GEORGE MORRIS CENTRE

EG&S: Estimating Program Uptake and the Nature of Costs and Benefits

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Presentation Overview

- Purpose and objectives
  - Research
  - Focus Group
- Background on EG&S
  - Definition
  - Various policy options
- Background on Manitoba
  - Statistics on agricultural land
  - Current environmental management
  - Landscape (GIS maps)
- Implications for developing an EG&S program
  - WTO and Green Box Payments
  - Policy questions for program development

Purpose: Research

- To evaluate costs and benefits of a potential MB EG&S program with consideration to various agri-environmental regions

Objectives: Research

- Determine nature and extent of EG&S qualifying lands throughout Manitoba and across various agri-environmental regions
- Describe potential environmental and other benefits from an EG&S program and main environmental practices involved
- Estimate program expenses for low, medium and high adoption rates on EG&S qualifying lands

Objectives: Research

- Estimate value of environmental and other benefits resulting from low, medium and high adoption rates on EG&S qualifying lands
- Develop an analytical framework that compares costs and benefits of various scenarios
- Recommend an approach for staging introduction of a provincial EG&S program based on cost/benefit parameters

Purpose and Objectives: Focus Group

- Stakeholder perspective for EG&S program design:
  - Objectives for a potential EG&S program
  - Land eligible for participation in the program
  - Eligibility criteria
  - Proposed levels of payments
  - Hypothesized adoption rates of EG&S practices
  - Shortcomings of the proposed program scenarios
  - New sources of data and information and key contacts for research

Definition: BMP

Any agricultural management practice that mitigates or minimizes negative impacts and risk to the environment, ensures the long term health of land related resources used for agriculture and does not negatively impact the long term economic viability of producers.

McGarry, 2004

Ecological Goods and Services

Components of nature, directly enjoyed, consumed, or used to yield human well-being.

Millennium Ecosystem Assessment, 2005

Definition: Ecological Goods and Services

- Transformation of natural elements into a function useful to human beings, including such things as:
  - purification of air and water
  - maintenance of biodiversity
  - soil and vegetation generation and renewal
  - groundwater recharge through wetlands
  - greenhouse gas mitigation
  - aesthetically pleasing landscapes

Key Distinction between BMPs and EG&S

- BMP is a means, EG&S is an outcome
- Based on principle that polluter pays, ag producers are responsible for maintaining a certain level of env stewardship on their farms.
  - Compliance baseline
  - Do not always receive compensation for environment-improving activities
- Voluntary activities that go beyond ‘compliance baseline’ could be considered part of society’s responsibility.
  - Compensation may be paid to producer

The Problem

- Need to understand value of public benefits of environmental improvements
  - Air, water, soil or biodiversity
- No market mechanism...
  - A market may be created where ecological goods and services are demanded by society and supplied by public and private landowners

Valuing Ecological Goods and Services

- In 1997, Costanza estimated economic value of the world's ecosystem services and natural capital at US$33 trillion per year
  - about 1.8 times current GNP

- *Natural capital refers to natural resources, such as water and oil, the land which provides space on which to live and work, and ecosystems that maintain clean water, air and a stable climate.*
  - *a key input in production of goods and services and is particularly important to ag industry due to role of land, air, water, soil, and biodiversity in crop and livestock production.*

Source: Costanza, R. et al. 1997. The Value of the World's Ecosystem Services and Natural Capital. *Nature* 387: 253-260.

