

Carbon Footprinting and the Pulse Industry

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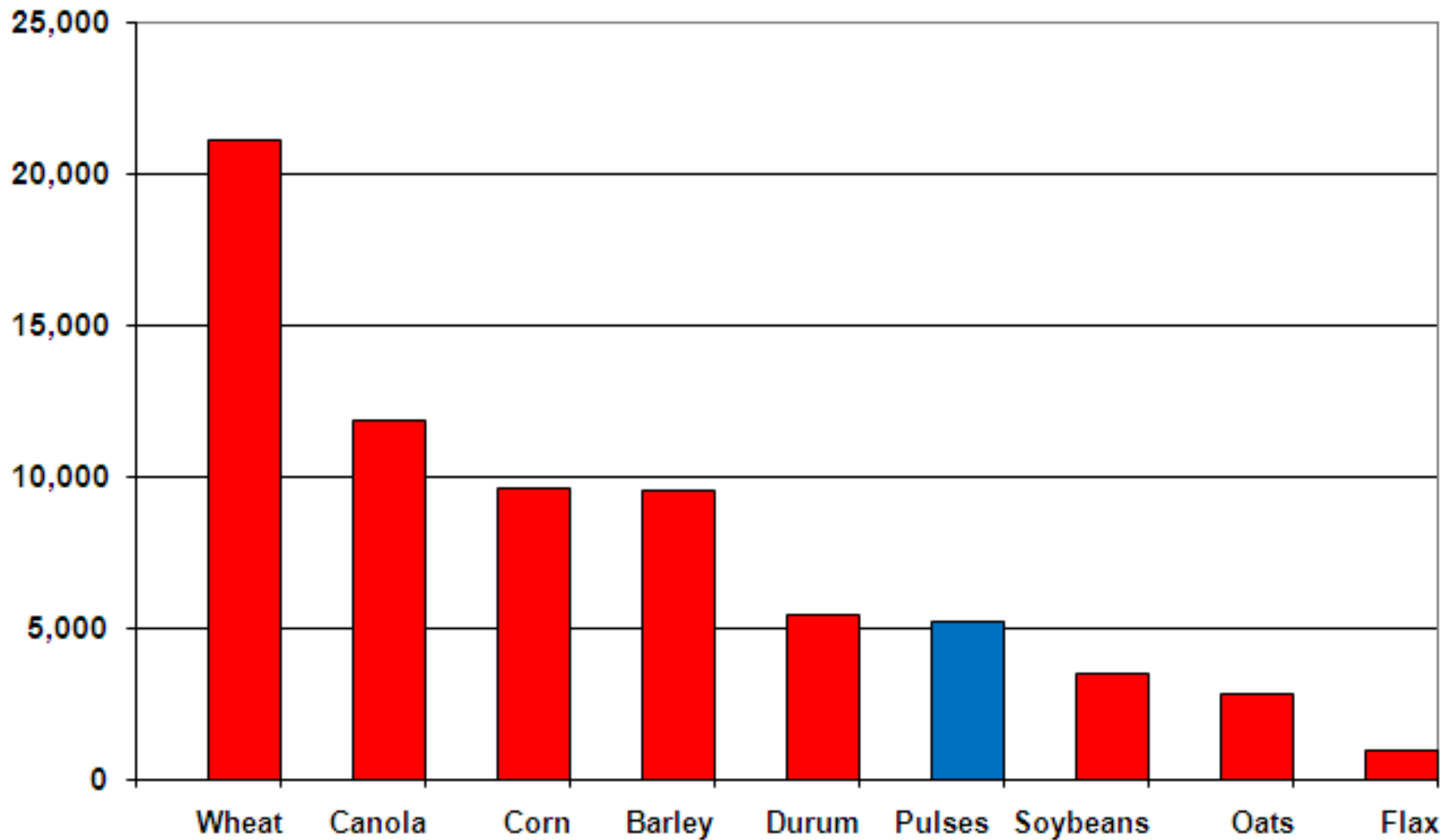
Definition



