



# *“What innovation means for you and your organization”*

COGA **Innovation** Seminar - Abbotsford, BC

**Al Scholz**, PAg, CAC, CMC

**A Well Fed World**

**Tuesday, November 20, 2012**

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*Funding provided by:*

Canada 



**Investment  
Agriculture  
Foundation**  
*of British Columbia*

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Cameron Herold, 1-800-Got-Junk

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Abe Gubegna, Ethiopian Entrepreneur

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Jason Jennings, Author

- *Think Big Act Small*
- *Hit the Ground Running*
- *How extraordinary companies pursue radical continuous change*

# Can we feed 9 billion by 2050?

1. Global conflict / Energy security / Economic stability (**Change?**)
2. Food scarcity / Food security issues (in the **media?**)
3. Can farmers produce enough food **sustainably?**
4. Will **prices** increase?
5. Will **profit margins** improve for farmers?

# Defining the **average producer** in the marketplace



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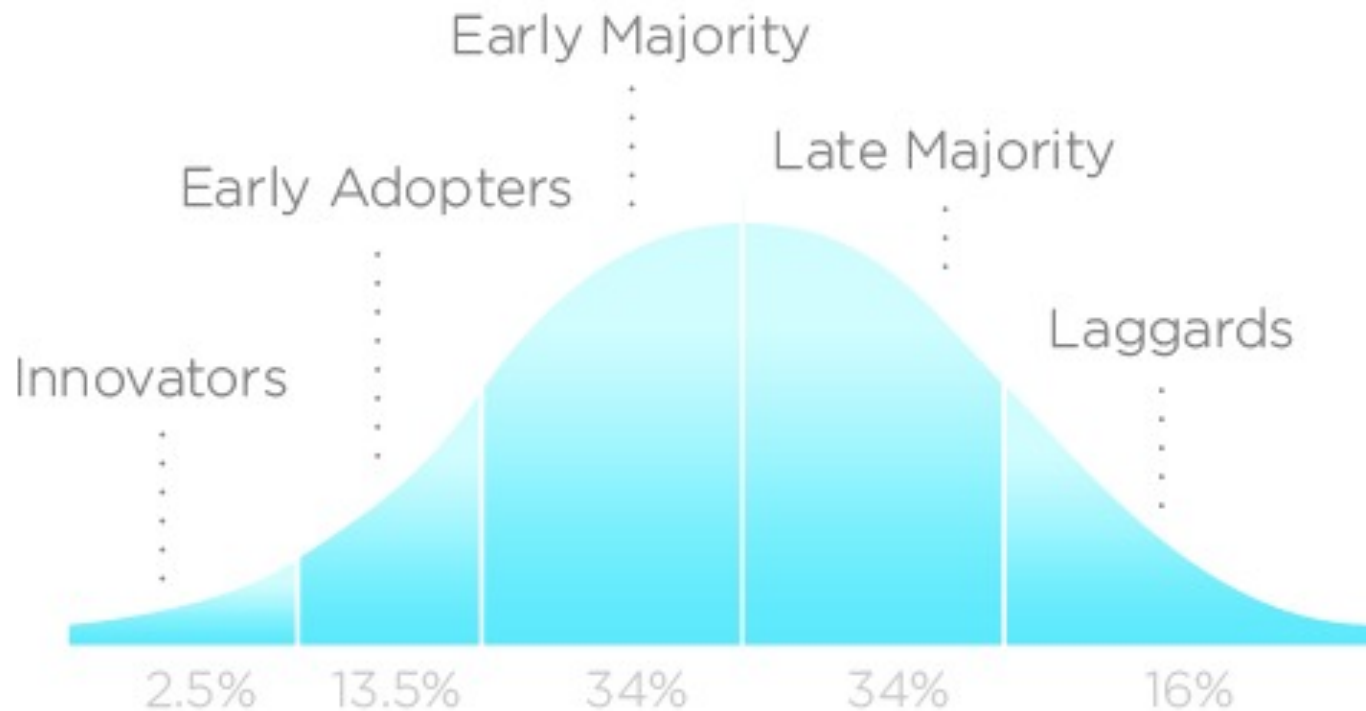
**Source:** Danny Klinefelter, Texas A&M University

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# Defining the Average Producer



## INNOVATION ADOPTION LIFECYCLE

Source: <http://www.theclinegroup.com/>

# Defining the Average Producer

**Innovation** in the agriculture, agri-food and agri-based products sector is a process that **generates new knowledge and develops or adapts new or improved products, processes or practices** that are implemented or adopted to add value to farms, firms or the sector. **Source: AAFC**

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# **Innovation:** The Challenges Facing Agriculture

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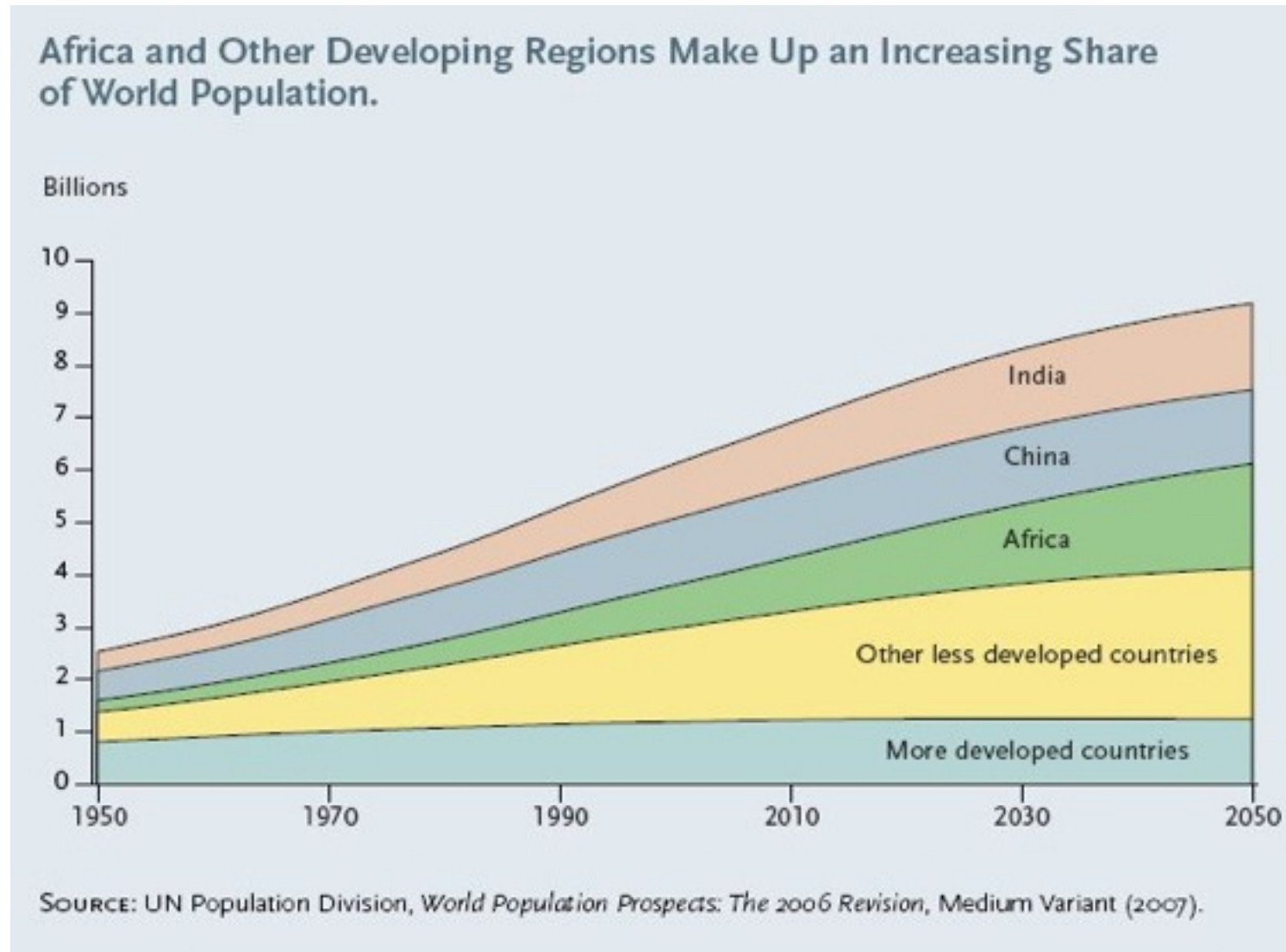
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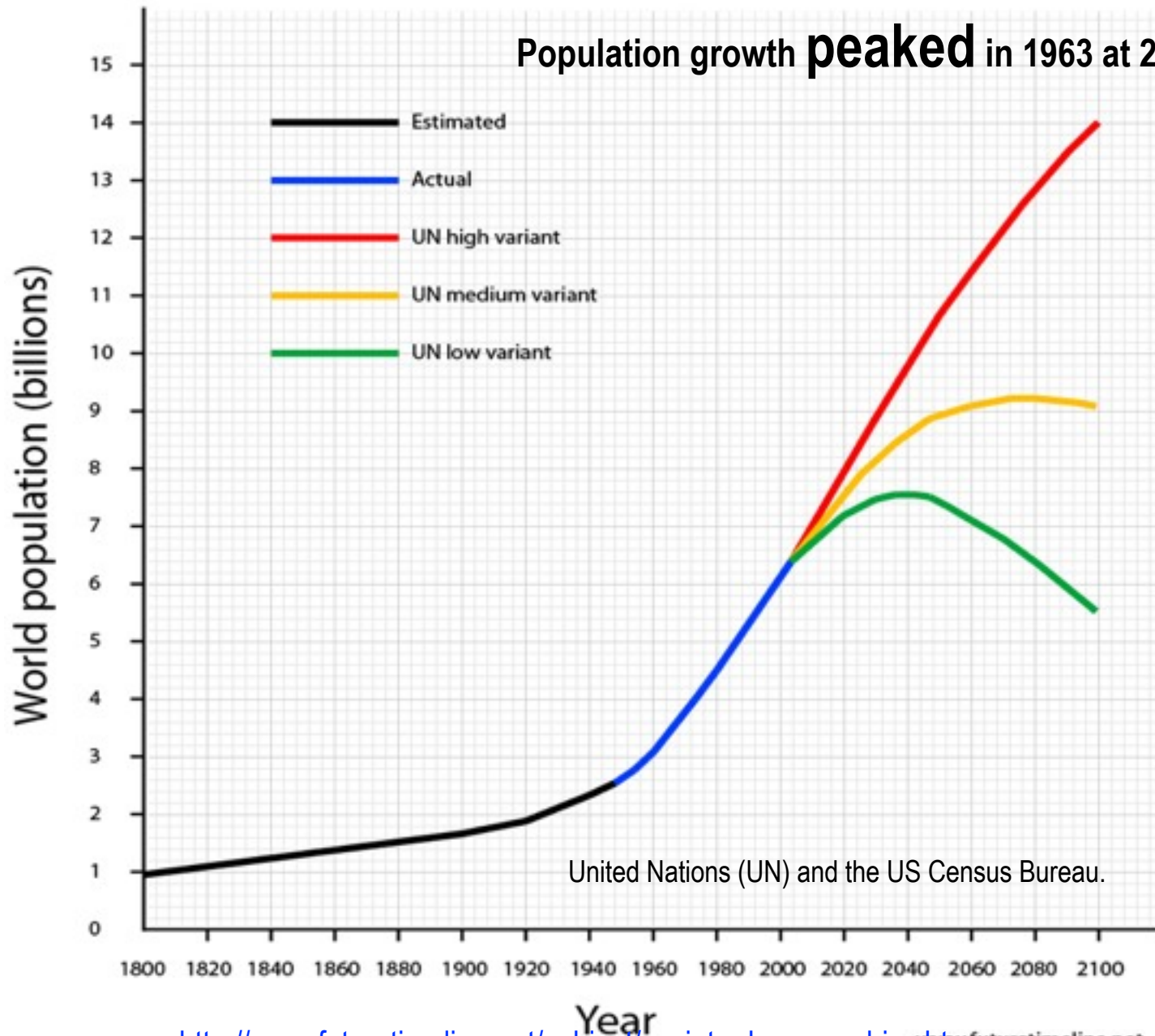
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- There is a “**Factor 4 Challenge**” – double global food production double [2x] and, at the same time, cut fossil fuel inputs in half [1/2]
- **Consider:** Canada is the most trade dependent [export – import] nation of the G-8 – particularly in agriculture ... what is our future? – **for supply managed sectors?**

