Environmental Sustainability: what it means to the flour milling industry?

Graham Worden
Senior Manager Technical Services
Canadian Wheat Board

What is the definition of “sustainability”?

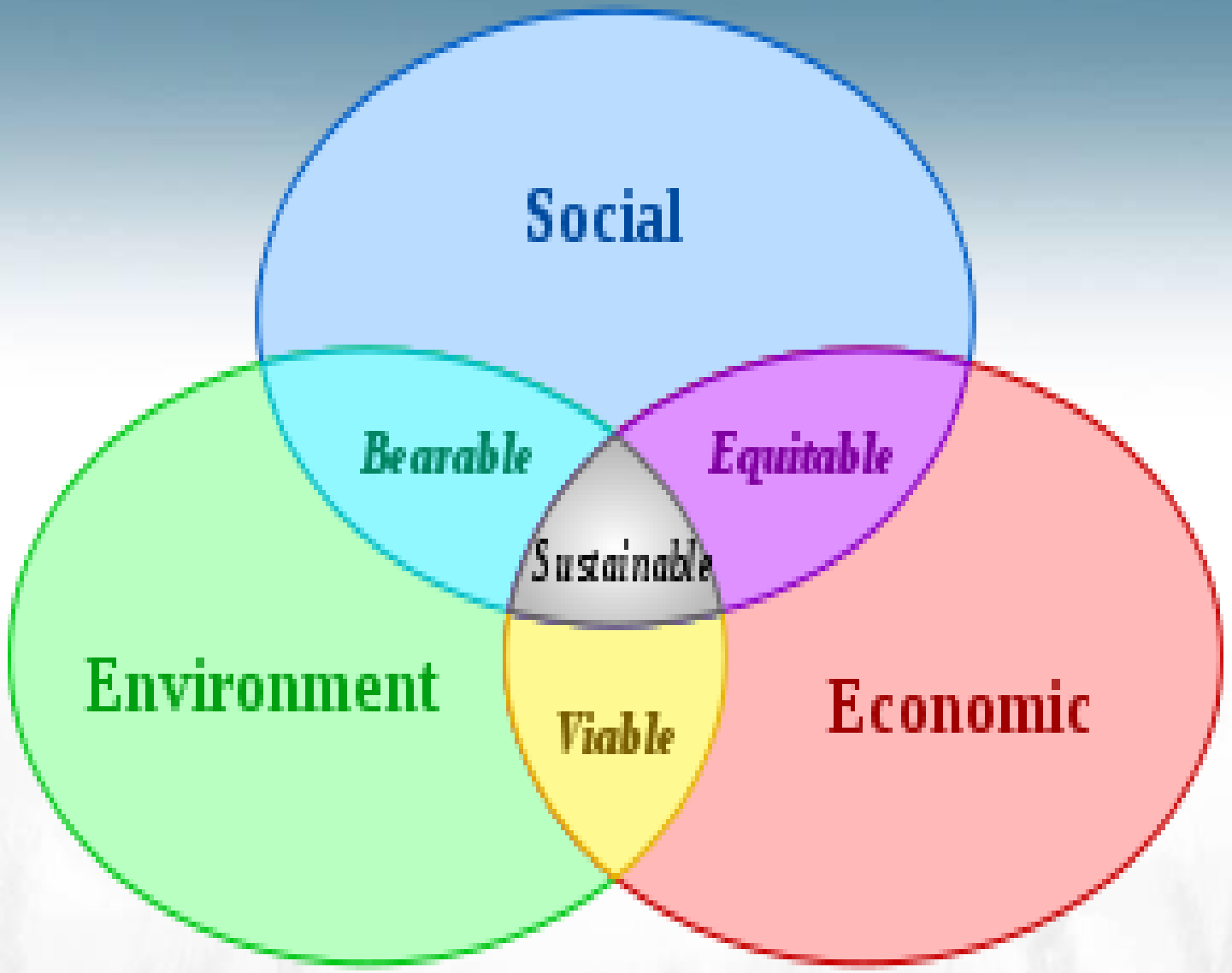
"We do not inherit the earth from our ancestors, we borrow it from our children.“
- native American proverb

- Sustainability is the long-term maintenance of well being
- Sustainability is improving the quality of human life while living within the carrying capacity of supporting eco-systems
- Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs

  (for some, the idea of sustainable development is contradictory as ***development*** *seems to necessitate environmental degradation)*

Environmental sustainability:

- Environmental sustainability encompasses the concept of stewardship:
  - responsible planning and management of resources
  - responsibility to take care of something belonging to someone else
- Sustainability interfaces with economics through the social, ethical and environmental consequences of economic activity


Social
Bearable
Equitable
Sustainable
Environment
Viable
Economic

Requirements and Impacts of different <u>cultures</u> should also be recognized

Sustainability: the fundamental challenge

It is the combination of population increase in the developing world and unsustainable consumption levels in the developed world that poses a real challenge to sustainability

Environmental Management

Recently, the focus is towards **environmental management**:

- Global warming (human-induced climate change) and how to mitigate this
- Carbon (water) footprint - impact of operations on carbon use or carbon conversion – how can we be more efficient?
- Biodiversity
  - Necessary to maintain health in an ecosystem
  - Are we encouraging the natural diversity potential or promoting monoculture that will challenge the ecosystem?