Valuing Ecological Goods & Services

- In 2003, value of wetlands to Canadians estimated at $20 billion annually
- Value of freshwater to Canadian economy estimated between $7.5 and $23 billion annually
  - amounts equal to gross figures for agriculture and other major economic sectors
- Total value of EG&S provided by Canada's boreal forest in 2002 estimated at $93.2 billion

Source: DUC, Linking the Environment to the Economy Series, 2007

Policy Tools for EG&S

- Policy tools that can be used to ensure provision of ecological goods and services:
  - Regulations
  - Cross compliance programs
  - Environmental marketing schemes (e.g. eco-labeling)
  - Voluntary participation programs
  - Market based approaches (e.g. offset credits, auctions)
  - One time direct payments
  - Ongoing direct payments

Global EG&S Payments

- Payments based on farming practices
  - to stimulate use of environmentally friendly practices, e.g., extensive pasture, low-input technologies, or organic farming
- Payments based on land retirement
  - stimulate reserving of land or other factors of production for environmental purposes
  - payment normally based on foregone agricultural income, market value of the land, taxation rate for land, or leasing (rental) rate of the farmland
  - usually annual rental payments

Global E&GS Payments

- Payments based on fixed farm assets
  - reimburse investments associated with implementing more environmentally-friendly technologies and equipment
    - mostly cost share
- Tax Relief and Credit Concessions
  - implicit payment used to offset investment cost of environmentally-friendly technologies

Australia's Market-Based Instruments (MBIs) Program

- MBIs use trading mechanisms, auctions and price signals to positively influence behaviour of people managing natural resources and environmental assets
- MBIs work by:
  - altering market prices
  - setting a cap or altering quantities of a particular good
  - improving the way a market works
  - creating a market where no market currently exists
- Currently conducting pilot study to assess market instruments

ALUS Program

- Alternative Land Use Services (ALUS)
  - By farmers, for farmers, for the environment, for Canadians
  - Pilot projects in Blanchard, Manitoba and Norfolk County, Ontario
- Program aims to:
  - establish fair market-based method of pricing ecological service delivery
  - quantify effects of approach on farm incomes
  - Norfolk program includes monitoring and assessment component to determine environmental effectiveness
  - test method's feasibility and costs
  - determine most efficient administrative structure for program delivery

ALUS Blanshard Pilot Project

- During first sign-up period in the fall of 2006, over 70% of eligible landowners enrolled their lands in project:
  - 50% had not participated in conservation programs before
  - represented over 20,000 acres
  - $300,000 in ecological goods & services

Source: Keystone Agriculture Producers, 2007; Bob Bailey, 2007

ALUS Blanshard Pilot Project

Wetland Service	Payment Per Acre
Maintenance of Wetlands with no Agricultural Use •Leave in natural state •No burning, draining, filling or clearing	$15.00/acre
Maintenance and/or enhancement of wetlands with haying permit •No burning, draining, filling or clearing •Haying permitted b/w July 15th and Aug 31st inclusive	$7.50/acre
Maintenance and/or enhancement of wetland areas with controlled grazing permitted •Min 75% ground cover surrounding wetlands •Continuous season long grazing not permitted (no grazing before July 1st) •Less than 15% of total shorelines has evidence of pugging, rutting and/or hummocking •Maintain avg minimum grass height of 10-15 cm •Adequate off-site watering system required, with setback of a minimum of 15 metres setback from water source	$5.00/acre

Source: ALUS Technical Standards Document, 2006

EG&S Payment Criteria

- Gagnon (2005) proposes that EG&S payment programs must meet both of the following primary criteria:
  - Payments are made to the producer of the ecological good or service
  - Payments are for the production of a well defined ecological good or service

EG&S Payment Criteria

- *and* at least one of the secondary criteria
- Secondary criteria:
  - Payments are *on-going*
  - Payments are made under a contract resulting in the *long-term* provisions of an ecological good or service
  - Payments *exceed the initial cost* incurred and thus provide a form of production incentive
  - The ecological good or service is the *object of a transaction* between the producer and another stakeholder for whom the *good or service is useful*.

Global EG&S Programs

- Many of env management programs reviewed globally meet Gagnon's critera for EG&S

Main distinctions – BMPs vs EG&S:

- BMP payments: one time payments based on risk posed by farm
  - Exception was Greencover program

- EG&S payments: long term, continuous payments for the production of ecological goods and services
  - Based on anthropocentric demand

NFSP and EG&S Criteria

- Does NFSP meet EG&S criteria?
- Is Canada's NFSP existing framework sufficient to incorporate EG&S program payments?