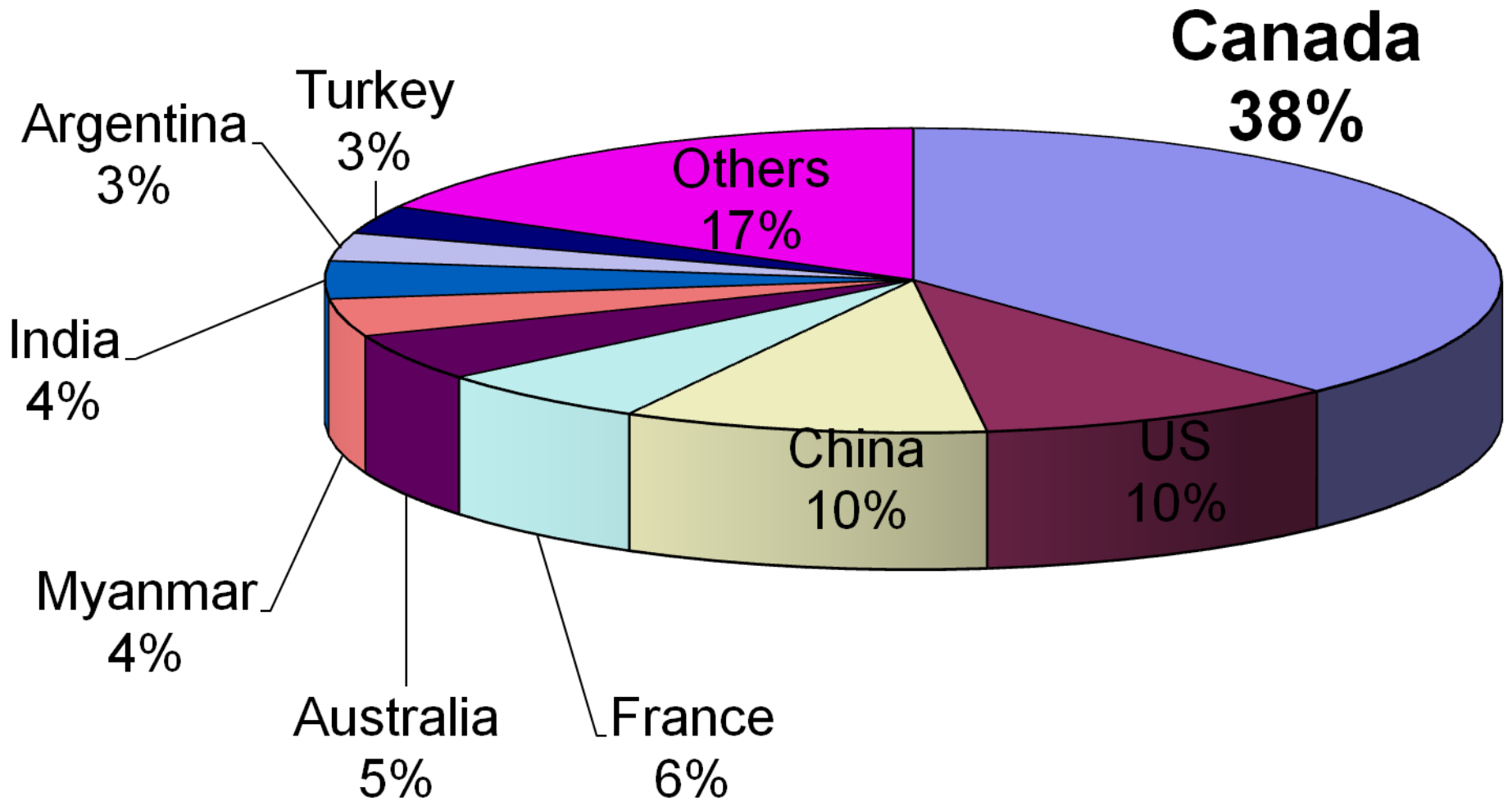
Pulse: from the Latin puls meaning thick soup or potage, pulses are the edible seeds of plants of the legume family.

Canada: peas, lentils, dry beans, chickpeas

2009-10 Crop Production in Canada (thousand tonnes)



World Trade in Pulses





- American Farm Bureau Federation
- American Soybean Association
- Bayer CropScience
- **Bunge Limited**
- **Cargill**
- **ConAgra**
- Conservation International
- Cotton Incorporated
- DuPont
- Fleishman-Hillard
- **General Mills, Inc.**
- **Grocery Manufacturers of America**
- Manomet
- **Mars, Inc**
- **McDonald's Corporation**
- Monsanto
- National Association of Conservation Districts
- National Association of Wheat Growers
- National Corn Growers Association
- National Cotton Council of America
- National Potato Council
- Syngenta
- **The Coca-Cola Company**
- **The Kellogg Company**
- The Nature Conservancy
- United Soybean Board
- World Wildlife Fund
- University of Arkansas
- University of Wisconsin



