

An aerial photograph of a lush green field. On the left side, there is a row of several large, round hay bales. On the right side, a herd of cows of various colors (brown, white, and black) is grazing. The field is divided into sections by faint lines, possibly fences or furrows. The overall scene is a typical agricultural landscape.

# **Introduction to Carbon Quantification and Accounting**

**By:**

**Environmentally Correct Concepts, Inc.**

**June 2006**

# ECCI Company Summary

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We are a grassland management company.

We facilitate the bio-energy fuel market by aggregating biomass & enlisting and supporting growers of bio-energy crops.

We help land managers create landscapes that produce feed for grazing animals, renewable energy and allied ecosystem services and benefits.

We facilitate the emerging GHG emissions trading market by quantifying, certifying and verifying annual amounts of greenhouse gases removed from the air.

# ECCI Company Summary

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We

- ✓ Calculate agricultural carbon credits using our patented technology,
- ✓ Help clients report under the Federal 1605 (b) reporting mechanism
- ✓ Actively promote ways to turn carbon credits into cash.
- ✓ Enlist qualified third party contractors via license agreements.

# Services

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- ✓ Carbon Accounting
- ✓ Certification and verification of Carbon Credits
- ✓ Landscape management strategies
- ✓ Preparation of Federal 1605(b) reports
- ✓ Consultation and education

# Carbon Sequestration Fundamentals

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## **Carbon Sequestration**

Taking carbon out of the atmosphere and storing it in plants and soil.

## **Carbon Avoidance**

Not releasing fossil carbon into the atmosphere.

## **Anthropogenic**

Pertaining to the effect of human beings on the natural world

## **Biogenic**

Pertaining to natural effect, carbon neutral

# Documented Carbon Credits

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Carbon credits are 2200 lb. units of CO<sub>2</sub> stored in

- 1) plant structures above and below ground
- 2) the soil in amounts greater than base value

ECCI carbon credit types are referred to as:

- “**A**” **credits** - carbon stored below ground in soil and roots not for harvest
- “**B**” **credits** - carbon stored in above ground plant material for harvest

# How CS Works in Agriculture

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- CO<sub>2</sub> from the air is the only source of carbon available to the plant during photosynthesis
- CO<sub>2</sub> is trapped and stored in plant biomass above and below the soil surface
- Above ground biomass -- agricultural production -- is a very good bio-indicator of CO<sub>2</sub> reductions
- Farmers and ranchers are good at growing biomass -- how much depends on their production system



# How Do Plants Create Carbon Credits?

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Above ground portion of plants ~45% carbon

Source of “B” credits



Below ground portion of plants ~55% carbon

Source of “A” credits

Example calculation for plants with 1:1 root to shoot ratio

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1000 lbs of above ground dry matter production = 450 pounds of carbon. This equates to 1,651.5 lbs. of CO<sub>2</sub>

1000 lbs. of below ground dry matter production = 550 pounds of Carbon. This equates to 2,018.5 lbs. of CO<sub>2</sub>

**Gross Total = 3,670 lbs. /1.8 T CO<sub>2</sub>**

# Valid Agricultural Credit Attributes

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- Must be site specific – *Direct Measurement*
- Must stand the scrutiny of “Life Cycle Analysis”
- Must perform an “ECOSYSTEM SERVICE”
- Must produce a net gain from a base value
- Must be able to accurately measure the amount of the product produced

# Desirable Attributes

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- ▶ Able to meet the market demand
- ▶ Accepted in a global market: possess recognized quality standards
- ▶ May be “serialized” by a neutral third party acting as an escrow agent/auditor

# Carbon Credits Producing Activities

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- ❖ Vegetative Conversion
- ❖ Revegetation
- ❖ Urban Grasslands
- ❖ Grassland Preservation
- ❖ Modified Grassland Management
- ❖ Agroforestry
- ❖ Grass Products
- ❖ Conservation Tillage/No-Till
- ❖ Manure Management

# Grassland Activities to Produce Credits

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## **Vegetative Conversion**

Plant grassy & herbaceous plants in areas that have not recently supported such plants. For example, converting cropland to perennial vegetation.

## **Revegetation**

Plant or overseed additional grassy & herbaceous plants in an area that has been recently grazed, mowed, etc.

## **Urban Grasslands**

Plant vegetation in urban, suburban or on rights of way areas for the purpose of sequestering carbon.