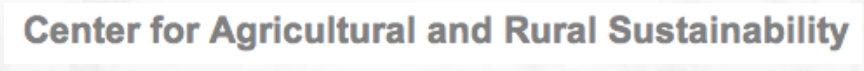
Environmental Management

- **Sustainable agriculture** is the practice of farming using principles of ecology, the study of relationships between organisms and their environment.
- It has been defined as **"an integrated system of plant and animal production practices with a focus that will last over the long term"**
- There need to be **measurements** and **schemes** to provide **standards** and **certification programs** for what constitutes a sustainably grown crop

Proliferation of schemes – standards and certification: What is the target?







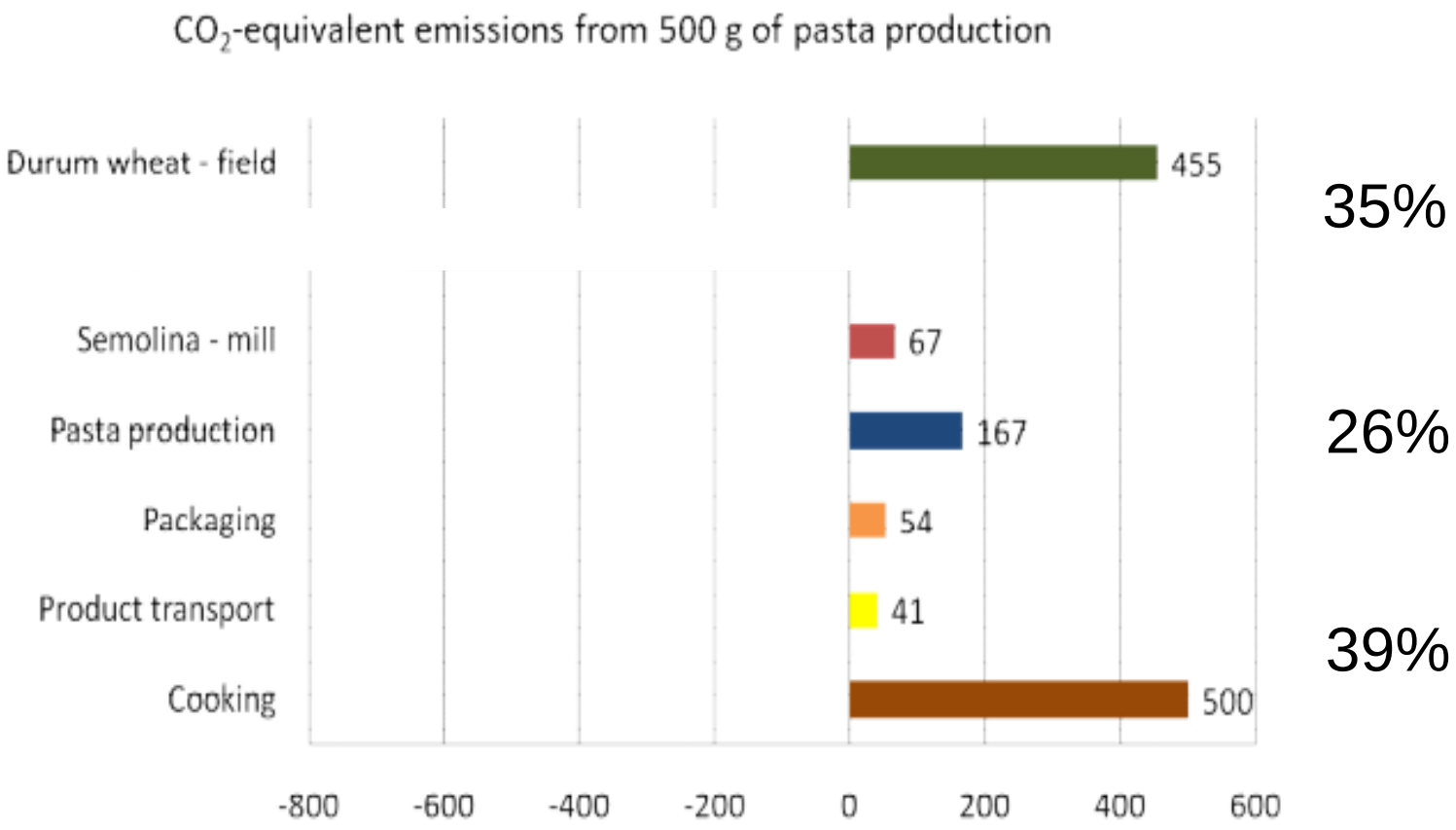
What does this mean for our industry?