Main Criteria	
✓	Payments are made to the producer of the ecological good or service
X	Payments are for the production of a well defined ecological good or service
Secondary Criteria	
~	Payments are on-going
X	Payments are made under a contract resulting in the long-term provision of an ecological good or service
X	Payments exceed the initial cost incurred and thus provide a form of production incentive
✓	The ecological good or service is the object of a transaction between the producer and another stakeholder for whom the good or service is useful.

ALUS Program

- Does ALUS meet EG&S criteria?

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Manitoba Ag Statistics

- Total land area is 135.3 million acres, 36.2 million acres (~27%) have some agricultural potential
- Land use for ag in 2006 (both improved and unimproved land) totalled over 19.1 million acres or over 50% of total lands with ag potential
  - Over 13.5 million acres of these are suitable for sustained annual production of cultivated crops

Source: Statistics Canada, 2006 Census of Agriculture

Natural Land in Manitoba

- 3.8 million acres of natural land for pasture
- 1.6 million acres of woodlands and wetlands

Source: Statistics Canada, 2006 Census of Agriculture

Reasons for BMP Adoption

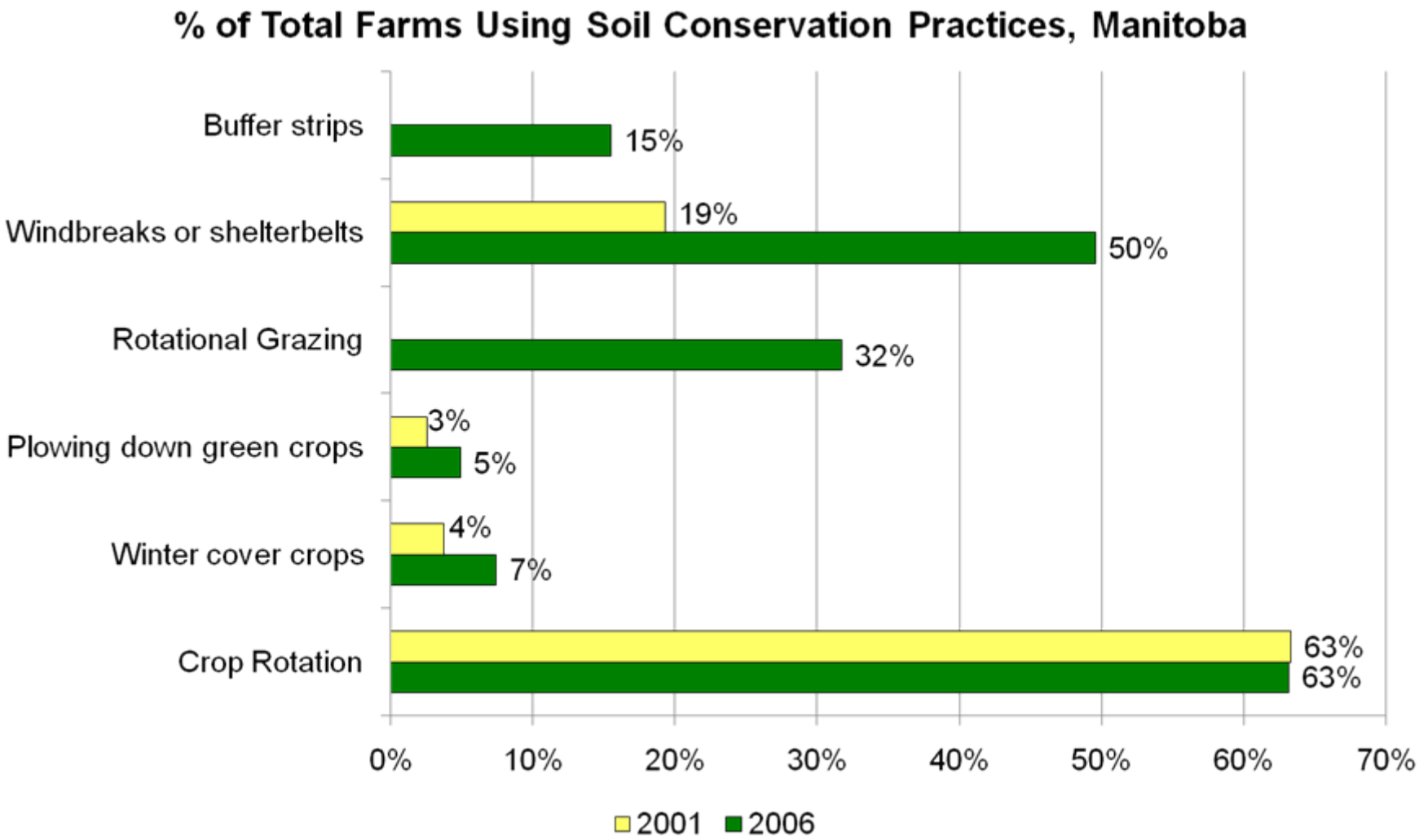
- Importance of the environment
  - 98% of agricultural producers surveyed place a high level of importance on the environment
- Risk management
- Other benefits:
  - Increased yields
  - More efficient use of fertilizer & manure
  - Concerns about soil quality/erosion
  - Fuel, labour and monetary savings

