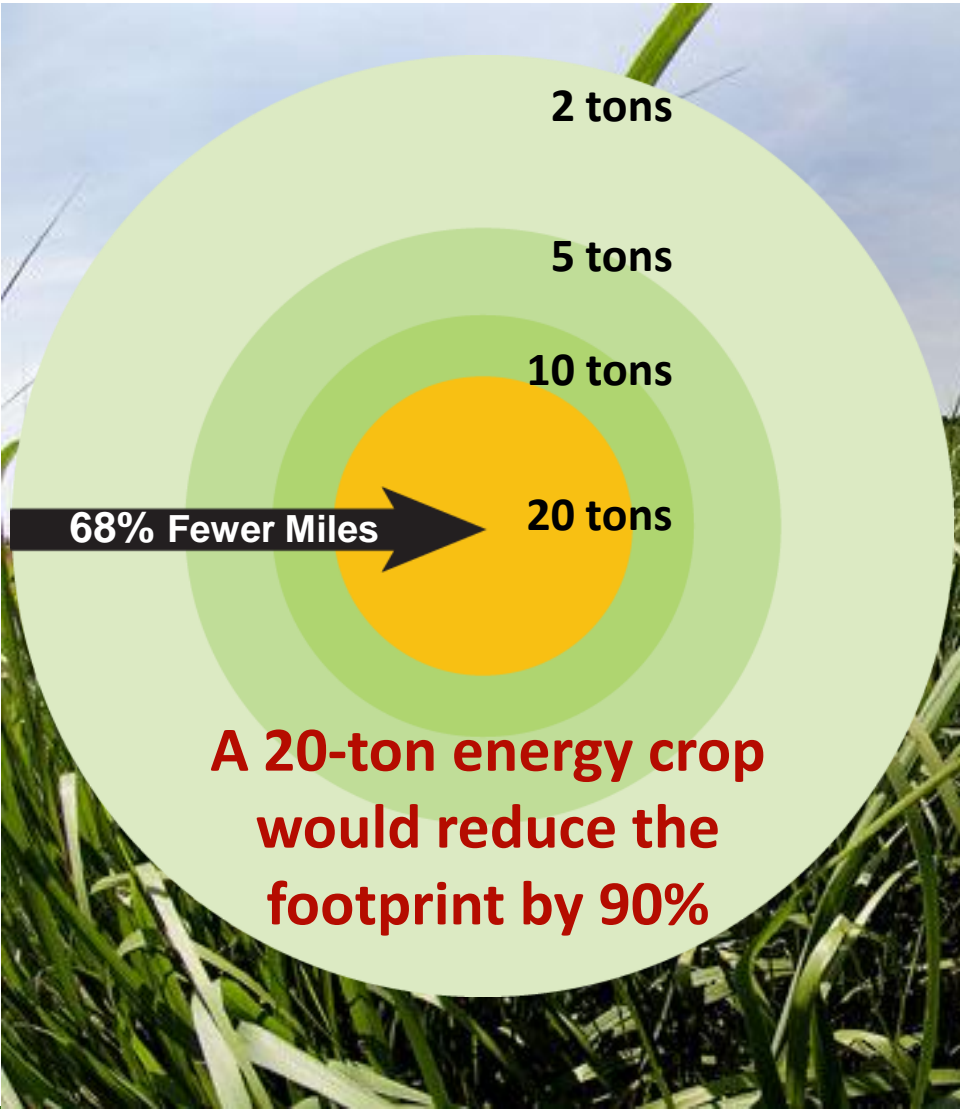






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# Biomass Yield Matters





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# Yield, Yield and Yield



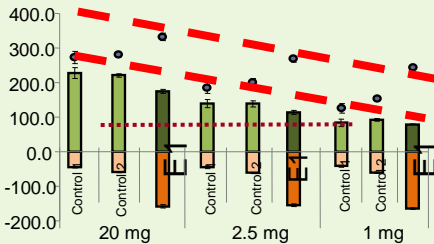
### Nitrogen Use Efficiency



### Maturity Control



### Water Use Efficiency



### Improved Conversion

# Drive YIELD



### Biomass Yield



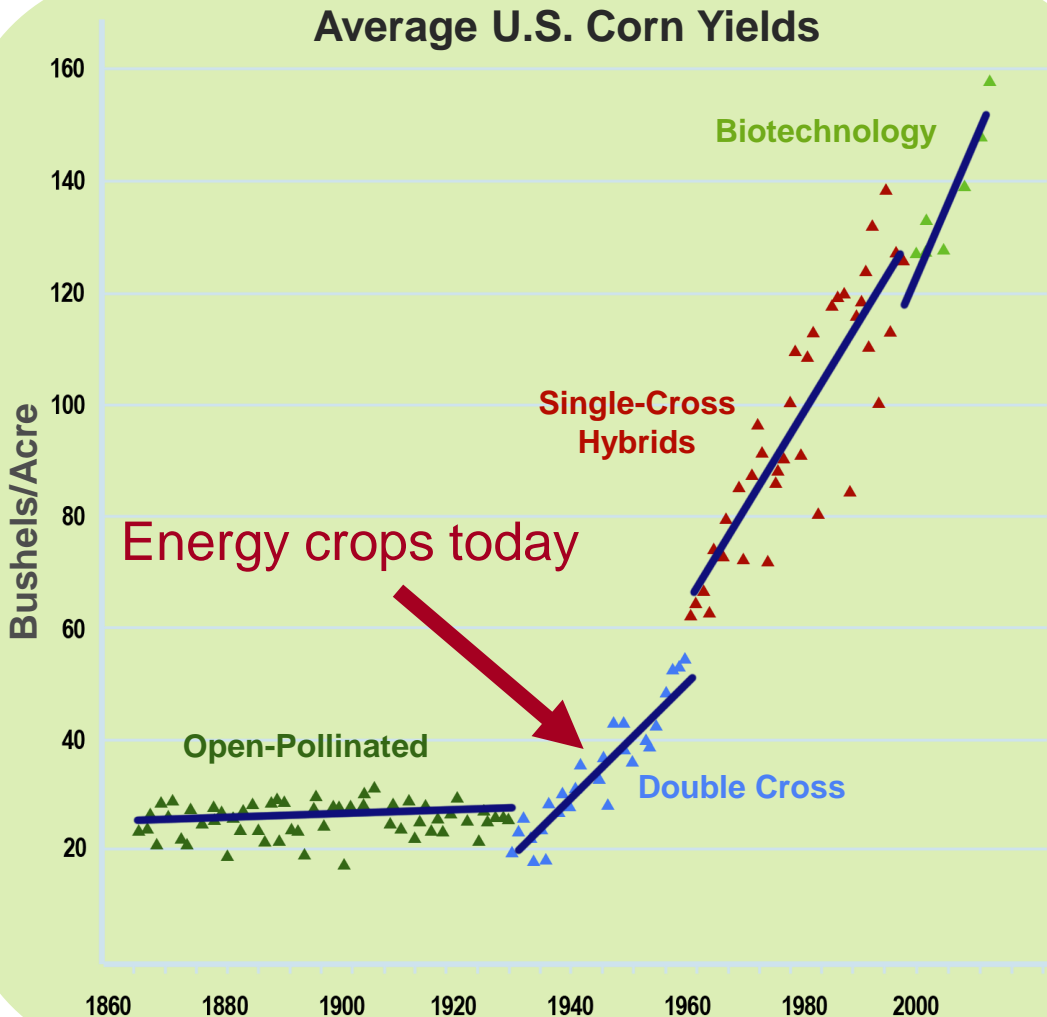
### Salt Tolerance





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# Technology is Game Changing



Hybrid genetics & biotechnology are being applied to dedicated energy crops and can drive yield increases and improved conversion

Source: USDA



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# Adjacent fields under drought conditions...



Corn



Switchgrass





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# Switchgrass Roots







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# Nitrogen Use Efficiency



**High-Yield, Low-Input Trait**



**Control**



## Feedstock

- Meet biorefinery supply needs
- Minimize feedstock risk
- Proven supply system
- Consistent with project timeline
- Bankable

## Biorefinery

- Qualified project developer
- Commercially ready technology
- Detailed design, construction, and operations plan
- Technology risk mitigation
- Committed EPC partner

## Financing

- Stable cash flows & strong credit metrics
- Equity commitment
- Strong financing partner(s)
- Financing for construction and long term operation

## Off-take

- Purchase commitments with volume and term
- Well-defined pricing structure
- Credit worthy counterparties
- Multiple markets and buyers





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# Feedstock Supply Plan



## A bankable biomass feedstock supply requires:

- Year round supply
- Predictable price
- High quality, consistent product
- Credible counterparties
- Sustainability is paramount





# Feedstock Supply Plan Structure

## Ag Producers

- Hundreds of growers
- Self perform all biomass production activity
- Short to medium contracts
- Performance requirements
- Farm gate or Plant gate

Bio-  
refinery

**Traditional View of Dedicated Energy Crop  
Feedstock Supply Chain**



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# Feedstock Supply Plan Structure



**Feedstock Supply Relationship with a proven, credit-worthy partner on a Turnkey basis**





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# Bankable Feedstock Supply Development Process