- There is a growing recognition that we need to be more aware of our planet's sustainability potential – at all levels of society and the economy
  - Wheat, Rice and Corn (Maize) are the three largest crops globally – demand is increasing with limited potential for an increase in land use
  - Food processors are looking for sustainable supply

The Life Cycle Assessment

The Life Cycle Assessment (LCA) is an environmental impacts analysis tool of consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal.

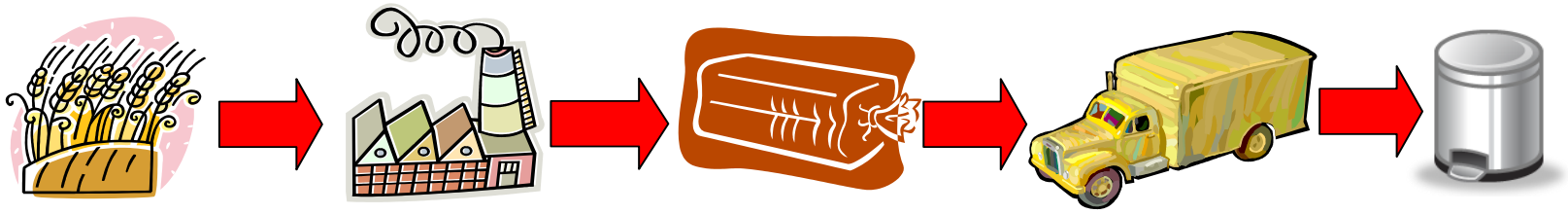
Life Cycle Analysis (field to plate)
Barilla, Italy



Carbon Footprint Analysis - field production to retail shelf
Warburtons (UK Bakery)

Carbon In the Product - Std 800g loaf

Raw materials & milling	Production at bakery	Packaging	Transport	Disposal
66%	19%	3%	11%	1%



~740g of CO_2 for an 800g loaf

~80g of CO_2 per two slices

Warburtons Family Bakers

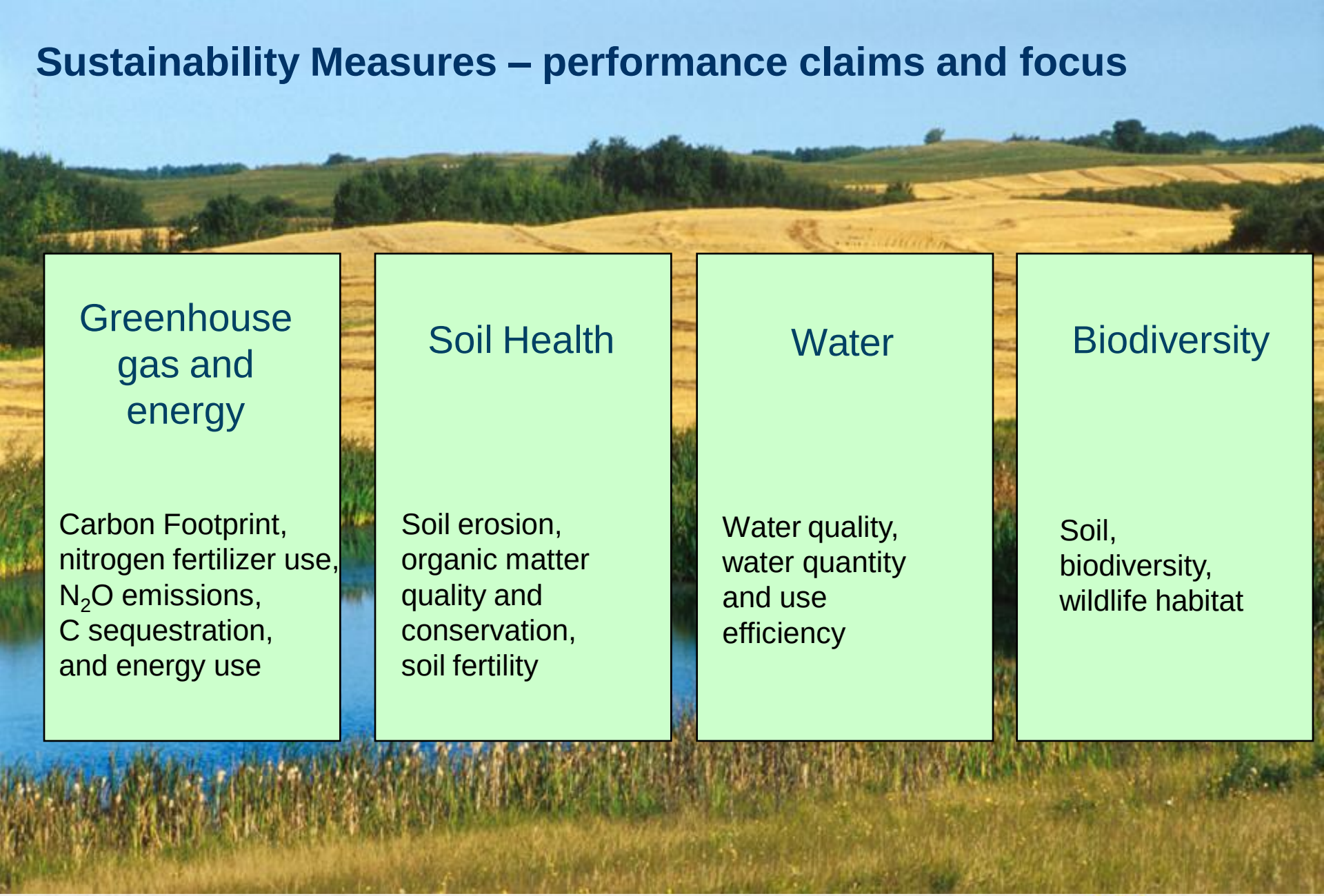
- Food companies are realizing the largest environmental footprint of their supply chain is occuring outside their operations.
- This puts pressure on agricultural commodity suppliers to provide sustainability in their product offerings
- Magnitude relative to:
  - Field productivities (yield)
  - Fertilizer applications (nutrients and application rate)
  - Pesticide and insecticide control
  - Biodiversity versus monoculture