- Agrarfrost GmbH & Company
- Agroterra
- Arla
- Campina
- CIO
- **The Coca-Cola Company**
- **Danone Group**
- Ecom Trading
- Elders
- Farm Frites International
- Fonterra
- Friesland Foods
- **The Kellogg Company**
- Kemin Industries
- **Kraft Foods**
- **Lamb Weston/ Meijer**
- **McCain Foods Ltd**
- **McDonald's Corporation**
- **Nestlé**
- **Sara Lee Corporation**
- Tchibo GmbH
- **Unilever**
- Volcafe



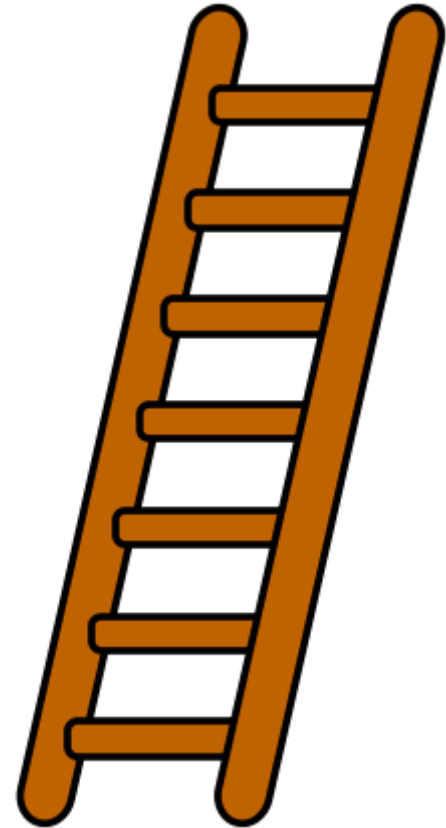
- Adeco Agropecuaria
- Adina World Beat Beverages
- Birds Eye Foods
- Bolthouse Farms
- Cabot Creamery
- CH Robinson
- Clif Bar & Company
- Del Cabo Foods
- **General Mills**
- Golden Heritage Foods
- Green Mountain Coffee Roasters
- **H.J. Heinz**
- Jasper Wyman & Sons
- Los Angeles Salad International
- Organic Valley Cooperative
- Sadia
- Scharffen Berger
- **Sodexo**
- Sotral
- Starbucks
- **SYSCO**
- **Unilever**
- **US Foodservice**

Carbon footprinting

- UK Carbon Trust standard PAS2050



The mainstream 'sustainability ladder'



1. Reduced energy use in processing / distribution (shut off the lights, turn off the trucks).
2. Reduced/recyclable packaging
3. High-risk ingredients: coffee, cocoa (and water in some cases)
4. Ag products with short supply chains (direct farmer/company contracts, often perishable products).
5. Ag products with long supply chains (ag commodities)

Message: showroom floor vs. design room floor

“We estimate that greenhouse gas emissions in the (agricultural) supply chain are approximately ten times those in our own manufacturing impacts.”

-Sustainable Development Overview 2008, Unilever

“An estimated 90 to 95 percent of the food industry’s environmental footprint occurs in commodity production.”

-2009 Corporate Social Responsibility Report, General Mills

Number of gallons of water required by one 2 liter bottle Coca-Cola: 1 in the manufacturing plant, 132 in the field.