Conservation Practices

- Soil conservation practices:
  - 12,043 (63%) farms using crop rotation
  - 6,041 (32%) farms using rotational grazing
  - 1,410 (7%) farms using winter cover crops
  - 940 (5%) farms ploughing down green crops
  - 2,951 (15%) farms have buffer zones around water bodies
  - 9,451 (50%) farms have wind breaks or shelterbelts (natural or planted)
- Total farms in Manitoba 19,054

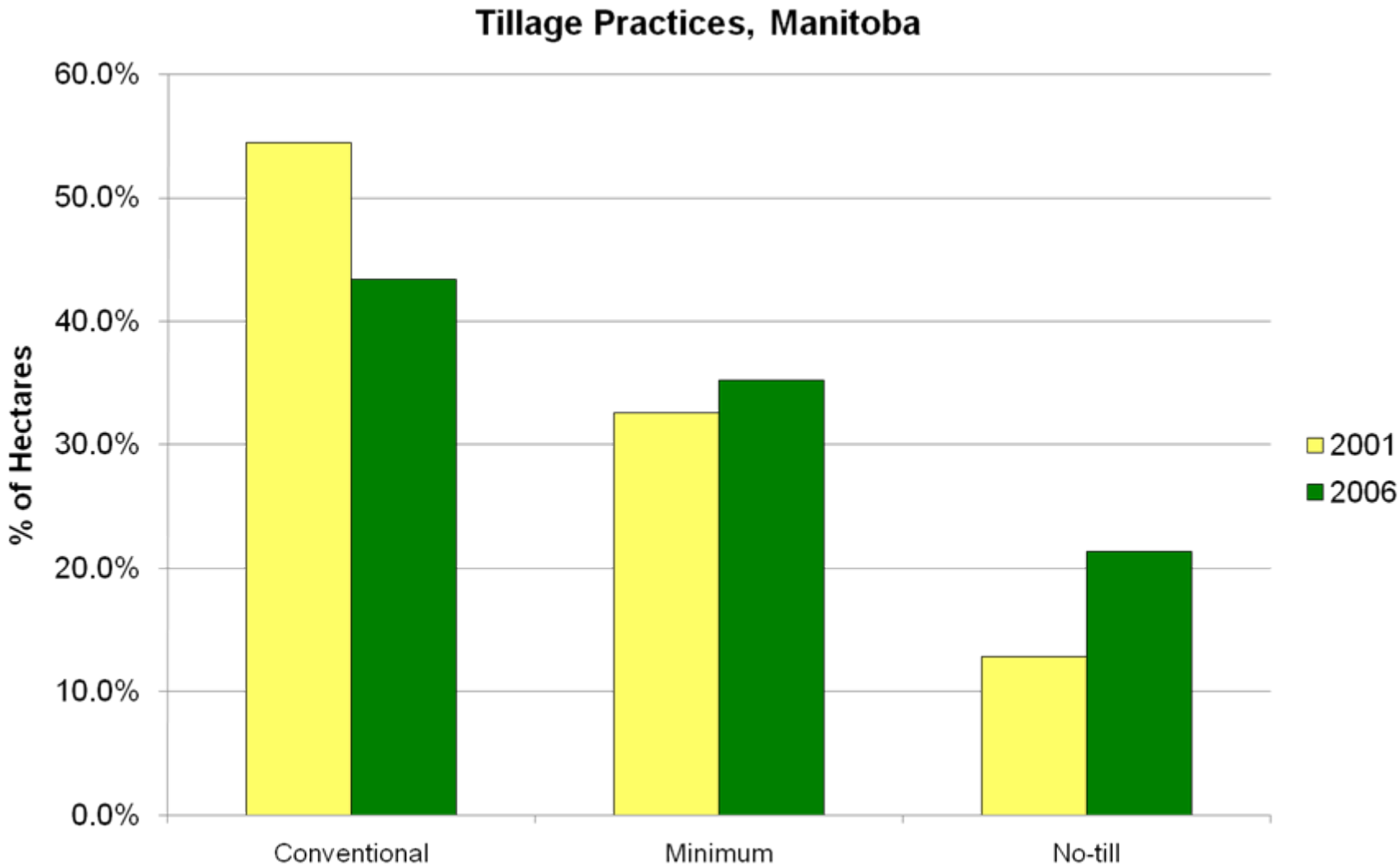
Source: Statistics Canada, 2006 Census of Agriculture

BMP Adoption



Source: Statistics Canada, 2006 Census of Agriculture

Tillage Practices, Manitoba



Source: Statistics Canada, 2006 Census of Agriculture

Most Popular BMP Category under NFSP & GC Funding

Ontario

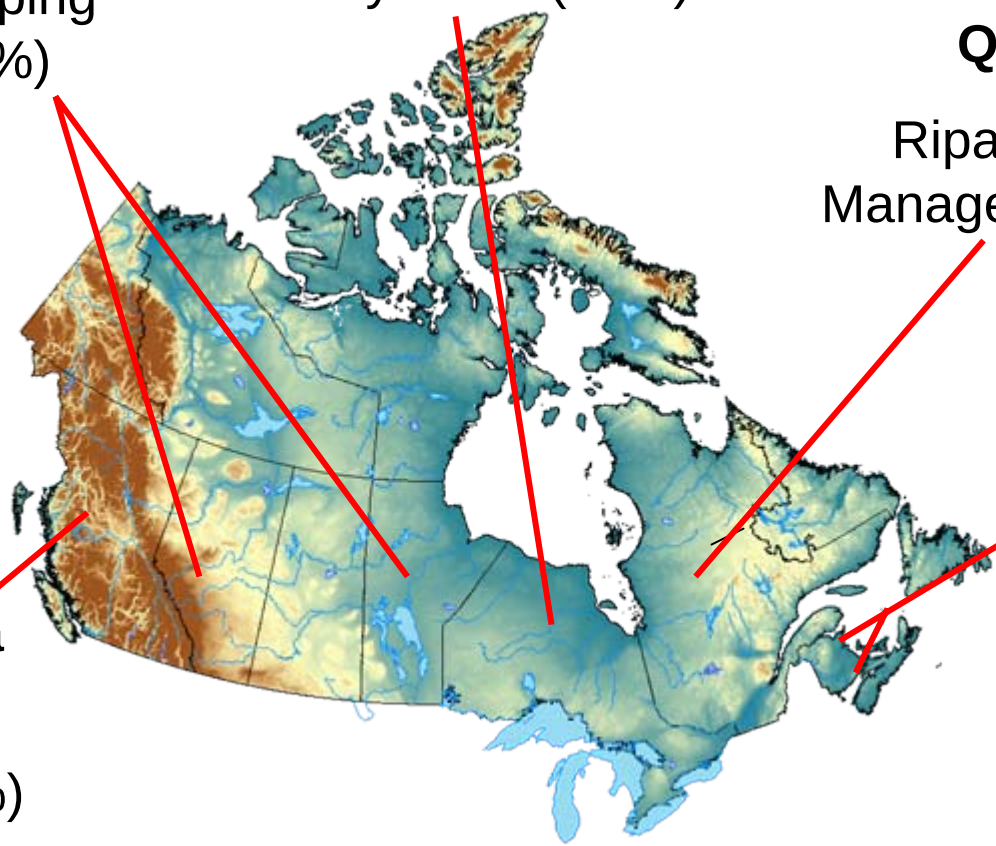
Improved Cropping Systems (22%)