GROW LOCAL does not necessarily provide significant sustainability improvement – the relative contribution of transport to total carbon footprint of imported wheat is small (between 1.6% EU to 5.5% Canada)

Cropping System Review: Key Production Practices

- Soil conservation practices
  - No-till and direct seeding systems
- Cropping system
  - Crop rotations
  - Varietal development
  - IPM – integrated pest management
  - Low input systems
- Climatic conditions
  - Short growing season
  - Semi-arid conditions

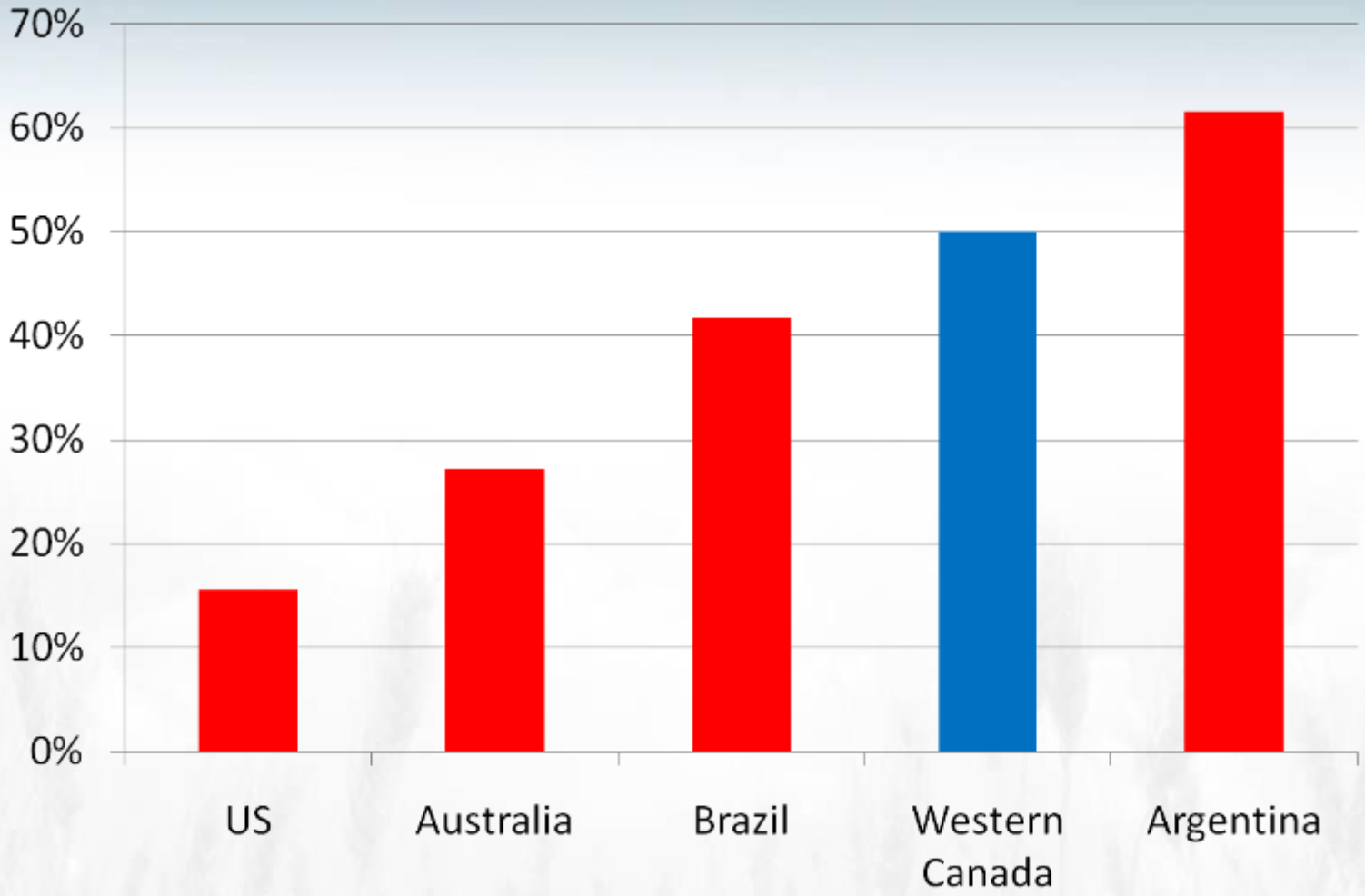
Sustainability Measures – performance claims and focus