# Population Growth and Food Supply



<http://prorev.com/populate.htm>

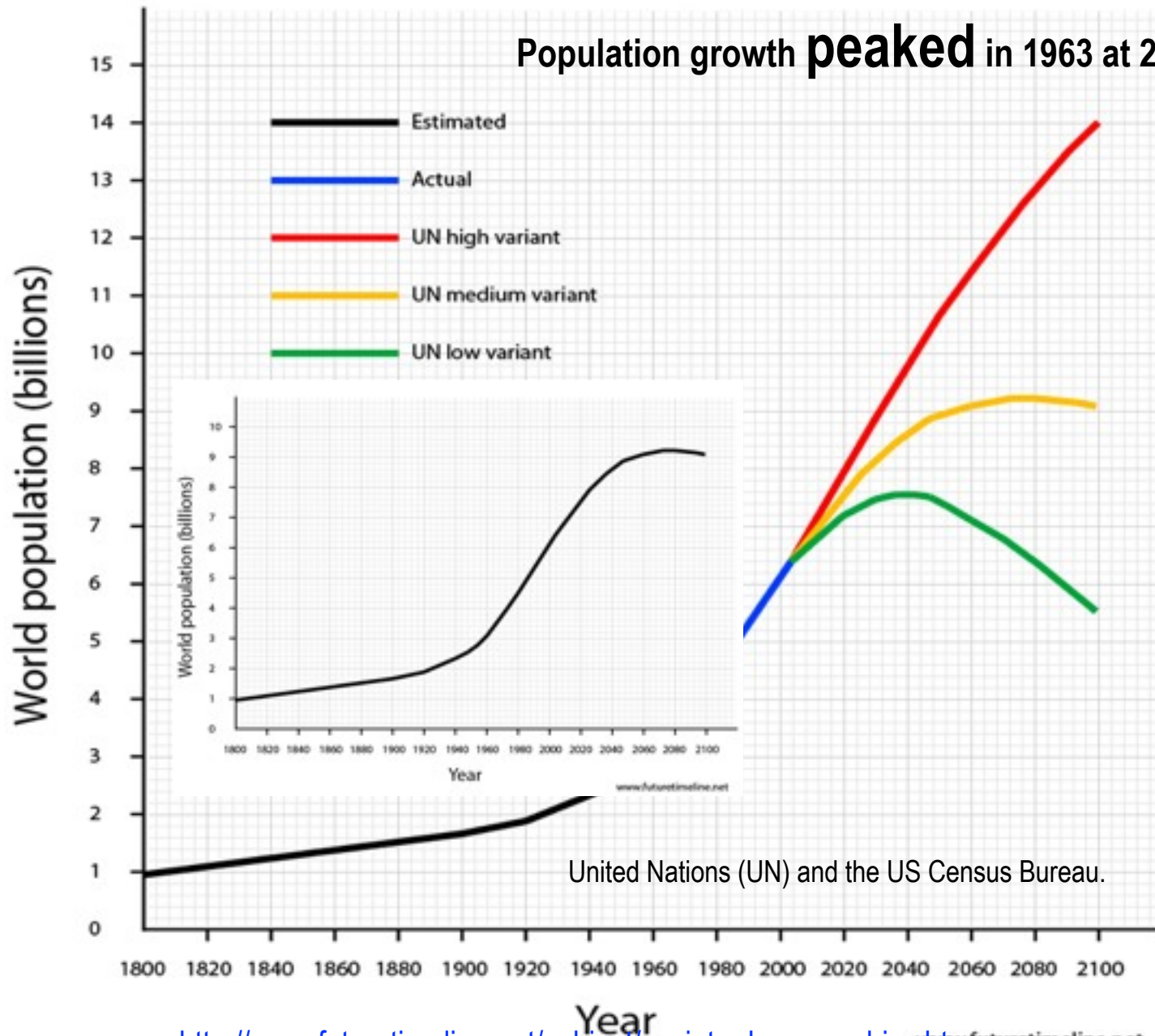
Population growth **peaked** in 1963 at 2.2%



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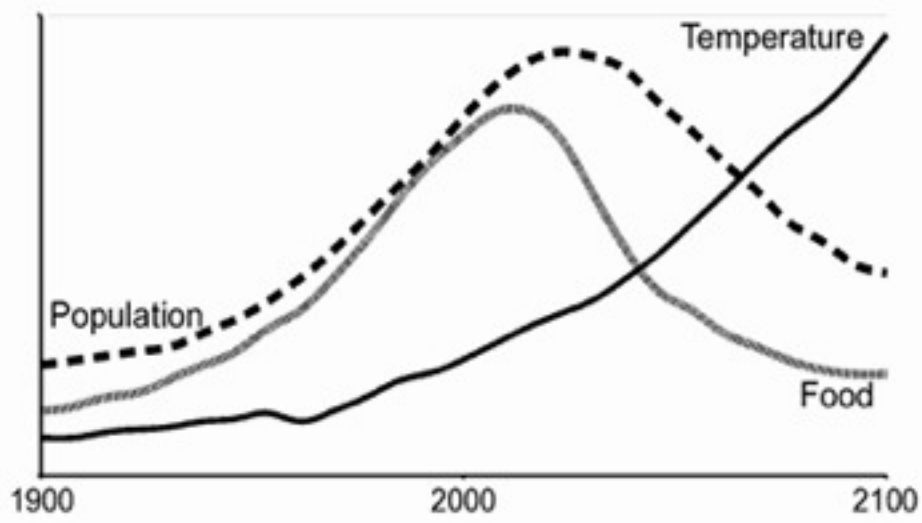
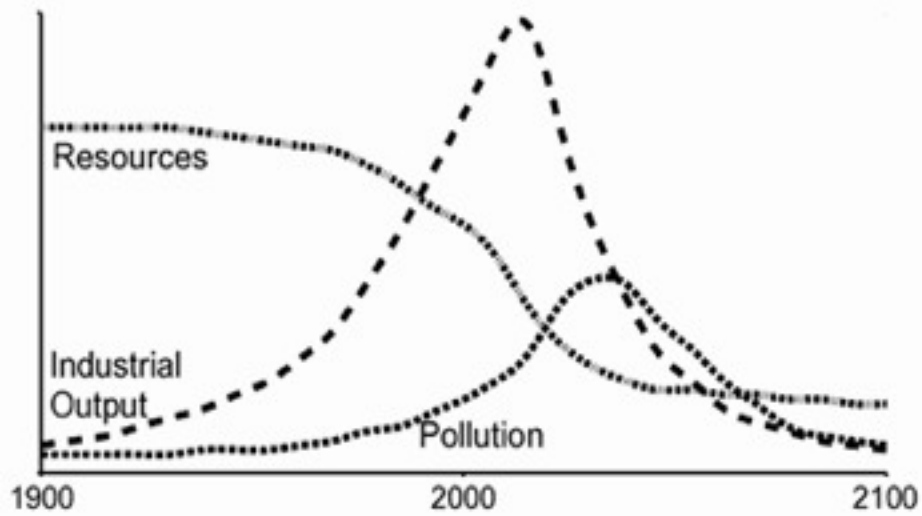


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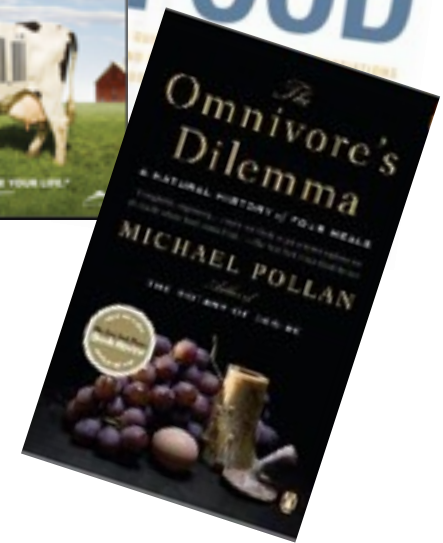
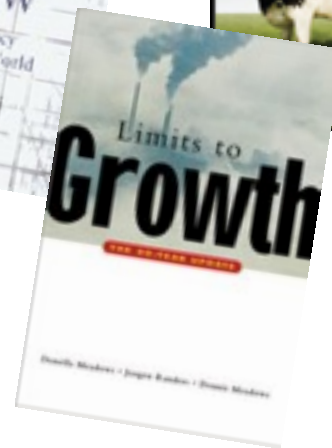
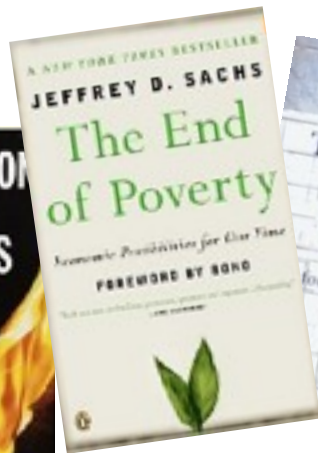
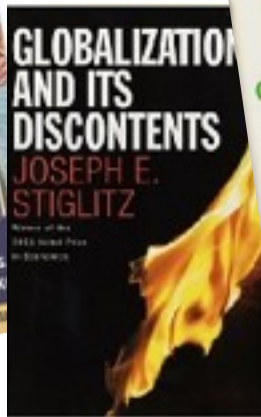
<http://www.futuretimeline.net/subject/society-demographics.htm>



# Sustainability – Economic & Environmental



[http://www.mnforsustain.org/meadows\\_limits\\_to\\_growth\\_30\\_year\\_update\\_2004.htm](http://www.mnforsustain.org/meadows_limits_to_growth_30_year_update_2004.htm)



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# Food Scarcity – Food Security?

Non-farmers and “non-agricultural” people are determining the direction of agriculture, farm production, science and technology.

**What do farmers and farm organizations say and do?**



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# Lots of speculation on the future of food



*“When you two have finished arguing your opinions, I actually have data!”*

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# Food Scarcity – A Myth?

Is the world facing a potential food scarcity challenge? In this article, Al Scholz looks at the facts, and potential solutions, to this very important issue