# Grassland Activities to Produce Credits

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## **Grassland Preservation**

Protect an existing area of grassland from conversion to another land use.

## **Modified Grassland Management**

Improve management practices of an existing area of grassland to increase carbon accumulation or reduce the release of carbon dioxide.

## **Agroforestry**

Combine agriculture and forestry on the same land area to produce products while sequestering more carbon, i.e., manage the understory of an orchard through grazing to optimize production.

# Grassland Activities to Produce Credits

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## **Bio-energy Production**

Plant and harvest vegetation for the purpose of supplementing fossil fuels as an energy source.

## **Grass Products**

Increase usage of products developed from grass such as building materials.

## **Conservation Tillage/No-Till**

Produce crops that sequester carbon without the use of broadcast tillage.

## **Manure Management**

Accelerate humification through agronomic and mechanical projects.



# Pertinent Patents

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## U.S. Patent Numbers

- 5,887,547, May 1999
- 5,975,020, November 1999
- 6,115,672, September 2000

## Corresponding Foreign Patents

- ✓ Europe
- ✓ Canada
- ✓ Mexico
- ✓ Australia
- ✓ New Zealand

# Pertinent U.S. Patents

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US Patent No. 5,887,547 granted for processes that sequester carbon from the atmosphere into grassy and herbaceous plants and the soil they grow in; also for methods to measure and quantify amounts of greenhouse gases removed from the air on an annual basis.

US Patent No. 5,975,020 granted for processes that sequester atmospheric carbon in the controlled growth of woody plants, the soil they grow in and the humification of animal waste and plant material other than roots as well as methods to measure and quantify such amounts of sequestered carbon.

US Patent No. 6,115,672 granted for a method of measuring carbon credits to be sold to a purchaser of carbon credits or the equivalent

Carbon credits based on fossil carbon avoidance are inherent in ECCI's greenhouse gas offsets quantification methodology and illustrated in its U.S. and corresponding foreign patents.

# ECCI Business Structure

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ECCI has developed a U.S. site licensing program for private and public land in the U.S and territories. Site licenses may be granted to qualified entities. Such entities might include, but are not limited to individuals, businesses and organizations both for profit and not-for-profit.

ECCI has licensed the right to use its corresponding EU patent to Bical [www.bical.net](http://www.bical.net) for the purpose of quantifying and/or verifying carbon credits from Miscanthus x giganteus production in Europe.

**It takes a team to deliver a certified, verifiable  
Carbon Credit**

# Responsibilities of ECCI

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Basic duties include providing the Licensed Product Program:

- Continue to develop and refine the Rights.
- Provide documentation for approved carbon management activities.
- Ensure accuracy of records of government landowner contracts, carbon management accounts and general finances by appropriate auditing.
- Licensor will provide oversight of quality control and practices (auditing and validation of carbon credits)

# Responsibilities of ECCL, cont.

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- Provide software & forms for recording of carbon management activities.
- Maintain central registry of generated carbon management credits.
- Provide training for Licensee(s) staff in the use of the Rights. Training sites shall be mutually agreed and the costs incurred by each party, associated with all training shall be borne by the incurring party. As new versions of the Rights and/or Licensed Product are released, additional training of Licensee's staff may be required and will be provided by Licensor.

# Responsibilities of ECCL, cont.

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- Develop marketing, collateral materials and implement a business development strategy which will target customers.
- Provide in-office and field staff for landowner services and landscape verification.
  - Collect, record and distribute fees. Licensee will provide billing and other necessary first tier record and financial services and in doing so will prepare and maintain, in accordance with generally accepted accounting principles, consistently applied, complete and accurate books of account and records covering all transactions relating to the Licensed Product Program (the "Financial Records").
  - Maintain complete and accurate records on applicable government landowner contracts as received from USDA.

# Responsibilities of Site Licensee

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- Provide in-office and field staff for landowner services and landscape verification.
- Actively pursue interested landowners/managers and enroll participating land and acreages into managed landscapes that sequester carbon using the approved landowner contract.
- Work with interested landowners/managers to advance and implement landscape management strategies appropriate for the specific landscape and in concert with terrestrial carbon sequestration technology and strategies developed and endorsed by ECCI, calculate carbon credits using the patented technology.