Prairies

Improved Cropping Systems (52%)

Quebec

Riparian Area Management (33%)



Atlantic

Product & Waste Management (19%)

British Columbia

Irrigation Management (30%)

Source: AAFC, 2007

WTO: The Boxes

- Subsidies in general identified by boxes given colours of traffic lights
  - Green (permitted)
  - Amber (slow down, i.e., reduced)
  - Red (forbidden)
- Agriculture more complicated
  - No red box
  - Limits on amber box
  - Blue box
  - Green box

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

WTO: Amber Box

- All domestic support measures considered to distort production and trade ***OR*** that do not meet the green or blue box criteria fall into amber box
  - Measures to support prices, or subsidies directly related to production quantities
  - All domestic supports except those in blue and green boxes

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

WTO: Blue Box

- Amber box with conditions designed to reduce production
  - Any support that would normally be in amber box is placed in blue box if support also requires farmers limit production
  - Designed principally for EU and US programs
    - Currently no limits on spending on blue box subsidies, but this is likely to change

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

WTO: Green Box

- ***Environmentally green and WTO green are <u>not</u> equal.***
- In order to qualify, green box subsidies must not distort trade, or at most cause minimal distortion;
  - Must also have a minimal effect on production
- Must be government-funded (not by charging consumers higher prices) and must not involve price support; ***<u>AND</u>***
- ***meet specific, prescribed criteria***.

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

WTO: Green Box

- Tend to be programs not targeted at particular products and include direct income supports for farmers not related to current production levels or prices
  - also paragraphs that refer to environmental protection and regional development programs

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

WTO: Green Box

- Allowed without limits as long as they comply with specific policy criteria set in Annex 2. For example:
  - Direct payments to producers under environment or conservation programs must:
    - be part of a clearly defined government program
    - be limited to extra costs or loss in income involved in complying with program

Source: www.wto.org/english/docs_e/docs_e.htm, 2007

Examples from Annex 2

- no price support to producers
- not linked to production
- land retirement must be for a minimum of three years
  - Land cannot be used for alternative ag production

WTO: Green Box

- ALUS program may not meet all Green Box requirements
  - Difficult to quantify extra cost/income loss associated with maintaining natural lands
  - Extra cost/income loss not clearly defined for conversion of lands to less intensive agriculture production
  - Payment rates not tied to individual producer's experience
  - No requirement to remove lands from agriculture production for more than 3 years

WTO Negotiations Are About

- Export Competition
  - Export Subsidies
  - Export Monopolies
- Domestic Subsidies
- Market Access
  - Import tariffs
  - Tariff rate quotas
- Sensitive and special products