# Who will (or How to) feed the World?

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## Yield increase

- FSU can **double** yields (currently one-half the yields of Canada)
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- Food loss in developing nations
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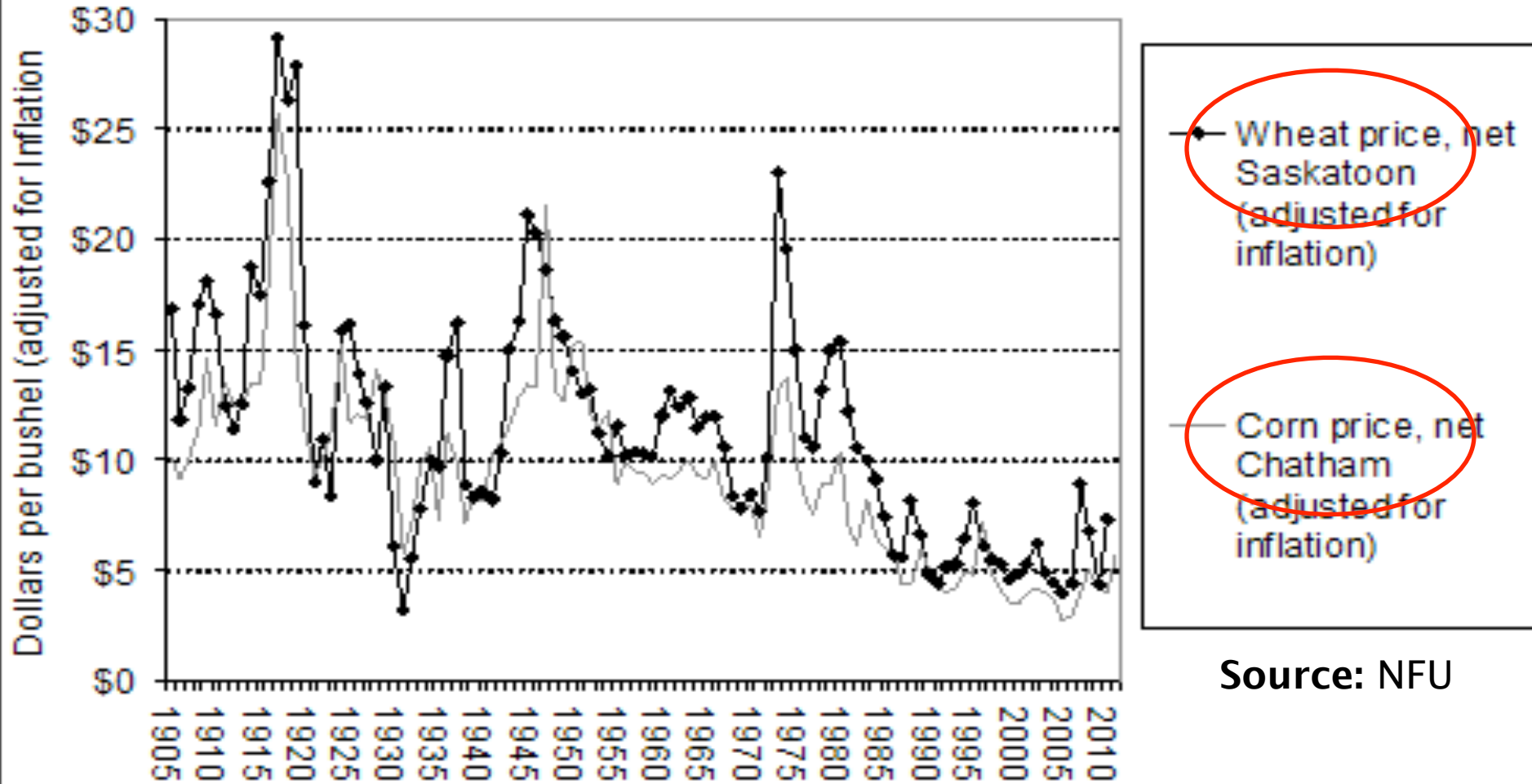
## Improved Technology

- Gene revolution
- Reduced use of petroleum-based inputs with bio-based products
- Improved water use for irrigation for crops and forage

# The Global Commodity Price Trends

## Real Wheat and Corn Prices (1905 to 2011)

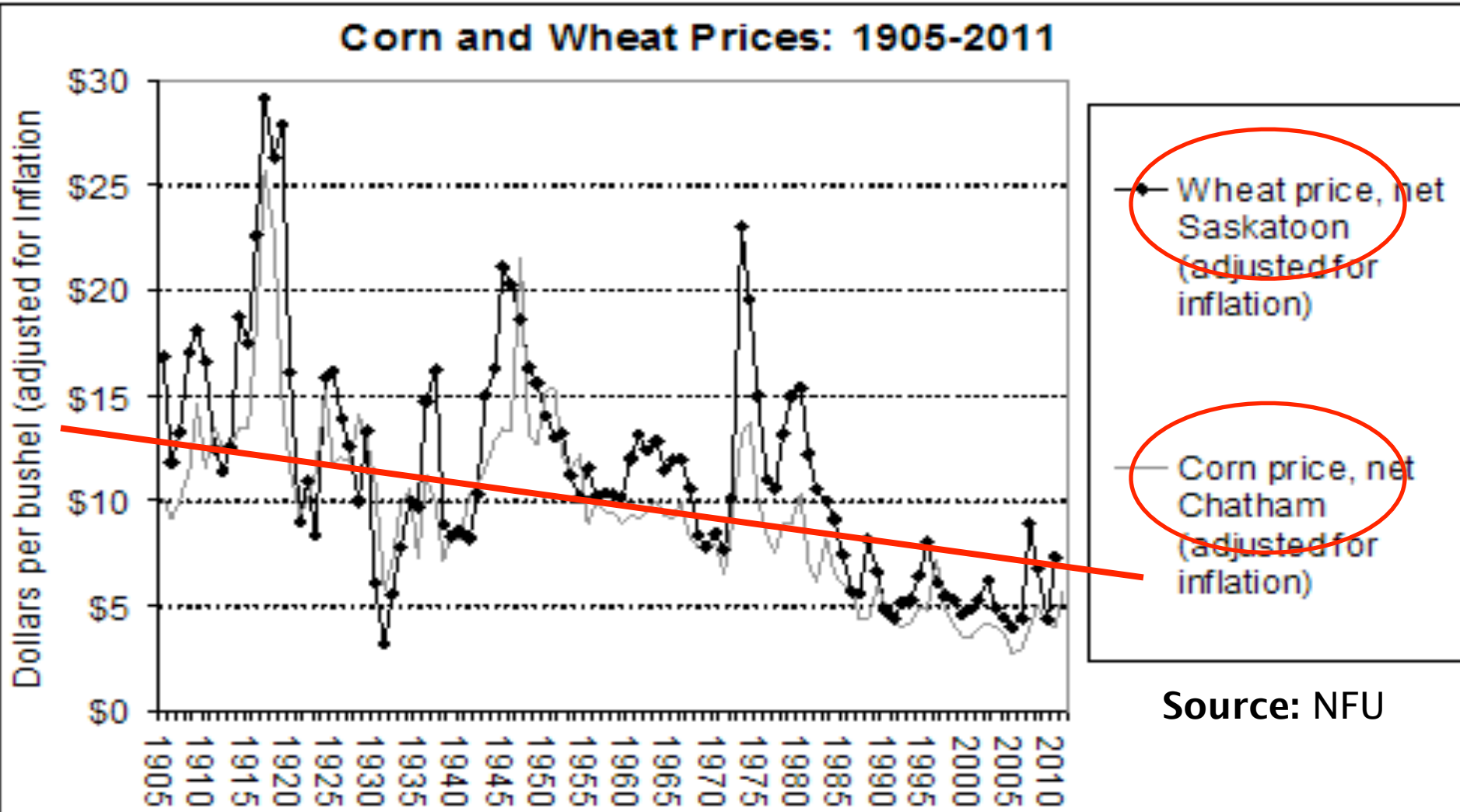
Corn and Wheat Prices: 1905-2011



Source: NFU

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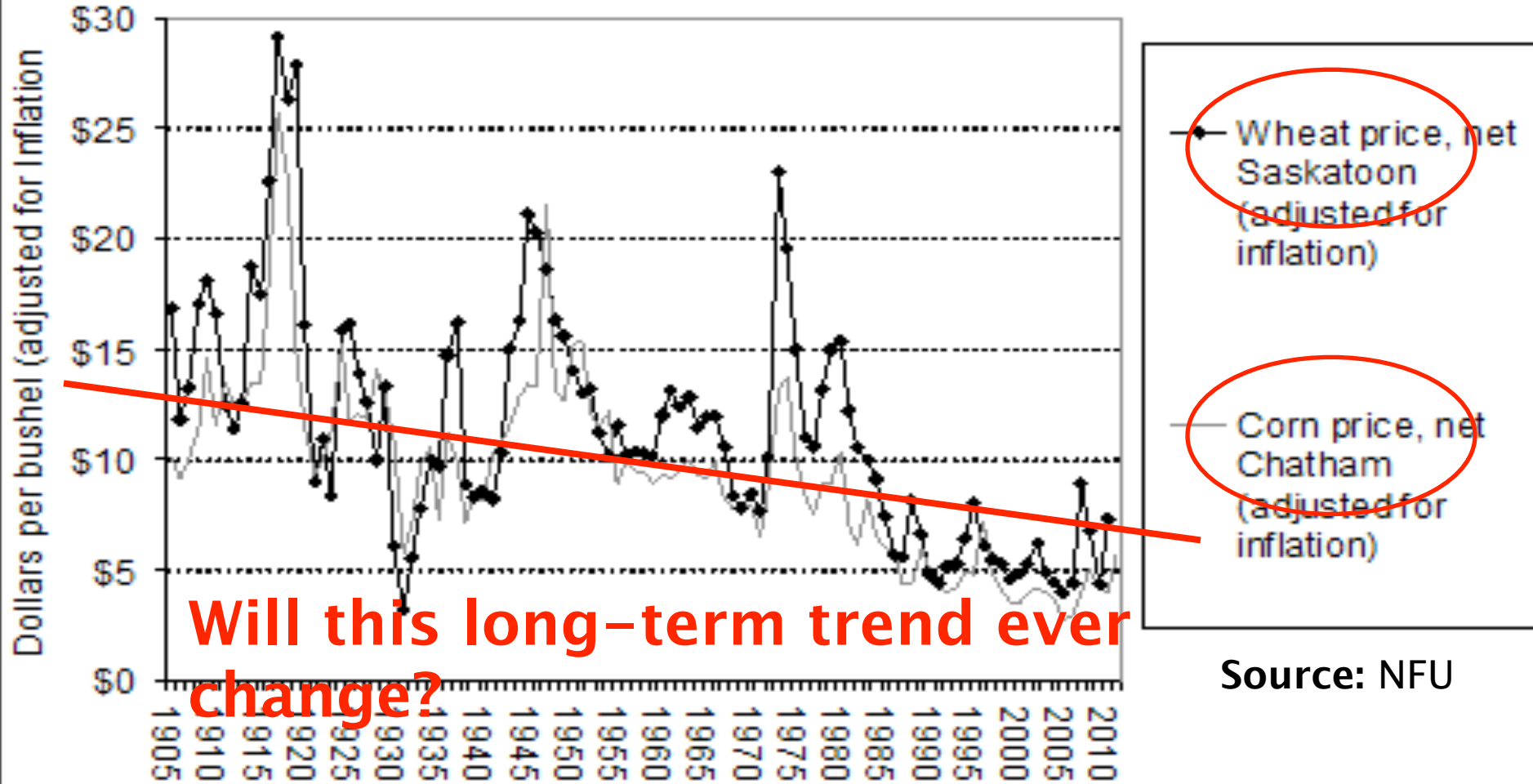
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Corn and Wheat Prices: 1905-2011



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Corn and Wheat Prices: 1905-2011



# Russian, Kazakhstan & Ukraine

## The Former Soviet Union (FSU)



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**REMEMBER:** Even if you sell locally, you must compete with global suppliers!

# The Emerging BRIC Countries

## Global Competition



# The Emerging BRIC Countries



Can farmers produce enough food sustainably?