# Responsibilities of Site Licensee, cont.

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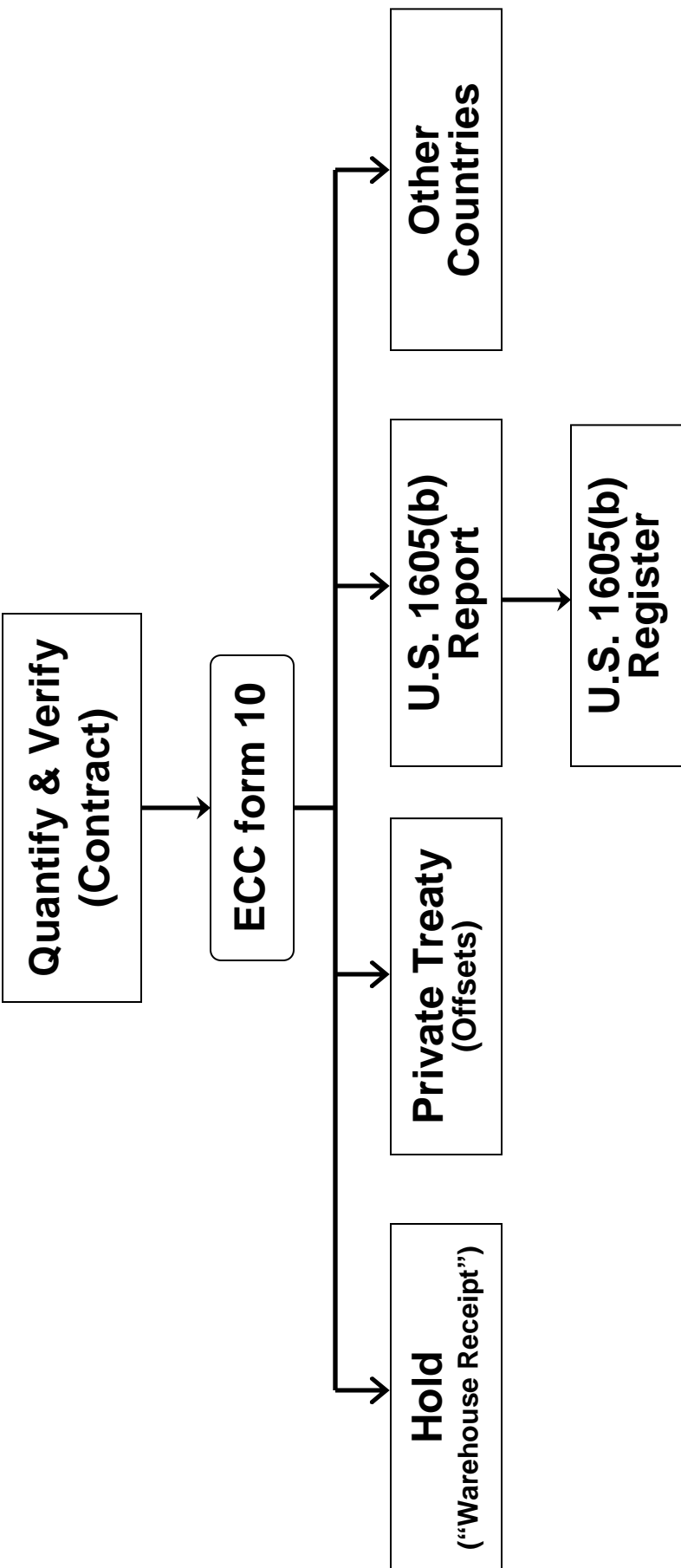
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- Provide landowner contracts and billing information to ECCI in a timely manner.
- Attend training and educational programs sponsored by ECCI.
- Pay any taxes incurred as a consequence of doing business

# Options for Clients

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# The Carbon Contract

## Necessary Provisions:

- Written agreement appropriate for the site
- Respects the wishes of landowner
- Flexible – may be modified during contract period
- Provides a way out
- Not a lien on the tract
- Credits reportable under 1605(b)

# *ClimateMarket.Com*

## **Marketing Site for ECCI Certificates**

- **Will actively make a two-sided market for certificates**
- **Assist emitters in developing customized contracts ( multi-year strips, options, maximum price contracts, etc)**
- **Website will list properties by internal identification numbers and their verified sequestration stats. Interested bidders may then contact the trade desk to initiate a trade and investigate further.**