-Wall Street Journal, Feb 2010

<http://online.wsj.com/article/SB123483638138996305.html>



Figure 1

Estimated Sources of Greenhouse Gas Emissions for Fluid Milk

TOTAL = 28.0 million metric tons CO₂e

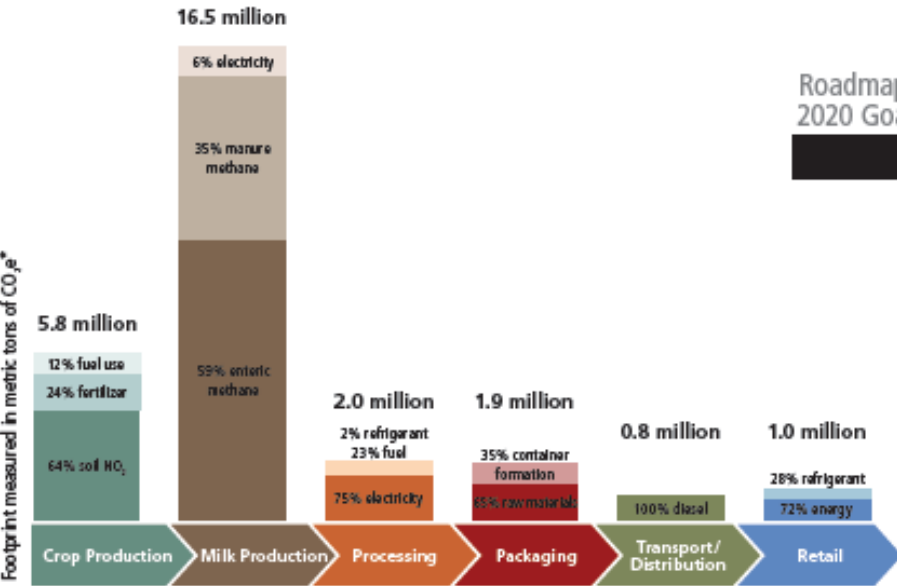
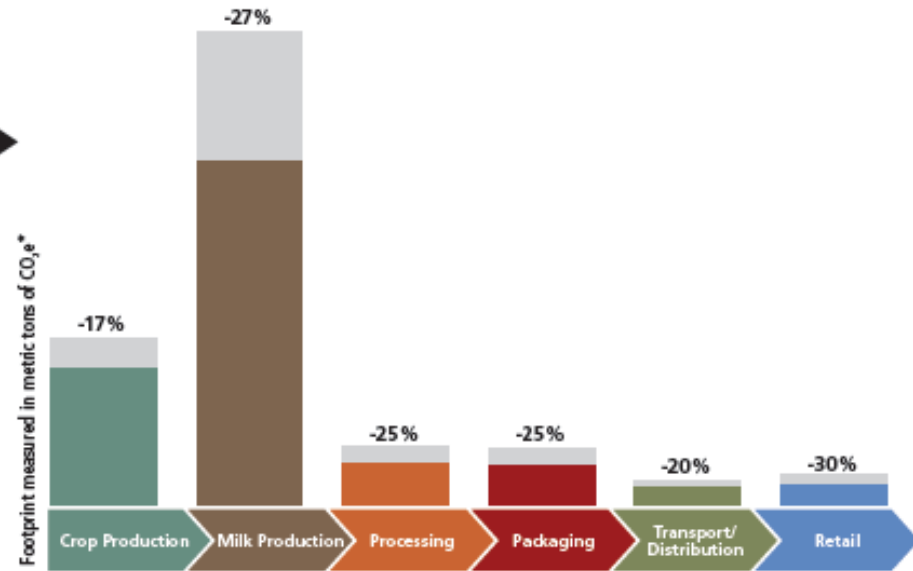


Figure 2

2020 Goals for Greenhouse Gas Reduction for Fluid Milk

OVERALL GOAL: 25% CO₂e reduction

Equal to taking 1.25 million passenger cars off the road every year.



REDUCTION OPPORTUNITIES

Conservation tillage Fertilizer use Pastured dairy Manure nutrients	Enteric reduction Methane capture Renewable energy generation Energy efficiency	Energy efficiency Process Innovation Cogeneration Renewable energy	Energy efficiency Materials reduction Renewable/recycled materials	Truck efficiency Route efficiency Driver training	In-store energy efficiency (refrigeration and lighting)
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VALUE CHAIN GOALS

Purchased feed -15% per unit	Manure: -30% overall	-25% reduction	-25% reduction	-20% reduction	-30% reduction
On-Farm Feed -20% per unit	Enteric: -25% (including on-farm)				