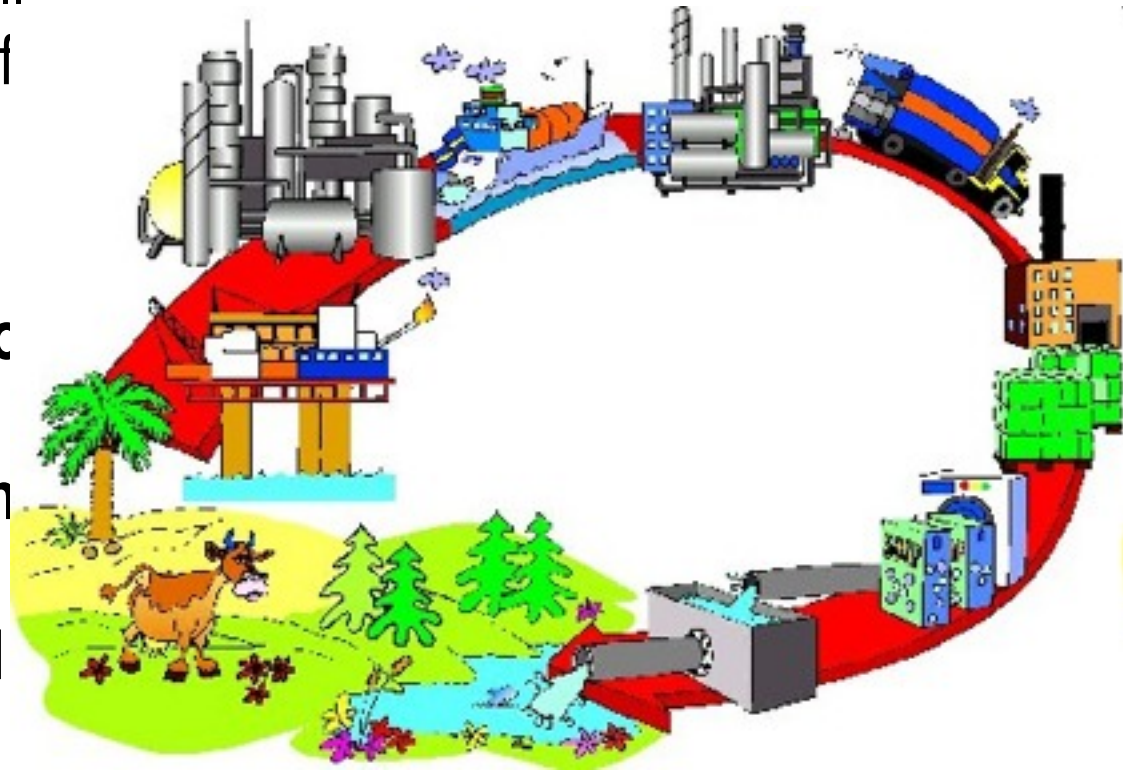
**Environmental Management**

**Food Miles – Buy Local**

**Life Cycle Assessment**

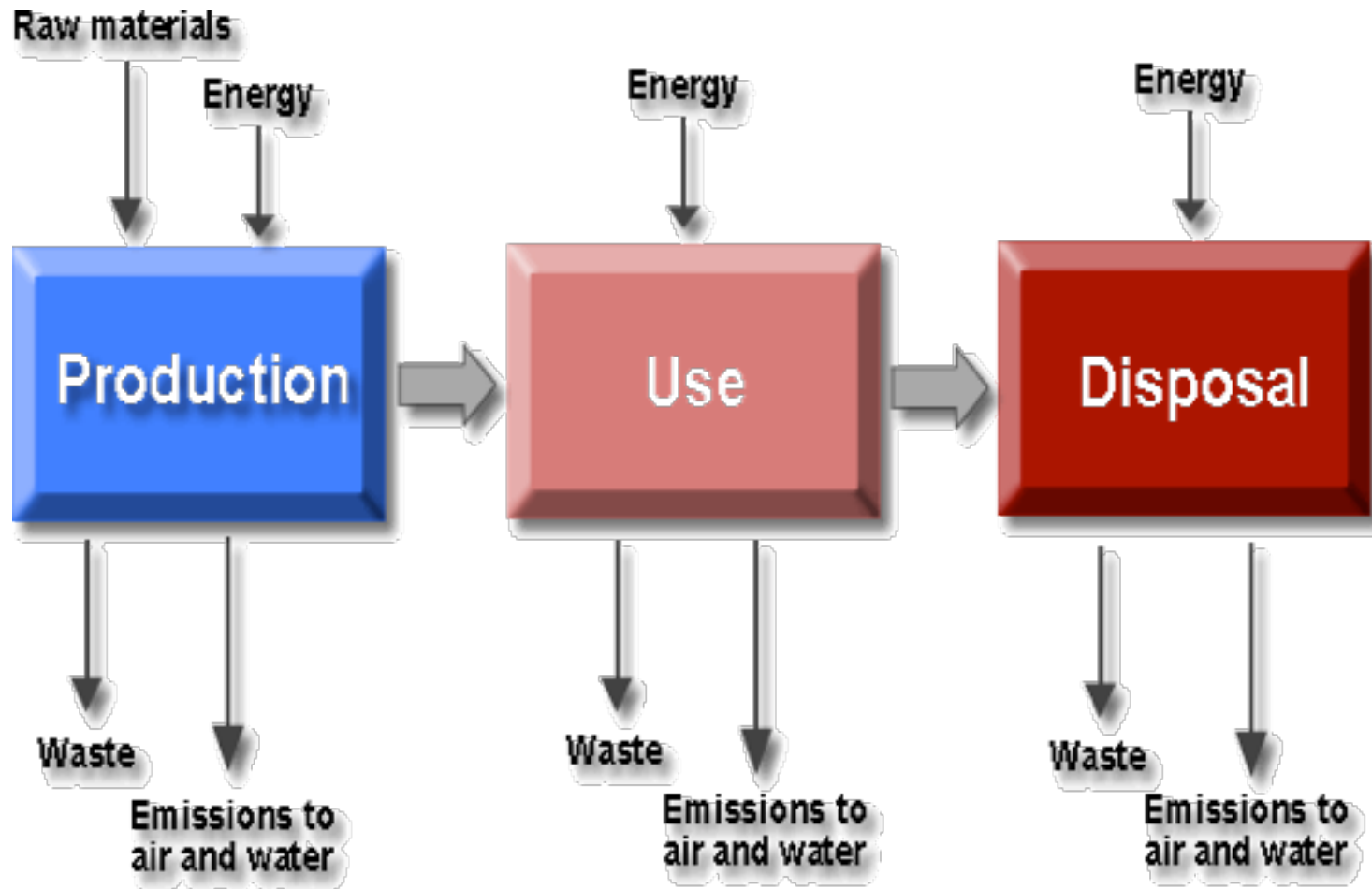
# The Future of Agriculture will be Monitored and Measured

- **Life Cycle Assessment** will soon be the “**new math**” of business and farming.
- It will create a **new battle for market share** and provide prairie farms with a **new kind of marketing opportunity** that will transform how food produced and marketed.



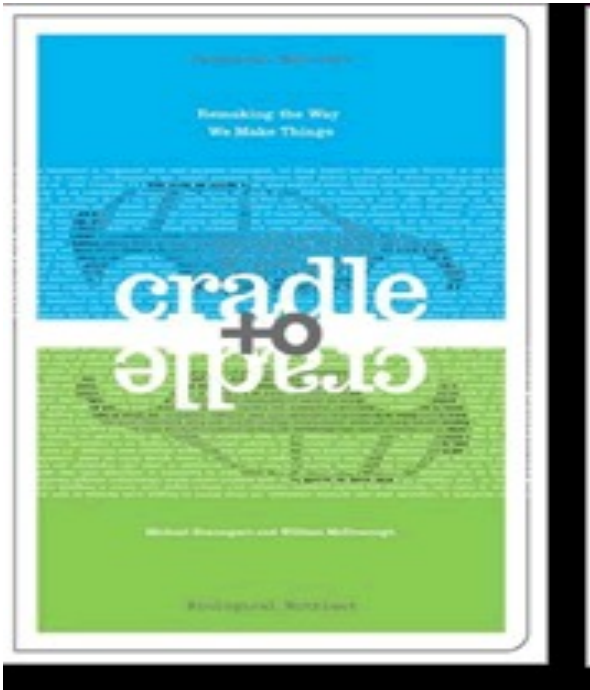
Source: <http://www.leopold.iastate.edu/research/marketing.htm>

# Life Cycle Assessment Tool



# LCA = Transforming to Recover, Re-Use, Re-Cycle

## Closing the Cycling Loop



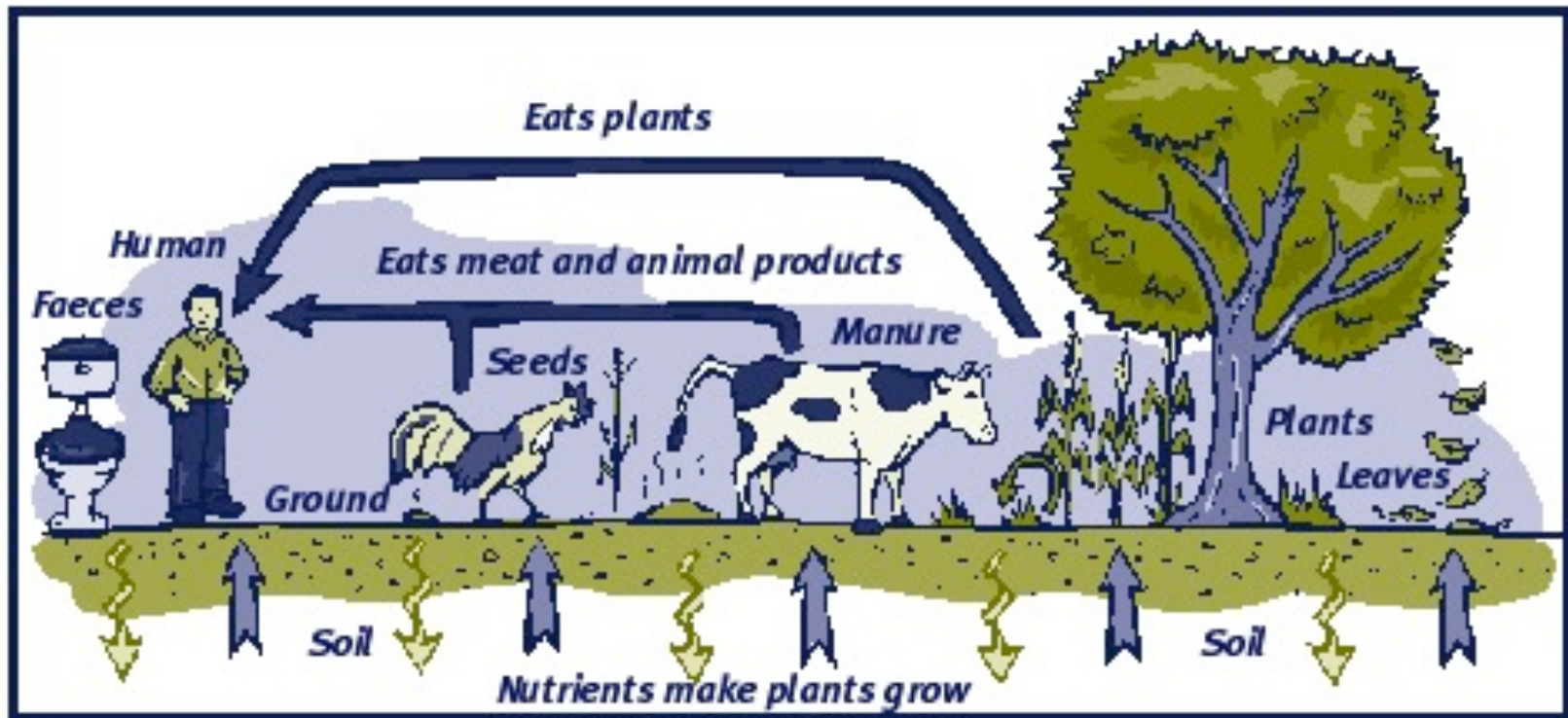
- Track material & energy flow
- Recover, reuse, recycle
- Eco-efficiency
- Xerox, HP, BMW

It aims to change the linear “**cradle to grave**” flow of materials and energy to a “**cradle to cradle**” loop.