Greenhouse gas and energy	Soil Health	Water	Biodiversity
Carbon Footprint, nitrogen fertilizer use, N_2O emissions, C sequestration, and energy use	Soil erosion, organic matter quality and conservation, soil fertility	Water quality, water quantity and use efficiency	Soil, biodiversity, wildlife habitat

Environmental stewardship is all about the soil

Per Cent of Arable Land in No-till (2008)



Data sourced from AAFC and Derpsch and Friedrich, 2009

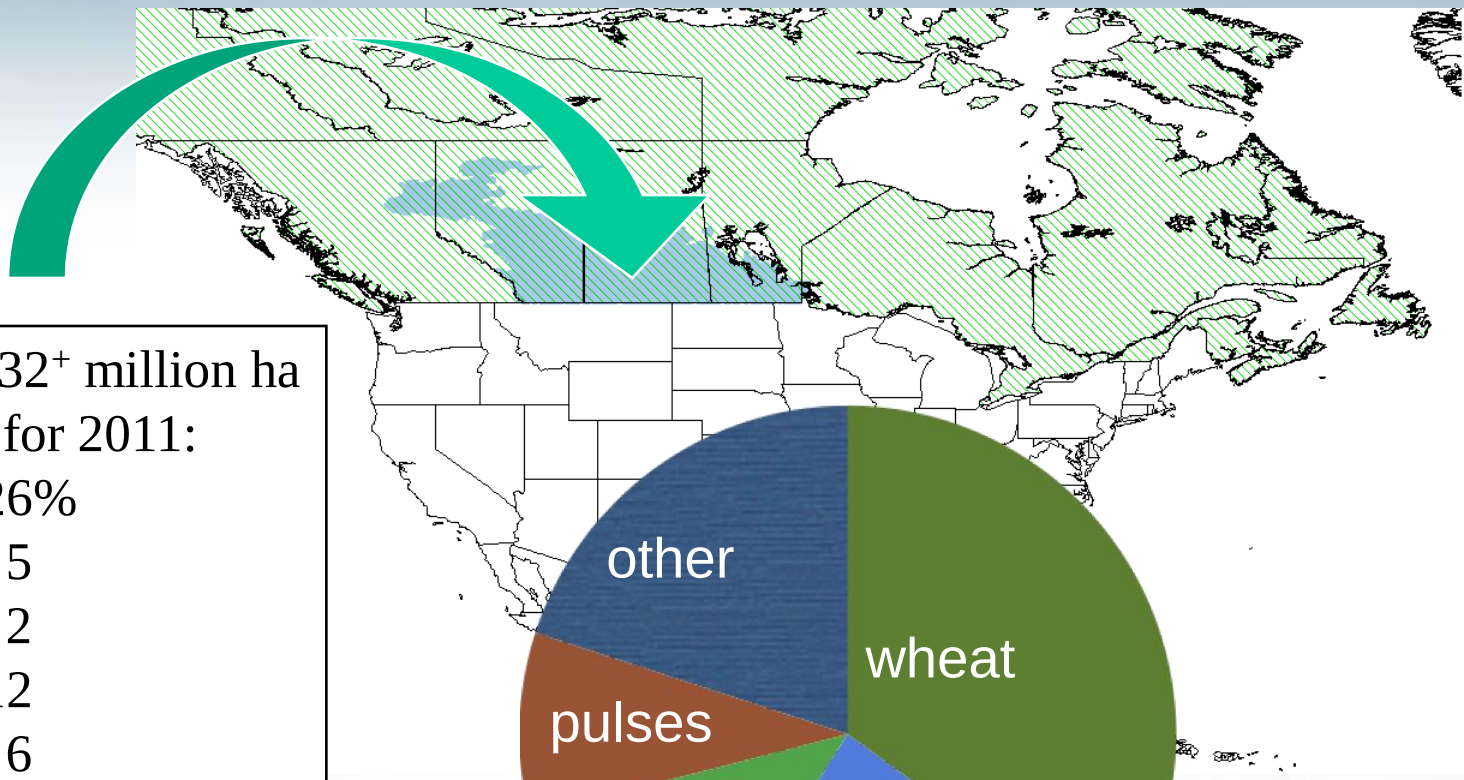
High Adoption of Direct Seeding Systems
(Also referred to as Zero-Till or No-Till)
Low Disturbance "One-Pass"