## Feasibility

## Development

## Finalization

### Land

- Land use review
- Historic production
- Preliminary feedstock mix
- Land owner outreach
- Acreage acquisition plan
- Finalize feedstock mix
- Land acquisition (optioning) and contracting
- Establishment plan

### Supply System

- Preliminary design
- Resource requirements
- Project schedule
- Detailed Supply System Plan
- Equipment Req's
- O & M Plan
- Staffing plan
- Equipment Acq. Plan
- Feedstock Supply Agreement

### Economic Analysis

- Analysis of cost data
- Draft Integrated Cost Model
- Refine Integrated Cost Model
- Engage financing partners
- Final Cost Model
- Financing plan
- Feedstock Due Diligence

### Biorefinery

### Offtake

### Financing

Overall Project Development Effort

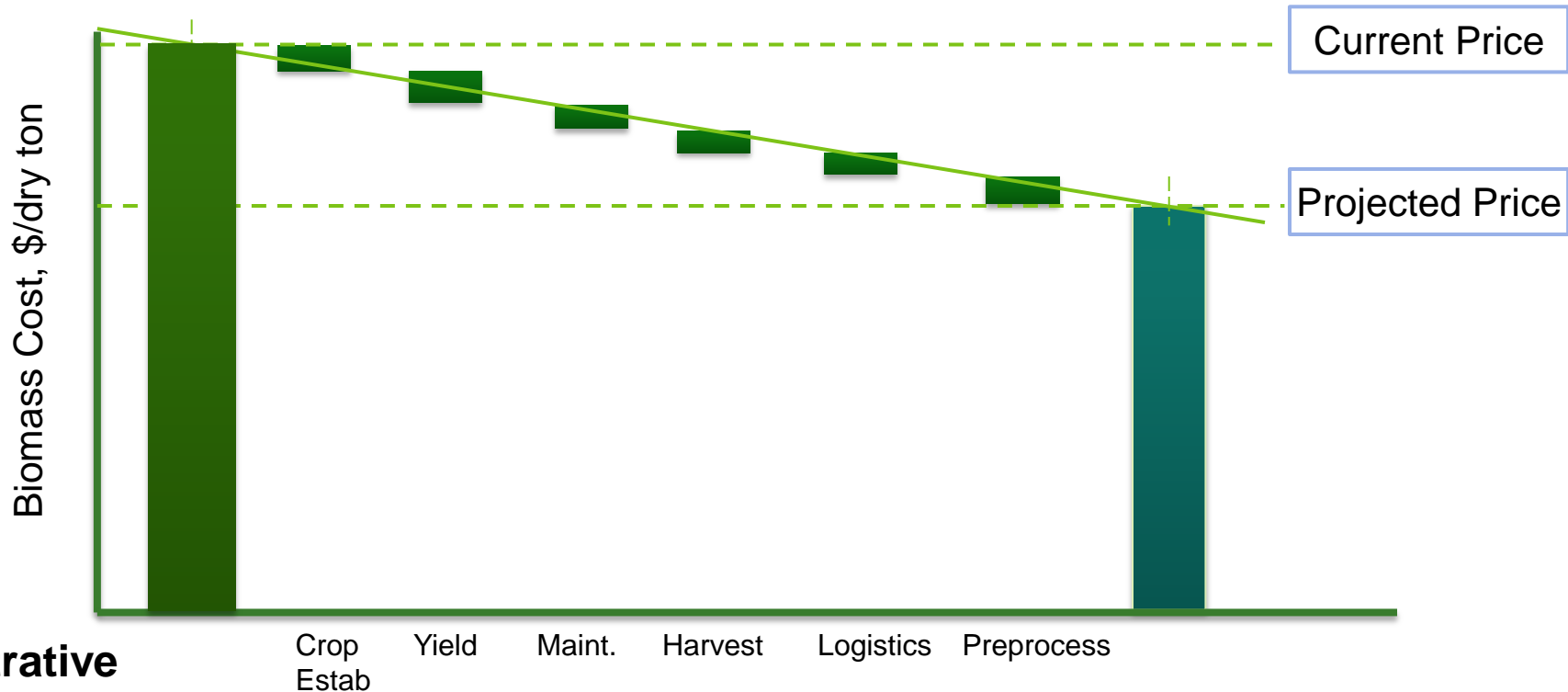
Bankable Feedstock Supply Solution

Bankable Project

Feedstock Supply



- Comprehensive plan to identify, confirm, and implement multiple cost reduction strategies with action steps and timing



**Illustrative**



- **Crop Establishment**
  - Land preparations (plowing vs. herbicides burndown)
  - Vegetative vs. seed
  - Timing
- **Maintenance**
  - Fertilization (swine effluent vs. chemical)
  - Weed/pest control
- **Yield**
  - Number of harvests
- **Storage**
  - Baled vs. Ensiling
  - Shrinkage