[http://www.mcdonough.com/cradle\\_to\\_cradle.htm](http://www.mcdonough.com/cradle_to_cradle.htm)

# How does this apply to Agriculture ... and Food?

**Question:** Is it possible to “close the loop” in food production in Canada or continue to export and import?





# The Food “Foot Print”

## Are we sustainable?

# Farmers Carbon Footprint



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# Farmers Carbon Footprint



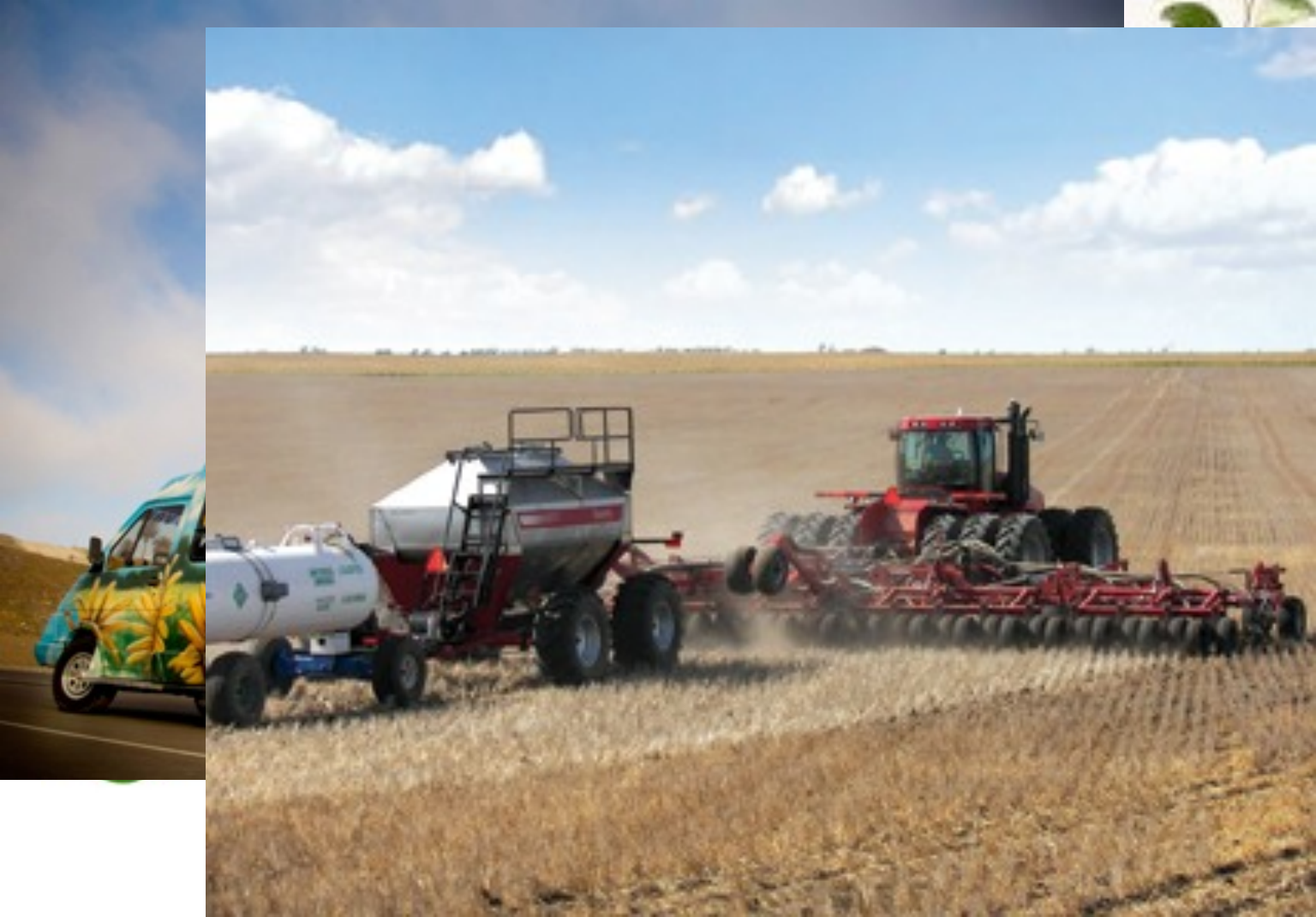
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ENVIRONMENT | BUY LOCAL

# Buy-local not necessarily best for environment

**Food miles concept challenged** | Eighty-three percent of the food sector's greenhouse gases are generated during production, while only 11 percent comes from transportation

BY BARRY WILSON

OTTAWA BUREAU

Consumers who support "buy local" campaigns because they think it is better for the environment and the local economy are wrong, an analysis published by the Montreal Economic Institute reports.

University of Toronto associate geography professor Pierre Desrochers, working with consultant Hiroko Shimizu, argued that the distance it takes to transport food to the store from the farm should not be the sole calculation for the impact of food on greenhouse gas emissions.

Buy-local advocates cited these "food miles" as a reason to discourage purchase of food that has been imported, often from distant countries.

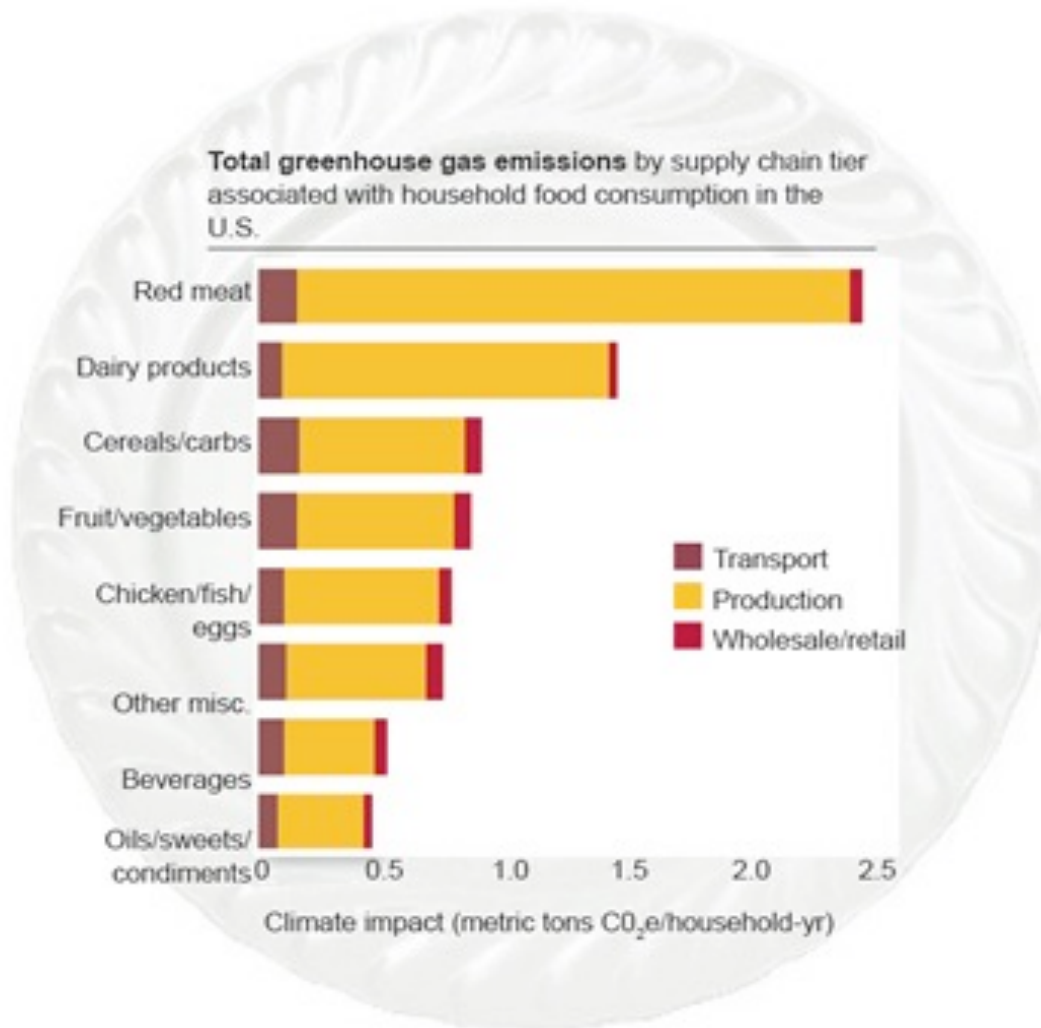
"The appeal of the food miles perspective, with its promise to reconnect people with food, neighbouring producers and seasonality, while delivering environmental, economic, health and social benefits is understandable," he wrote.

"However, the expected environmental advantages of buying food locally are often based on an improper assessment of the overall sources of greenhouse gas emissions in the food production and distribution process, as well as a misunderstanding of the advantages of geographic



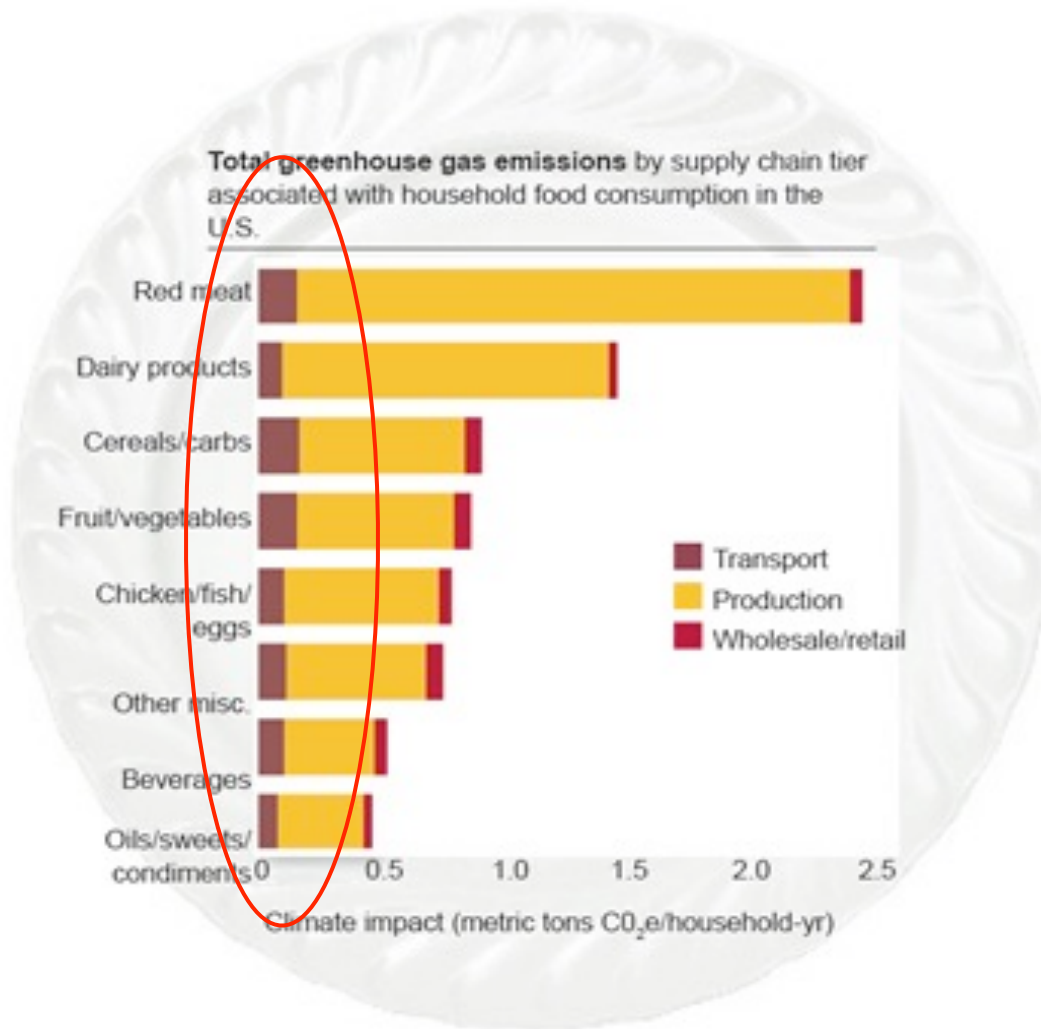
A recent study suggests that buying local may not be any greener than buying from grocery store chains. | FILE PHOTO

# What about food miles?



© iStockphoto.com/Marc Diezich

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© iStockphoto.com/Marc Diezich

# Life Cycle Analysis

the “new math” or “measuring stick”



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The paper cup has an environmental footprint  
36x more electricity than Styrofoam  
And 58x more wastewater.