DANGER
ANHYDROUS
AMMONIA
POOL

Benefits of Direct Seeding (No-till) Systems

- Conserving and improving soil quality:
  - Minimizes soil loss
  - Improves moisture conservation
  - Higher organic matter content
  - Improved nutrient cycling
- Productivity gains and reduced production costs
  - "One Pass" means less fuel consumption
  - Improved nutrient management means less fertilizer use and higher nutrient use efficiency
  - Improved moisture use mean increased crop yield
- Carbon sequestration benefits – carbon assimilation into organic matter
- All combine for reduced carbon footprint
- Better wildlife habitat promotes biodiversity

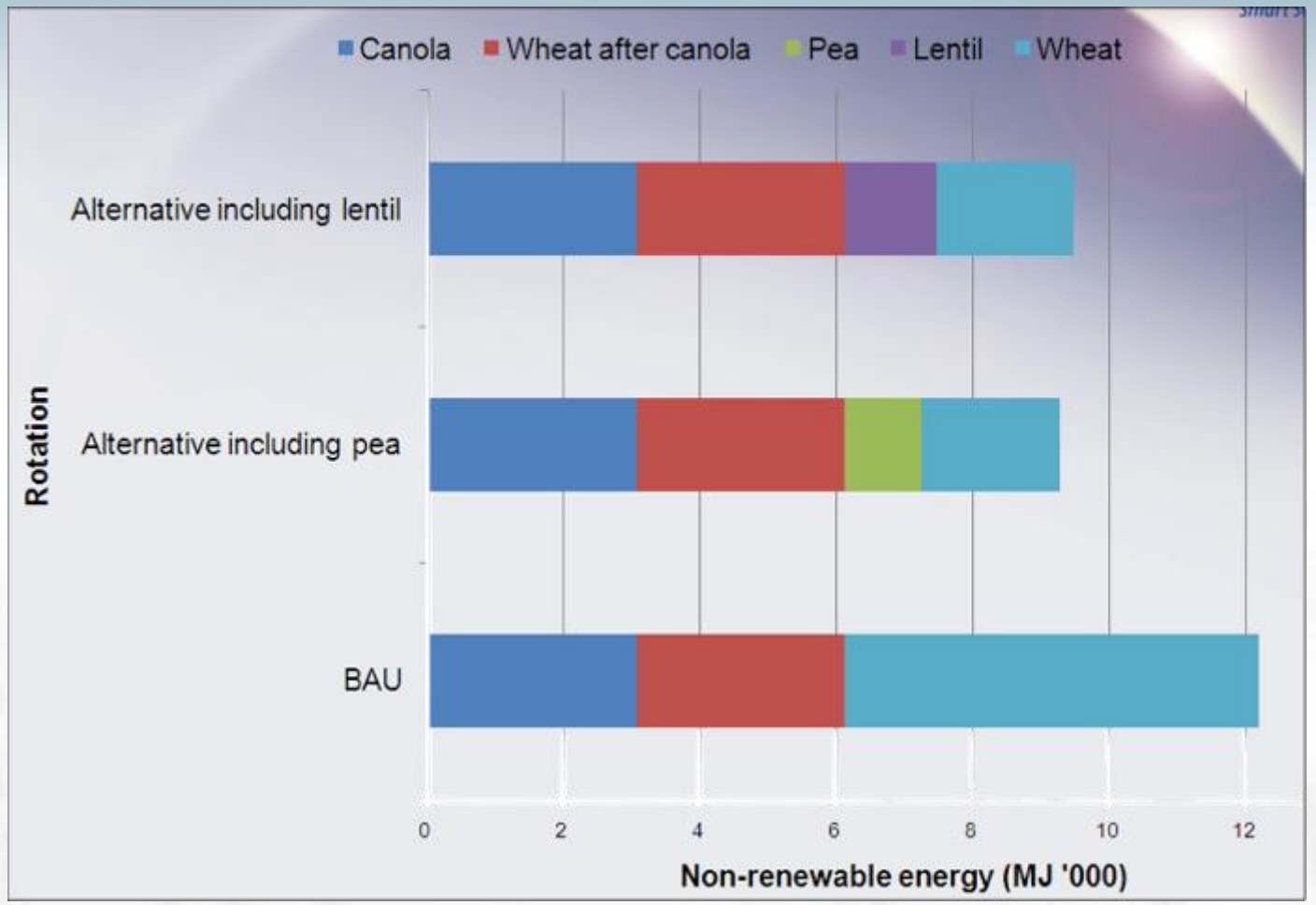
Western Canadian Crop Rotations



Total arable acres: 32^{+} million ha
Seeding intentions for 2011:

Spring Wheat:	26%
Durum	5
Winter Wheat	2
Barley	12
Oats	6
Canola	24
Flax	2
Pulses (Pea/Lentil)	7
Special Crops	7
Summerfallow	9

Crop rotation reduces on-farm non-renewable energy use



Preliminary data from Pulse Canada LCA Study

Integrated Pest Management Practices

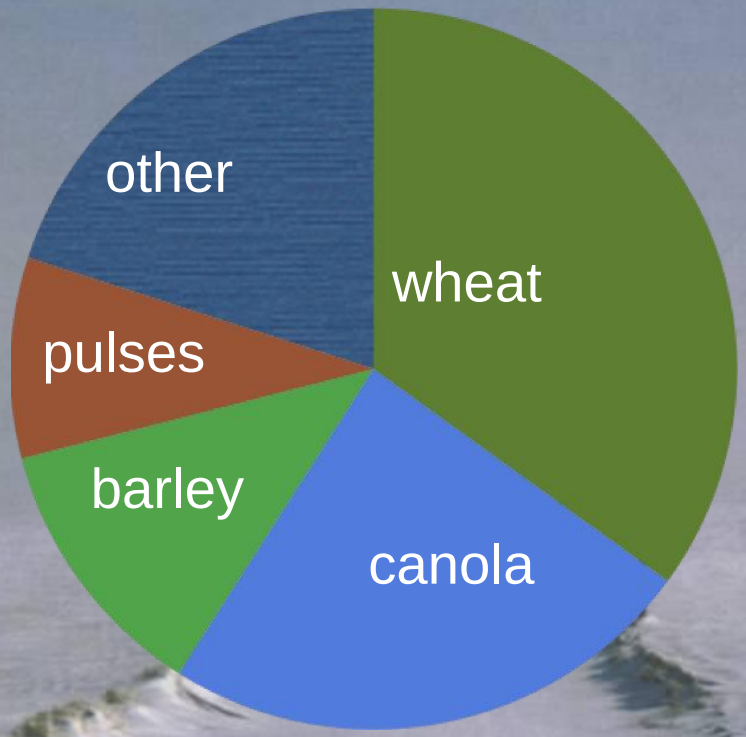
- Plant disease and Insect management through:
  - Crop Rotation
  - Variety Selection
  - Pesticides – “when and where” required
- Farmers use decision support systems to minimize pesticide use:
  - Pest risk forecasts in advance of growing season
  - Development of economic pest and action thresholds
  - Weather based decision support systems
    - Pest development and emergence patterns
