Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Agroforestry Horizons: Experiences and Reflections

Federal and State Government Panel

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Canada

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3rd AAFC & USDA Collaboration on Agri-Environmental Issues:

Agroforestry

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USDA NATIONAL AGROFORESTRY CENTER

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Agroforestry Changes in the Past Few Years

- **End of the Prairie Shelterbelt Program**
  113 year program ended in 2013 after distributing 620 million trees in Western Canada.
- **Reduction in Research and Development Activities**
- **Divestment of the Agroforestry Development Centre in progress.**

But positive Aspects to Change…….

- **Agroforestry Related projects continue…….**
  - Diversity and Role of Field Boundaries
  - Phosphorus capture and re-use: Phosphorus enriched lignocellulosic biochar as a strategy for increasing crop productivity and enhancing environmental performance.
  - Pollinator Habitat
  - Holos – Integration of Agroforestry Systems
- **Agricultural Greenhouse Gases Program**
  - 2011-2016 Approximately $6 million invested in 6 Agroforestry Projects in Universities
- **What can we learn from the process of change?**
  - Partnerships essential
  - Clear definition of issues. What is the problem?
  - More inclusive in the integration of science.

But positive Aspects to Change…….

- **Addressing the "Measure" of AF in the landscape**

$$C = A \times F$$

- **Agroforestry Leasing Alternatives**
  - Addressing skills and equipment issues
- **Genetic Development to Address specific needs**
  - Genomics on native willows.
  - Map the genome to design breeding programs
  - Storage of nutrients in wood versus leaves
  - Poor water use efficiency.
- **Agricultural production systems continue to evolve**
  - Risk homeostasis – Do we have a false sense of security in our current production systems?
  - Why change?

What Are your Agencies Goals and Needs?

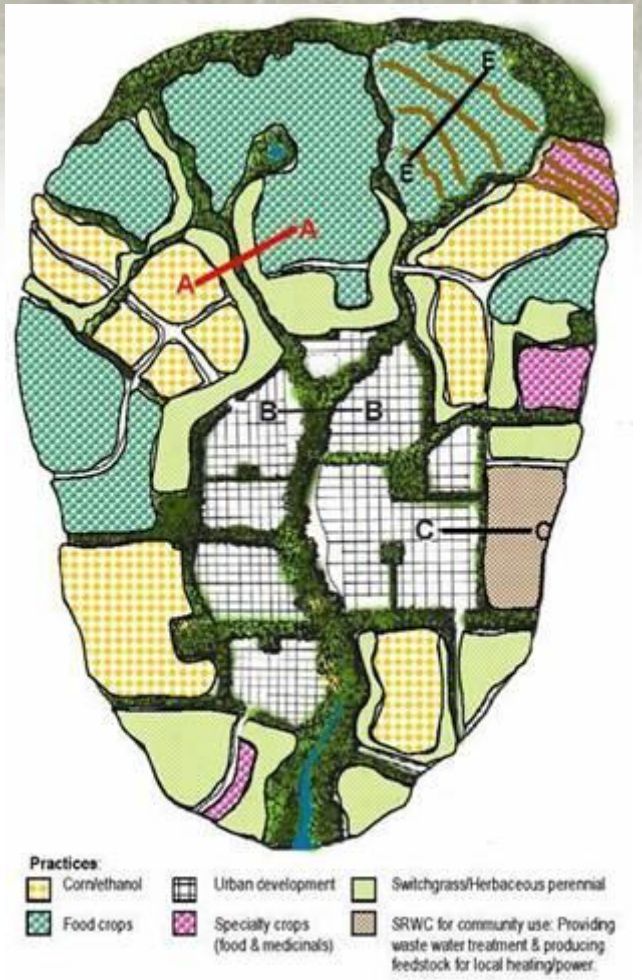
Agroforestry Must Address Strategic Objectives

- Increase agricultural productivity
- Enhance environmental performance
- Improve attributes for food and non-food uses.
- Address threats to the value chain.

  - **Agro-ecosystem Productivity and Health**
  - Water
  - Climate and air
  - Land and soil
  - Biodiversity

How might Agroforestry help you achieve your goals/meet your needs?

- Building in greater flexibility/resiliency to address future climate & economic variability
- Connecting energy/food-fibre production/natural resource objectives across the landscape.
- Better matching land use & management to land capability & needs.
- Bringing *landowner, community, industry & government* together to create a shared/diversified vision.



Agroforestry Can Address….

- water/air/soil quality
- crop & livestock protection
- economic diversification
- building & road protection
- Pollinator services
- rural/urban interface
- waste management
- wildlife habitat
- recreation & aesthetics
- carbon sequestration
- bioenergy

Multiple functions ~ Multiple services

Why is Agroforestry Important?

What is the Problem?

Can we clearly define it?

If we can't, how do we know agroforestry is important as part of the solution?

How do we convert a huge potential in Agroforestry Practice into actual function in the landscape?

Defining the Problem

Problem	Potential Solution
Milk Production – Poor Quality Feed	Silvopasture –Shade/higher quality feed
Consistent water Supply	Riparian Buffers
Water Quality	Riparian Buffers
Soil Erosion	Wind Breaks

Do we spend too much time framing the solution rather than defining the problem we wish to address?

Integrating Agroforestry into Current Practices

- Agroforestry is not viewed as a land management tool
- Intensive versus extensive agriculture
- Agroforestry not viewed as practical, profitable or low in cost
- Economic returns not known or not well understood

The Value of Agroforestry Systems

The Joint Investment –
Includes Research, Development, Production, Distribution and operation of the PSP.
Producer – includes costs for land, preparation, planting and maintenance

3.9 million seedlings to 8000 clients
1,482 fully sheltered yards
12,610 ha of cropland protected – yield increase and soil saved
198 ha of wildlife habitat created
270 km of riparian area protected
1.4 Mega tonnes of CO2 equivalent sequestered by 2058

A $1 Joint Investment

Government Investment $ 0.40

Producer Investment $ 0.60

Producers invest 1.5 dollars for each AAFC dollar in programs and services

Return of Public & Private Benefits

$1.40 to $4.40

Public Benefits
Sequestered Carbon
Soil Erosion
Improved Air Quality
Water Quantity & Quality
Bio-Diversity
Wildlife and Recreation

Private Benefits
Increased Crop Yields
Livestock Protection
Protected Yards
Biomass
Fruit/Tree Products
Soil Erosion

$0.60 to $1.60

What kind of resources does your agency have to facilitate agroforestry?

Science and Technology

Research and Development
Knowledge Transfer

Policy Development

Recognition of Agroforestry function.
Science Based solutions to issues.

Trade and Market Development

International Relations
Industry relations

Programs and Funding

Agricultural Greenhouse Gases Program
Growing Forward II

How might NAC and/or universities or other agroforestry experts help you?

Universities	**- Education**
	- Knowledge transfer
	- Build the science
Industry/ NGO	**- Educate**
	- Advocate
	- Integrate
	- Partnership
Producers	**- Implement**
NAC	**- Leadership (who owns agroforestry)**
	- Coordination
	- Policy and Program Advocates

5 Dimensions of Government Decision Making

Decisions are made based on more than evidence.

Is it ….

1) Technically Realistic?
   - Does it tackle the problem?
2) Socially Acceptable?
   - Is the societal impact neutral or meet evolving norms?
3) Politically Aligned?
   - Ideological support, Not too destabilizing
4) Operationally Implementable?
   - Time and resources, partners support
5) Publicly Understandable?
   - Can it be communicated?

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