# Disposable Diapers vs Cotton Diapers

## Life Cycle Assessment – Cradle to Grave



**Source:** <http://www.babybirthbasics.com/the-diaper-debate-cloth-vs-disposable>

# Life Cycle Analysis

## New Zealand Lamb VS. Local UK Lamb




[http://dSPACE.lincoln.ac.nz/dSPACE/bitstream/10182/125/1/aeru\\_rr\\_285.pdf](http://dSPACE.lincoln.ac.nz/dSPACE/bitstream/10182/125/1/aeru_rr_285.pdf)

# What's Canada's Sustainable Advantage? Google "Alberta Beef Life Cycle Analysis"





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**FINAL REPORT**

**EVALUATING ENVIRONMENTAL AND ECONOMIC  
IMPACT FOR BEEF PRODUCTION IN ALBERTA  
USING LIFE CYCLE ANALYSIS**

**Prepared For:**  
ALBERTA AGRICULTURE AND RURAL DEVELOPMENT  
POLICY AND ENVIRONMENT  
ECONOMICS AND COMPETITIVENESS  
ECONOMICS BRANCH

**Funded By:**  
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April 2010  
Fax no. 057566 (3)

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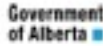



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PHASE 2**

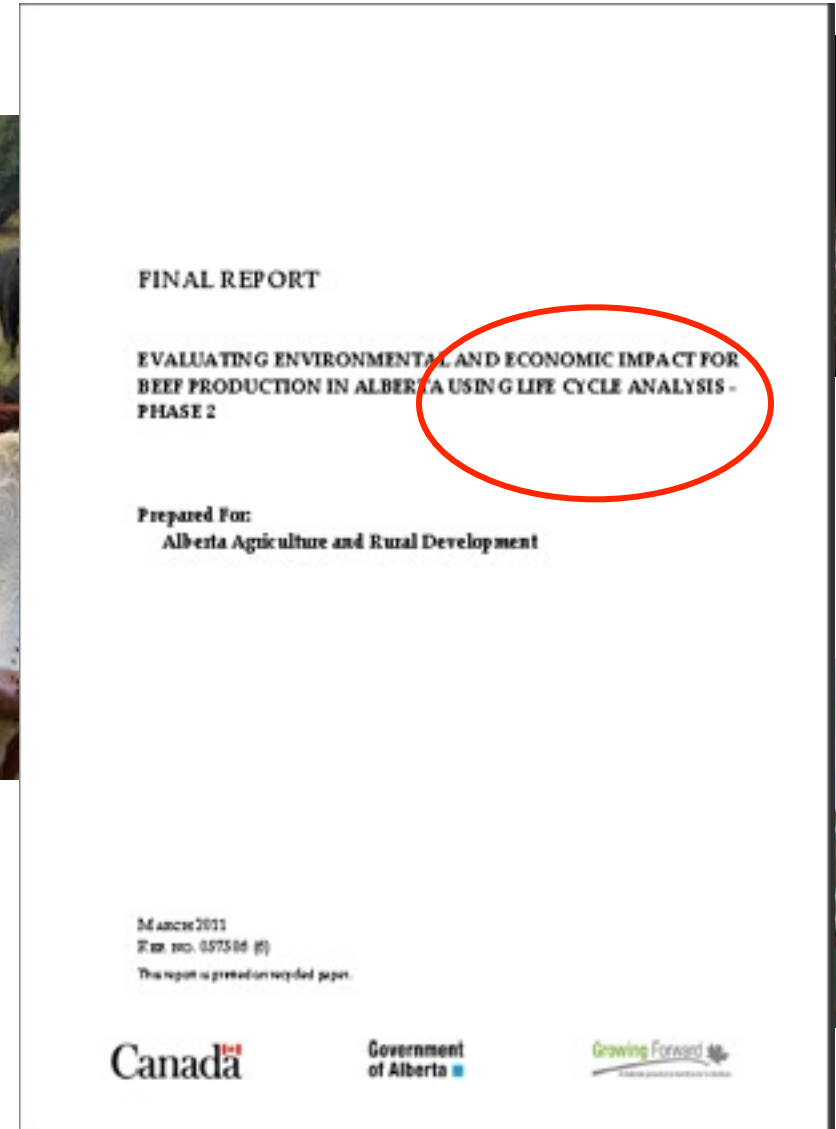
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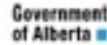

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- use of additives to improve feed efficiency
- reducing age to slaughter

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- crop inputs
- water use
- nutrient use – N & P
- grazing and feed
- tracing delivery of live shrunk animals to the packer

BP for to reducing footprint

- use of high quality forages
- extending grazing alternatives
- use of legumes in grazing
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# Next Consumer Trend ...

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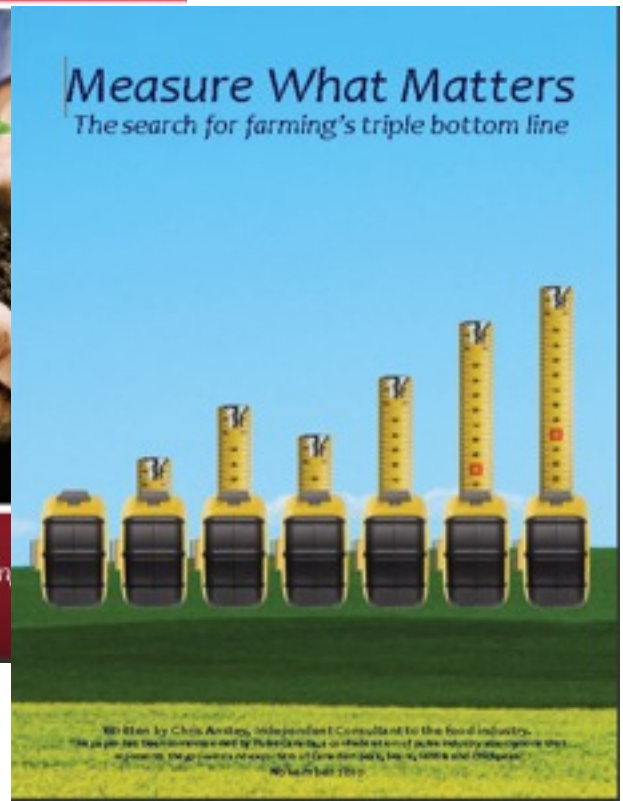
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- detailed record keeping

Four elements are emerging as the highest priorities for measuring environmental sustainability:

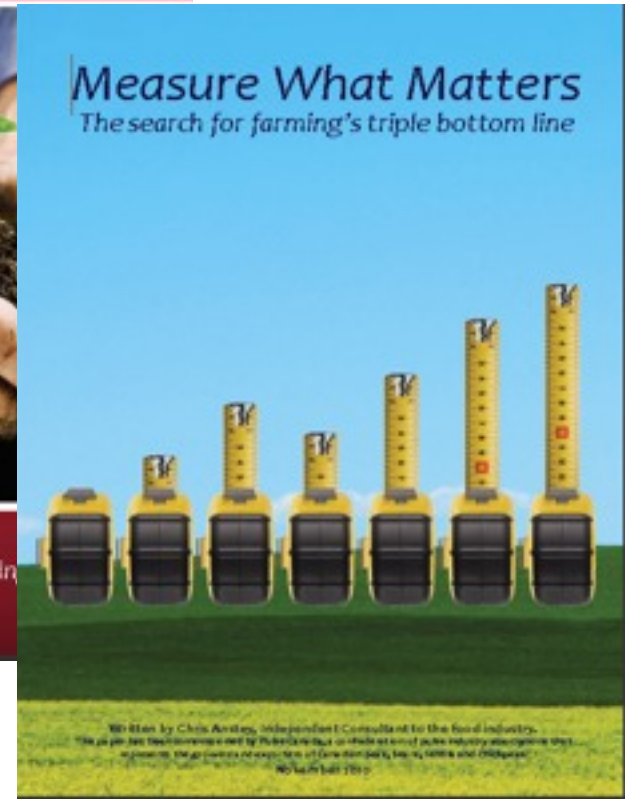
- (a) greenhouse gas (GHG) emissions
- (b) impacts on water
- (c) impacts on biodiversity
- (d) indicators of soil health.



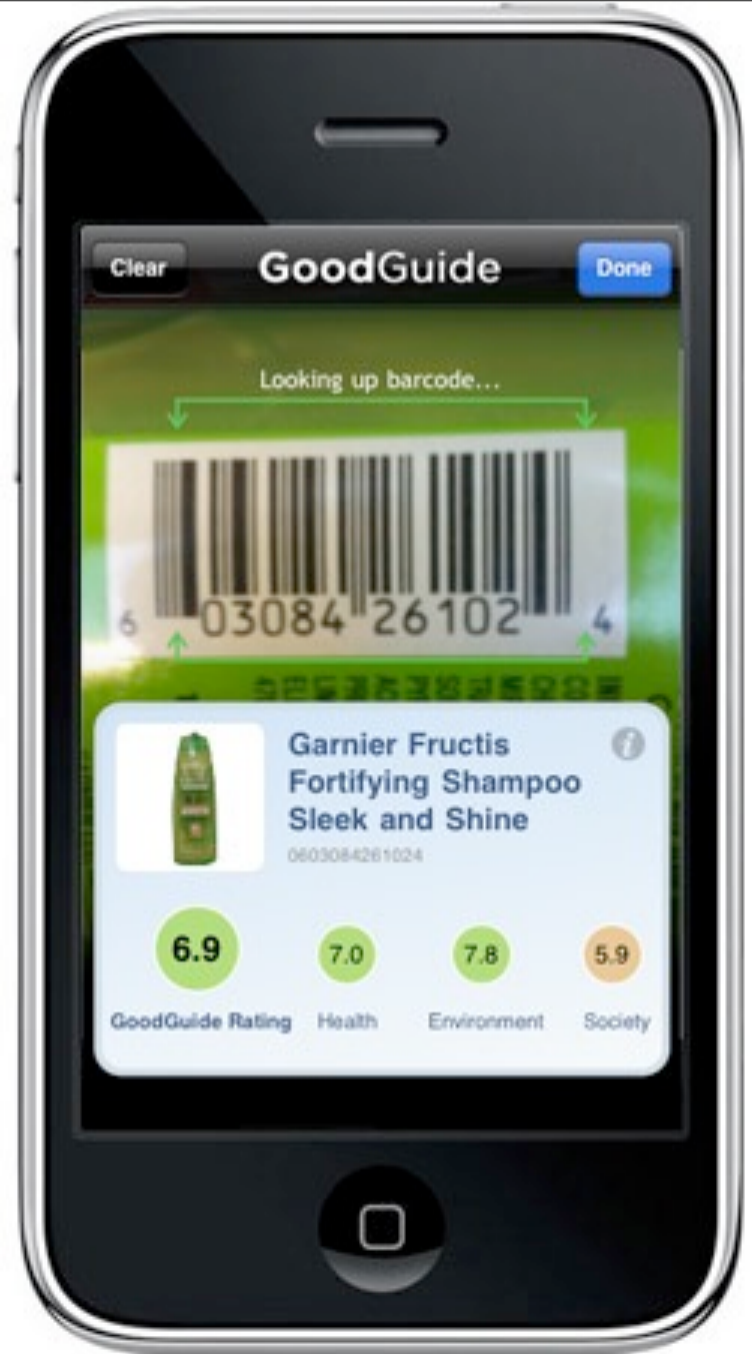
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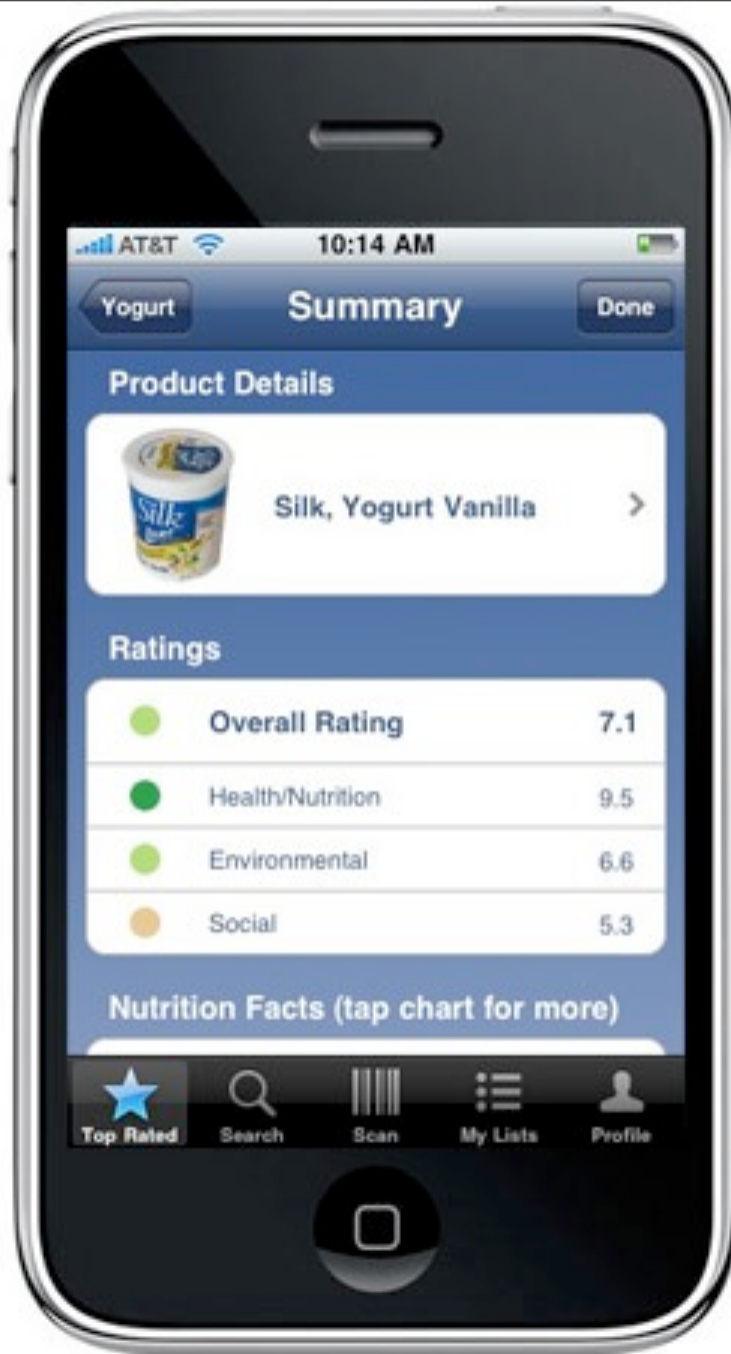
Consumers will tell us