Domestic Subsidies

- Reduce amber spending
- Limits on individual commodities
- Changes to blue box, and limits on blue
- Minor changes to green

Implications for an EG&S Program in Canada

- WTO rules could substantially change with respect to subsidy limits and Canada could quickly exceed its AMS cap
- Whole world is going green
- Canada is considering EG&S policy options, but they must fit within Green Box Annex 2 rules

Next Steps for EG&S Policy Framework

- Costanza (2007) suggests that to have effective ecosystem service payments the policy must take into account the following key principles:
  - Measurement
  - Bundling
  - Scale matching
  - Property rights
  - Distribution issues
  - Sustainable funding
  - Adaptive management
  - Education and politics
  - Participation
  - Policy Coherence

Next Steps for EG&S Policy Framework

- Need to clearly define what the production of EG&S means in Manitoba
  - What are the priority env issues for the policy framework?
- In addition, answer the following types of questions:
  - What approach for payments should be used?
    - E.g., long term continuous payments
  - What will payments for EG&S be based on?
    - E.g., watershed priorities
  - How will prices for EG&S be set?
  - Which activities will be eligible for EG&S?
    - Will existing practices be eligible?

Examples from Annex 2

- Things to keep in mind when considering an EG&S program:
  - clearly defined publicly funded government program
    - Cannot involve transfers from consumers
  - no price support to producers
  - not linked to production
  - payments limited to extra costs/loss of income involved in complying with program
    - Should be tied to individual producer
  - land retirement must be for a minimum of three years
    - Land cannot be used for alternative ag production

Questions?

Summary of Workshop

- Stakeholders:
  - Confirmation that every stakeholder has a role
  - Magnitude of role depends on stakeholder
- Eligible Lands:
  - Riparian
  - Wetlands
  - Upland Natural Areas
  - Fragile Lands
  - But within these categories it “Depends”
    - Regional perspective or perhaps a watershed based approach
- Eligible Practices
  - Maintenance, rehabilitation and enhancement all components

Summary of Workshop

- Targeted regions
  - Provincial program that has a targeted approach based on regional issues
- Payment structure
  - Opportunity cost + incentives for key areas
    - Bidding system
  - Annual long term payments
  - Based on environmental outcomes
    - Benefit indexing
  - Premiums for longer term contracts

Summary of Workshop

- Eligible criteria
  - Voluntary
  - Land owners
  - 3-10 years contracts
  - Historical stewardship eligible
    - if about service and on going delivery
- Eligible practices
  - ALUS appears to be encompassing
- Other?
  - Multifunctional market based program

Summary of Workshop

- Estimated Adoption
  - Percentage, 30-70% with caveats
  - High uptake
- A number of short comings and risks will need to be taken into account

Preliminary Interview Results

- Targeted regions:
  - 9/17 wanted a provincial program
  - 8/17 wanted targeted program based on sensitive regions
- Payment structure:
  - Long term (7/17)
  - Auctions (2/15)
  - Tradable permits (2/15)
  - Other (6/15) – all want flexible payments

Preliminary Interview Results

- Eligible Criteria
  - Responses generally even between those that stated payments should be:
    - connected to landowner
      - so that it does not impact land values
    - connected to any lands that provide an EG&S
- Eligible Practices
  - Wetlands and riparian/sensitive areas mentioned most commonly (10/17)

Preliminary Interview Results

- Other
  - Higher payments for larger amounts of land
  - Utilize EFP program so that we are not reinventing wheel
  - Include an educational campaign

Estimated Adoption Rates Given Defined Program

% Uptake	# of Respondents	% Sample
<10%	2	12%
10-20%	5	29%
20-30%	1	6%
30-40%	3	18%
40-50%	2	12%
50-60%	1	6%
60-70%	0	0%
70-80%	3	18%
80-90%	0	0%
90-100%	0	0%
Total	17	100%

% Uptake	# of Respondents	% Sample
Low	1	6%
Moderate	12	71%
High	4	24%

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