    - Up to date reports – web based

Variety development

- Public breeding programs
- Focus on:
  - Agronomic performance
  - Disease resistance
  - Quality improvements
  - Insect resistance

- Genetic enhancement using natural genetic variation rather than pesticides
- Results in “low input” system – means low reliance on pesticides for pest management

Canadian climate advantage ?



Pest Management and Pesticide Usage
How does Canada compare?

Global Pesticide Usage

Source: www.croplife.ca

Pesticide Regulation and Usage

- Pesticide Management Regulatory Agency responsible for regulation and monitoring of pesticide use in Canada
  - Conducts pre-market scientific assessment
  - Approves and register all pesticide products
  - Regulations controlled through federal legislated Pest Control Act
  - Establish domestic Maximum Residue Limits (MRL)
- For farmers, the product label specifies “Direction for Use” including:
  - Approved crop
  - Application dosage
  - Application timing as to crop growth stage
  - Specifies required pre-harvest interval

Government of Saskatchewan

Choose a Ministry

AGRICULTURE

Quick Search: This Site | All Government Sites | Advanced Search | Help?

Thursday, June 02, 2011

Directory | Contact Us

Saskatchewan! Committed to a thriving

SERVICES FOR:

Producers

Agri-Business

The Alberta Environmental Farm Plan: News

Alberta EFP

Environmental Farm Plan

Home | AEFP Program | News | Contact

Why an EFP? | EFP Process | EFP Workbook

June 2, 2011

Why Develop an EFP?