# Good Guide



gement Group



gguide shampoo

Top Brands in Shampoo  
 1 Tom's of Maine 9/10  
 2 Burt's Bees 9/10  
 3 Nurture My Body 8/10

Reply  
 1-3: Products  
 i: Ingredients to avoid  
 m: More brands



CUB



# The Good, the Bad and the ....



- **Good Guide** an assertive company giving preference to those they consider “green”

# Walmart Global “Sustainability Index”

Created a worldwide sustainability index initiative

1. More transparent supply chain
2. Drive product innovation and
3. Provide customers with information to assess product sustainability

**Requesting (require) it's 100,000 global suppliers to comply**

**Database is independently managed by U of Arkansas & Arizona State**



# Walmart Global Sustainability Index

## 1. Supplier Assessment of:

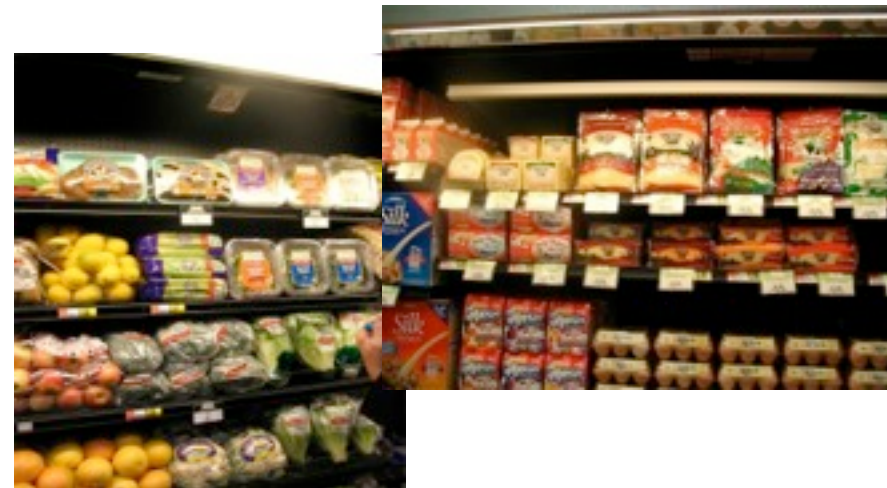
- Energy and climate
- Material efficiency
- Natural resource use
- People and community

## 2. Life Cycle Assessment database

- Raw materials to disposal
- Energy use – GHG emissions

## 3. Simple tool for customers

- To be developed



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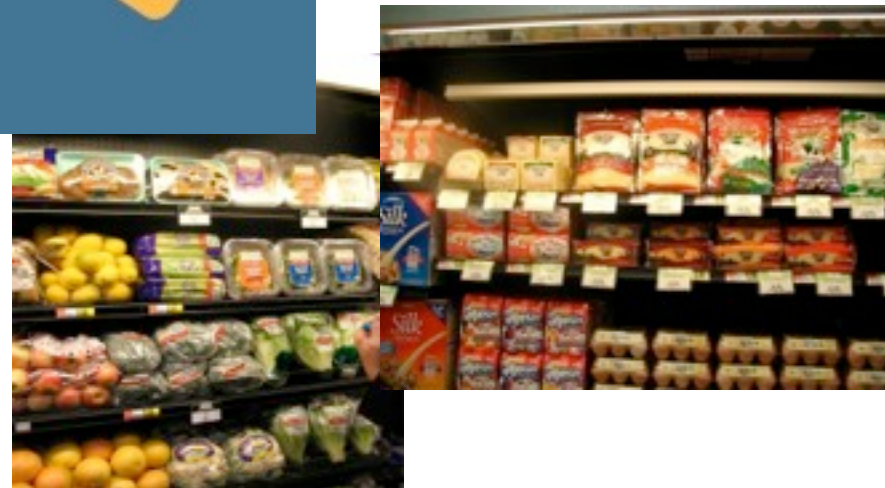
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# Walmart Global Sustainability Index

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- Materials
- National
- People and communities

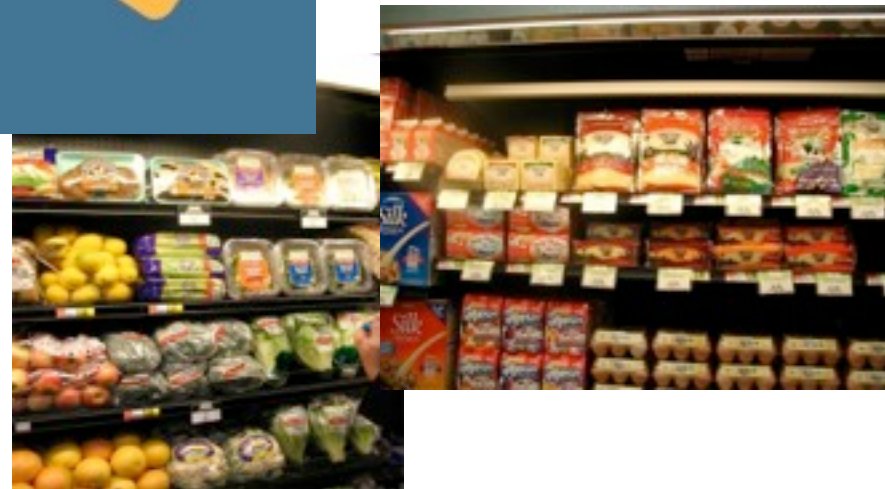


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SAFEWAY

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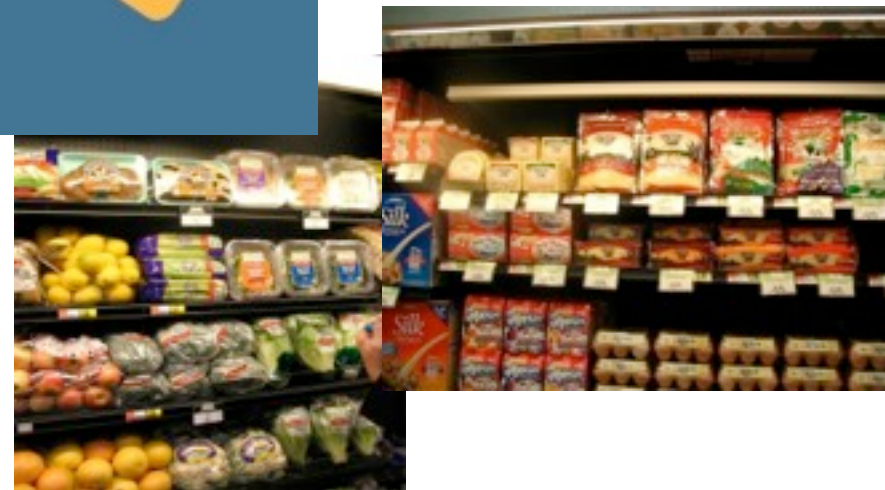


3. Simple tool for customers

- To be developed



Food Co-op



# Walmart Global Sustainability Index

1. Supplier of:
  - Energy
  - Materials
  - Natural Resources



Supplier of:



Food Co-op



Alberto Culver



ent Group

# Walmart Global Sustainability Index

1. Suppliers
  - Environmental
  - Material
  - Natural Resources





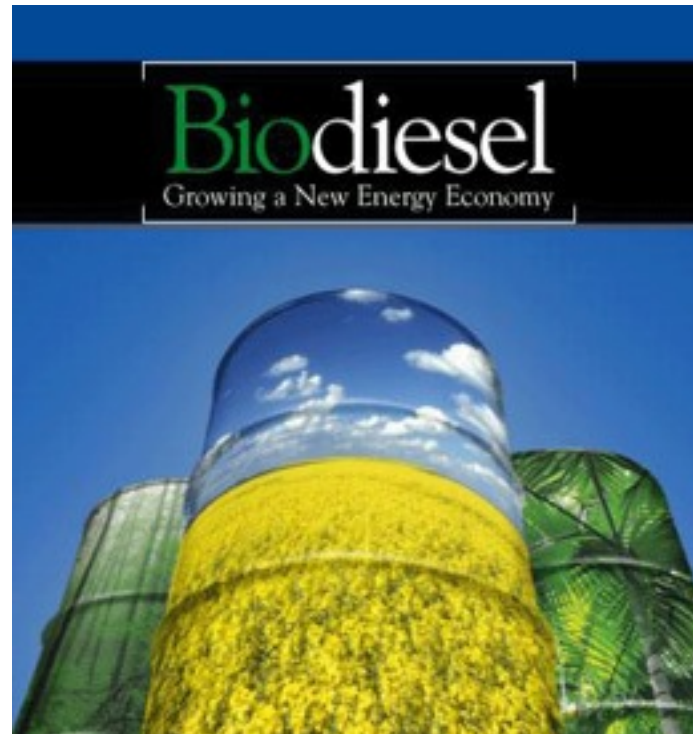
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1. Sup
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  - Mat
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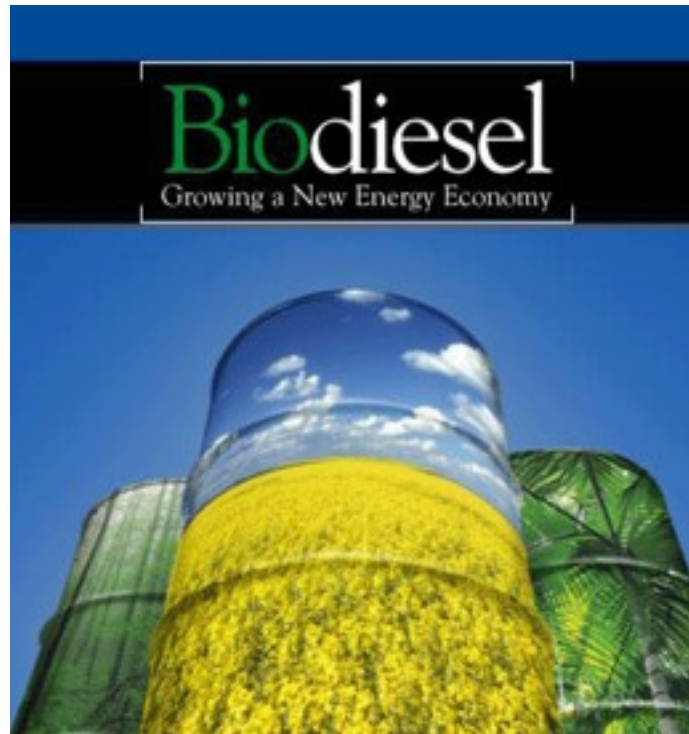