PHASE 1 PROJECTS

Dairy Feed Systems	Farm Energy Audit Program Cow of the Future Dairy Power Dairy Underground	D-CREE Non-Thermal (UV) Prototype Next Generation C/P	Dairy Delivery LCA	E-SMART	
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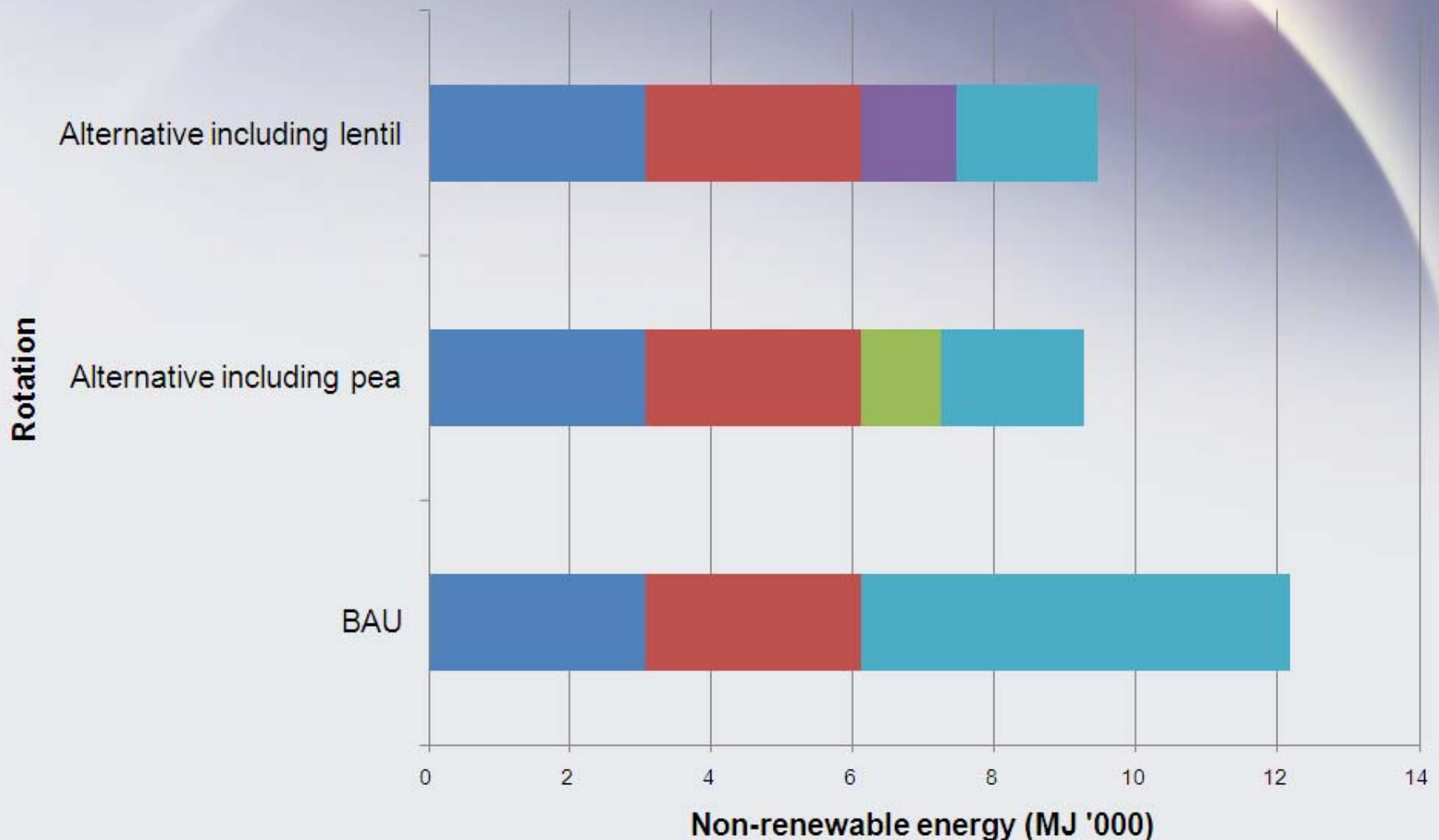
*Footprint conducted by Blu Sky Sustainability Consulting is a scan-level footprint based on a literature review of major greenhouse gas (GHG) studies in the dairy industry. University of Arkansas is currently conducting a life cycle assessment of GHG for fluid milk.

Results of Crop Rotation LCA

*Preliminary: currently undergoing peer review

smart science solutions

■ Canola ■ Wheat after canola ■ Pea ■ Lentil ■ Wheat



Our challenge: to get our positive story out in a way that our customers recognize and understand.

Study underway on carbon footprinting technical issues:

- Annual / regional data fluctuations: biological production
- Verification and auditing
- Data harmonization with other initiatives
- Labeling: certify current performance, improvements, or both?
- 'Category' vs. 'Product' LCAs

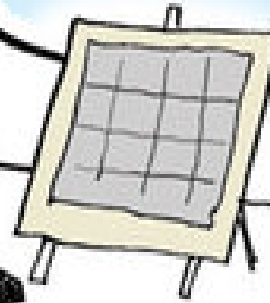




CLIMATE SUMMIT

WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?

- ENERGY INDEPENDENCE
- PRESERVE RAINFORESTS
- SUSTAINABILITY
- GREEN JOBS
- LIVABLE CITIES
- RENEWABLES
- CLEAN WATER, AIR
- HEALTHY CHILDREN
- ETC. ETC.



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JOEL RITT