- Harvest
  - Ratio of chopped biomass to baled biomass
  - Timing of harvests (different crops)
- Logistics
  - Duration of storage
  - Amount direct delivered at harvest
- Pre-process
  - Location of preprocessing
  - Particle size specification
    - Field chop (coarse)
    - Hammermilled (fine)





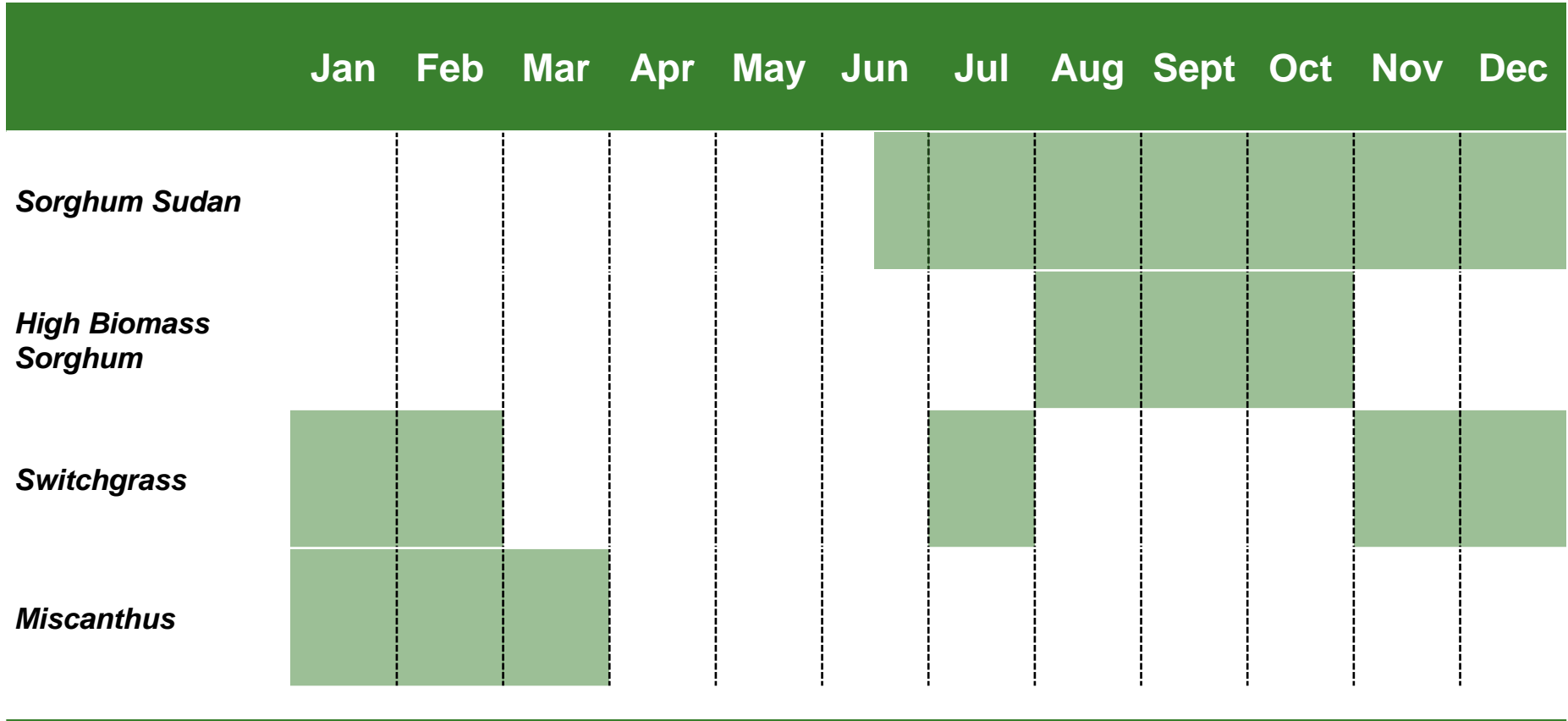


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# A portfolio of energy crops enables nearly year-round harvest and delivery

**ILLUSTRATIVE**

**Example: Southeastern US**



█ Harvest window



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# Dedicated Energy Crops Provide...

- **Scalability**
  - High Yield
  - Marginal Land Use
  
- **High Performance under adverse conditions**
  
- **Bankable Supply Solutions**
  - Turnkey commitments for Harvest, Collection, Storage, and Transport
  - Long term
  
- **Opportunities for significant cost improvements**





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# Thank You

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