Landscape Design Implications of BT16 Volume 2

Presented at:
Bioeconomy 2017: Domestic Resources for a Vibrant Future
Breakout Session 3-A
“Understanding the Environmental Potential of a Billion Ton Bioeconomy”
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How BT16 Vol. 2 Supports Landscape Design

Data shows how land-use and land-management decisions (i.e., landscape design) affect feedstock supply and environmental outcomes.

Shows that with appropriate landscape design, a vibrant, environmentally friendly bio-economy can be developed.

Helps identify research gaps and needs at local, regional, national and global scales.

Volume 2 and the accompanying Knowledge Discovery Framework (KDF) can assist stakeholders in identifying beneficial biomass production opportunities.
BT16 Recognizes Nature’s Pillars for Landscape Design

Diversity –
- Efficient nutrient cycling
- Multiple C sequestration pathways
- Filtering and buffering
- Wildlife food and habitat
- Soil Protection and enhancement
- Economic opportunities for humankind

Enhanced Soil Health – physical, biological, & chemical

Unimpaired Water Quality and Quantity
One Approach for Landscape Design

Characterize your target landscape

Use BT16 Vol. 2 scenarios as conceptual models to redesign your target landscape

Use BT16 Vol. 2 data as input for simulation models to project landscape design effects

Implement a new landscape design and compare BT16 Vol. 2 data to measured responses
Landscape Design Addresses Long-Term Change

Z axis 15 x elevation
Long-Term Change Reflects Topsoil Erosion

1840s

1964

1930s

2002

Mollic epipedon

$^{137}\text{Cs}$

Mollic epipedon

New C

$^{137}\text{Cs}$
Utilizing existing USDA-NRCS Conservation Stewardship Program (CSP), Environmental Quality Incentive Program (EQIP), and USDA-FAS Biomass Crop Assistance Program (BCAP) programs to create a more diversified, ecosystem friendly landscape.
Landscape Design for Sustainable Bioenergy Systems

Goal Statement:
The team will work with growers and biomass end-users to utilize subfield agronomic models to target areas within existing cellulosic ethanol feedstock supply sheds to build baseline datasets, implement conservation practices, monitor key environmental indicators, and monitor the environmental and economic impacts to the watersheds and the biomass supply chain. (to enable future biomass supply systems)

<table>
<thead>
<tr>
<th>Total Project Budget</th>
<th>$12,000,000</th>
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</thead>
<tbody>
<tr>
<td>DOE Funds Awarded</td>
<td>$9,000,000</td>
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<tr>
<td>Applicant Cost Share</td>
<td>$3,000,000</td>
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</tbody>
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$12.25 million additional leveraged to date
BT16 Vol 2 Helped Justify Funding

Expense Limited Zone

Revenue Zone

No Cost Zone
Approach (Technical)

- Changing management practices to improve profitability, environmental performance, and biomass supplies.
CP-38 Pheasant Recovery Participant Promotion

Antares Group and install partner FDC Enterprises, Inc. in cooperation with the local SWCD, FSA and NRCS are seeking landowners enrolled in the CP-38 Pheasant Recovery program to participate in a landscape design project funded by the US Department of Energy. An objective of the project is to assess the potential biomass yield that could be produced in the area and the environmental benefits of CRP establishment practices. Participants will receive numerous incentives described below.

Participant Incentives:

- Full establishment of your CRP practice free of charge. The team will pay for the portion of your project not covered by FSA’s cost share and practice incentive payments. All seed, chemical and establishment will be arranged for you.
- Establishment of your CRP practice by a company with over 270,000 acres of CRP establishment experience.
- Optional whole farm profitability assessment with Agslover.
- Optional financial and technical assistance for additional projects such as buffer strips and saturated buffers.
- Optional payments for harvest of 1/3 the native mix, in nesting cover portion only, of CRP practice in years 4, 5 and 6. Harvest of winter cover is not authorized.

Contract Terms:
- 5 year assessment of CRP establishment. The team will periodically take measurements related to soil erosion, water quality and wildlife benefits.
- Information gathered on your CRP planting will remain anonymous.
- All results will be shared with cooperator.
- Cooperator to abide by all rules of CRP program.

To learn more about the landscape design project and participation in the program contact us at:
712-253-6628
515-313-0080
tom@fdcenterprises.com

SIGN UP PERIOD:
DEC 15th - SEPT 30th

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Feedstock Logistics – A Landscape Design Component
BT16 Vol. 2 Helps Combine the Pieces

Advanced Harvest & Logistics, 2nd Pass

Regional Impact Modeling & Monitoring

Implementation of Conservation Practices (Cover Crops, Buffer Strips, etc.)

Advanced Harvest & Logistics, Single Pass

Multi-stakeholder Outreach

Perennial Grass for Conservation & Biomass Supply

Subfield Precision Business Planning

Sustainable Residue Harvest
The Ultimate Goal: Healthy Soils → Healthy Landscapes → Vibrant Bio-Economies