Sustaining production, managing risks

The Environmental Farm Plan (EFP) p
essential to the success of Alberta's a

Maintaining water, soil and air quality

- sustainable production of crops
- a healthy and diverse landscape
- a beautiful, productive environm

Ensuring a healthy environment is also
eat and about how that food is produc

top 6 reasons

- improving farm health and safety
- building acceptance of the operation among neighbours and the public
- increasing personal satisfaction and knowledge
- adding value to the farm property
- agricultural sustainability

other important reasons

- to reduce farm inputs like herbicides, insecticides, fertilizers and fuel.
- to demonstrate to the public, governments, regulators, lenders and/or investors that you are managing your environmental risks.
- to increase your understanding of your legal requirements related to environmental issues.
- to identify what you are already doing well and pinpoint where improvements could be made.

Site Map | Contact Us (1-866-MANITOBA)

Government | Business | Residents | Tourism | Services | Search MAFRI... GO

Manitoba

Manitoba Agriculture, Food and Rural Initiatives

Printer Friendly

Agriculture, Food and Rural Initiatives > Agri-Environment > Environmental Farm Plan

Agri-Environment

- Agri-Environment Home
- Agricultural Sustainability Initiatives (ASI)
- Climate Change
- Ecological Goods and Services (EG&S)
- Environmental Farm Plan (EFP)
  - What is EFP?
  - Participation
  - A National Approach
  - What are the Issues?
  - EFP Delivery
  - Manitoba's EFP Process
  - How Does it Work
  - 3rd Party Review
  - Workshop Schedule
  - EFAP
  - Contact Information
- Mortality Management
- Nutrient Management

Environmental Farm Plan

Growing Forward, the successor framework to the Agricultural Policy Framework (APF), is the new five-year combined federal-provincial-territorial government initiative designed to help the agriculture and agri-food sectors become more profitable, competitive and innovative.

Manitoba producers were strong supporters of the Environmental Farm Plan (EFP) program under the APF with 6,940 producers participating. Of these, 5,611 received a Statement of Completion making them eligible to apply for cost-shared environmental improvements on their farms. Over 8.8 million acres were assessed by producers through the EFP process.

By participating, producers are able to:

- contribute to environmental protection and conservation
- confirm the environmental benefits of their current management practices
- increase awareness of environmental assets and risks associated with their farming operations
- identify options and actions to reduce the identified risks
- improve farm production efficiencies

For more information contact your local Manitoba Agriculture, Food and Rural Initiatives Growing Opportunities Office; or call Manitoba Government Inquiry at 1-866-626-4862 for the GO Office nearest you.

Canada

Manitoba

Farming Smarter Probes Agri-Enviro Issues

A large group of agricultural researchers will attempt to find the agri-environmental issues most important to crop producers and begin to offer practical mechanisms to address them.

Under the banner of Farming Smarter, a one-year research project will go directly to crop producers and ask them which issues stand out for them and what gets in their way in trying to deal with those issues.

With the aid of a panel of experts from crop researchers, agronomists, industry, governments and environmental groups, Farming Smarter will prioritize issues from producers and design research projects to address them.

"There is a lack of clarity in priority issues and a general disconnect with crop producers interested in improving practices since government programs shifted efforts specifically to water quality and livestock issues," says Ken Coles, Farming Smarter general manager.

As the project matures, crop producers will have access to this information through all the modern media vehicles available. They will see Farming Smarter magazine articles,

June 16, 2011

Canola Crop Walk
Time: 1:15PM @ East Parking lot of the Lethbridge Research Station

Testing variables in Canola, Canola Stand establishment, In-depth look into Inter Row Seeding

Check website for further details

June 23, 2011

Crop Walk
Time: 1:15PM @ East Parking lot of the Lethbridge Research Station

Dr. Ross McKenzie- ESN and Fertility
Dr. Bob Blackshaw- Canola Agronom

Check website for further details

CWB

Food Safety Assurance Programs

Representation for CWB producers

- Working groups for grain safety assurance programs
  - on farm (ExcelGrains Canada)
  - post farm
- Producer manual
- Tools in place to meet market demands
- Recognize and promote SAFE grain
- Be prepared for customer demand **AND** market return

ExcelGrains Canada
HACCP Based
On-Farm Food Safety Program

Going forward – some of the sustainability questions:

Short term

- Evaluate opportunities on case by case basis
- Determining how to engage and collaborate with customers on measurements projects
- Dealing with database measurements

Longer term

- Developing our sustainability strategy within our marketing plan
- Value western Canadian cropping system approach which defines and leverages sustainability indicators and metrics
- Determining if there is a business model that makes sense for western Canadian farmers