# Certification is Coming to Your Farm

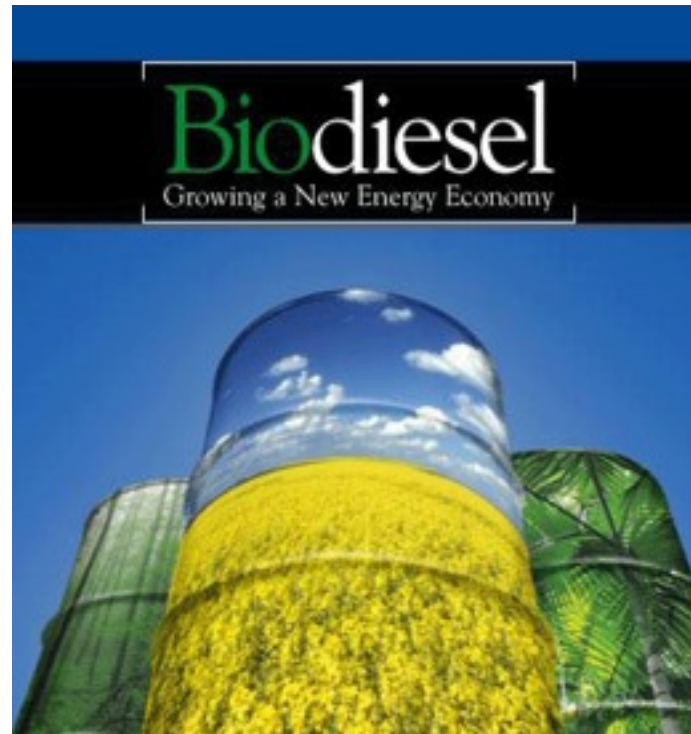
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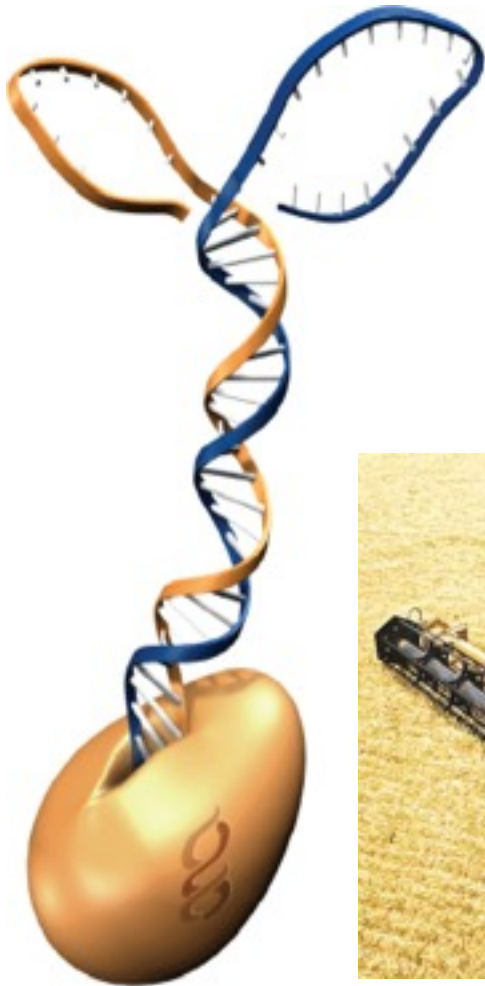
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# Certification is Coming to Your Farm



# Can farmers produce enough food sustainably?



<http://www.erieinnovation.com/genhome.html>

# Who will feed the World – INNOVATION in Food Security

- Urban agriculture
- Peri-urban agriculture



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**10 PRICIEST VANCOUVER HOMES**



# THE VANCOUVER SUN



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**VANCOUVER CONDOS WITH LOWEST PRICES...**

## Rooftop greenhouse grower finds high-end market for greens

### Plants raised atop parkade delivered by bicycle to nearby restaurants

BY RANDY SHORE, VANCOUVER SUN NOVEMBER 20, 2012

Recommend 0 Tweet 0 +1 0 Pin it ShareThis

A unique mechanized greenhouse operation will deliver its first crop of salad greens, herbs and spinach today and begin to pay back a \$2-million investment.

The greenhouse, perched atop a Richards Street parkade in downtown Vancouver, employs a four-metre-high system of hundreds of suspended trays that move to maximize exposure to natural light and to facilitate harvesting.

Alterrus' vertical greenhouse prototype has been operating in a greenhouse at England's Paignton Zoo for three years, providing food for the animals. But all eyes are on Vancouver to see if the system can turn a profit as a stand-alone business, according to the company's



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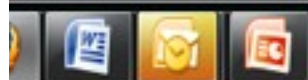
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**YVR OFFERS OVER 2,500 NON-STOP FLIGHTS A WEEK TO MAJOR CITIES AND BUSINESS CENTRES AROUND THE WORLD.**

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- DETROIT DUSSELDORF FORT McMURRAY FRANKFURT
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- NEW YORK ORANGE COUNTY OTTAWA PALM SPRINGS PARIS PHOENIX
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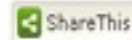


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# Lufa Farms in Montreal

<https://lufa.com/en>



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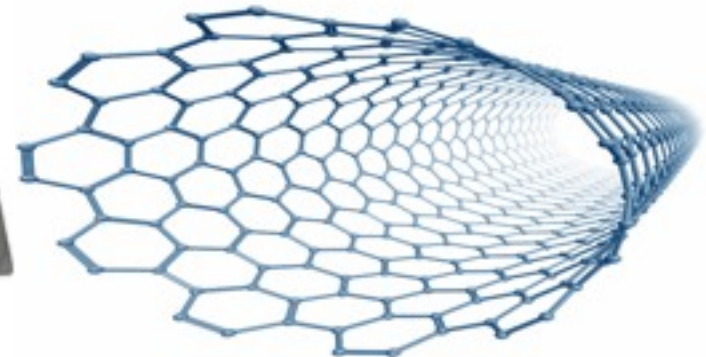
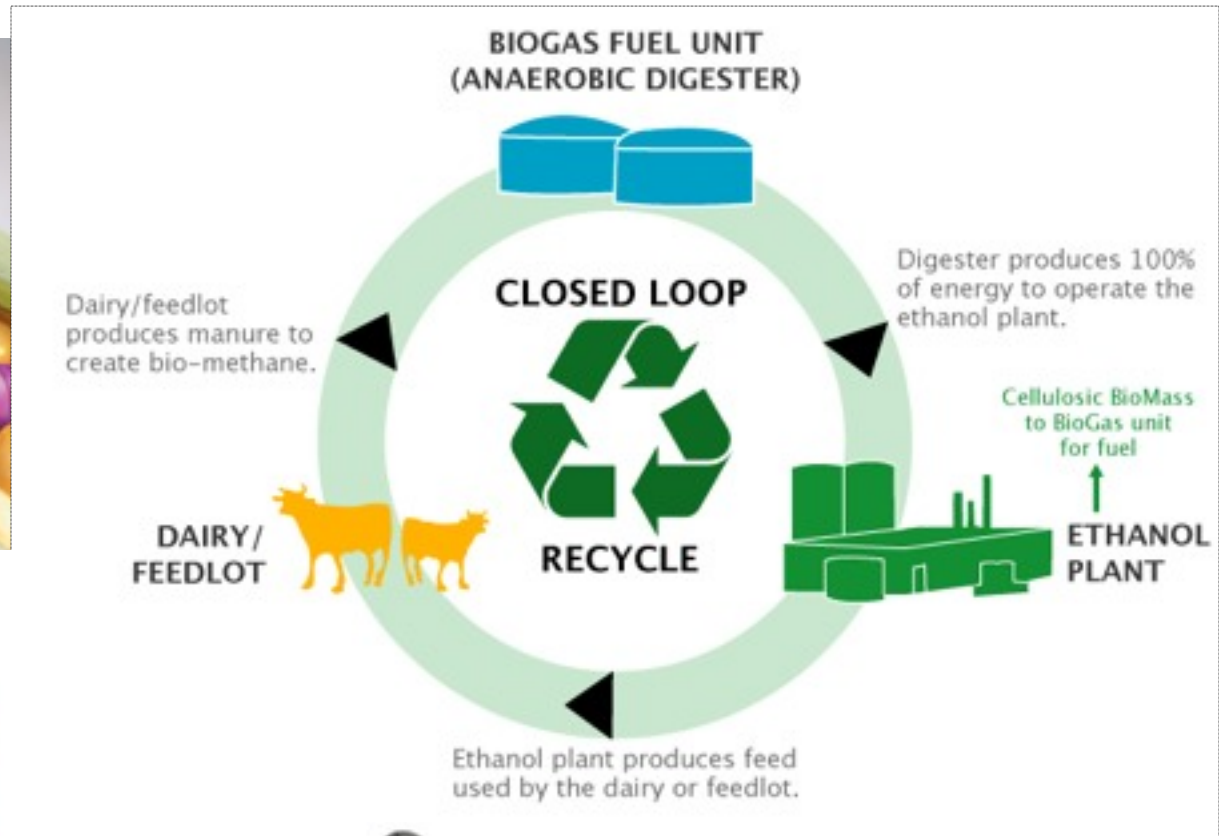


# Alterrus Greenhouse in Vancouver

<http://www.alterrus.ca/>



# How will Agricultural Production Innovate?



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  - **Opportunities** for livestock production & non-food bio-products



# Charles Darwin's Theory of Evolution



# Charles Darwin's Theory of Evolution

## Is it "Survival of the Fittest"?

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It is those "best able" to **adapt to change**

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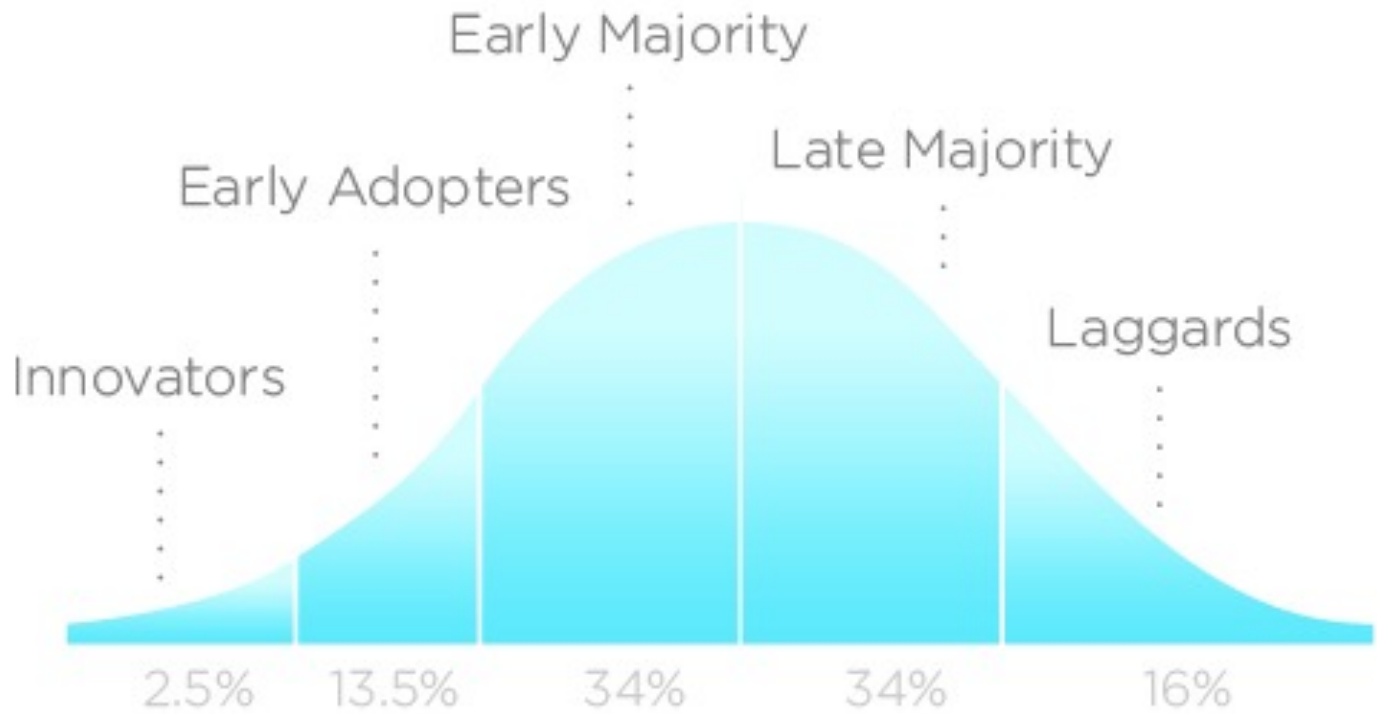
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**INNOVATION!**



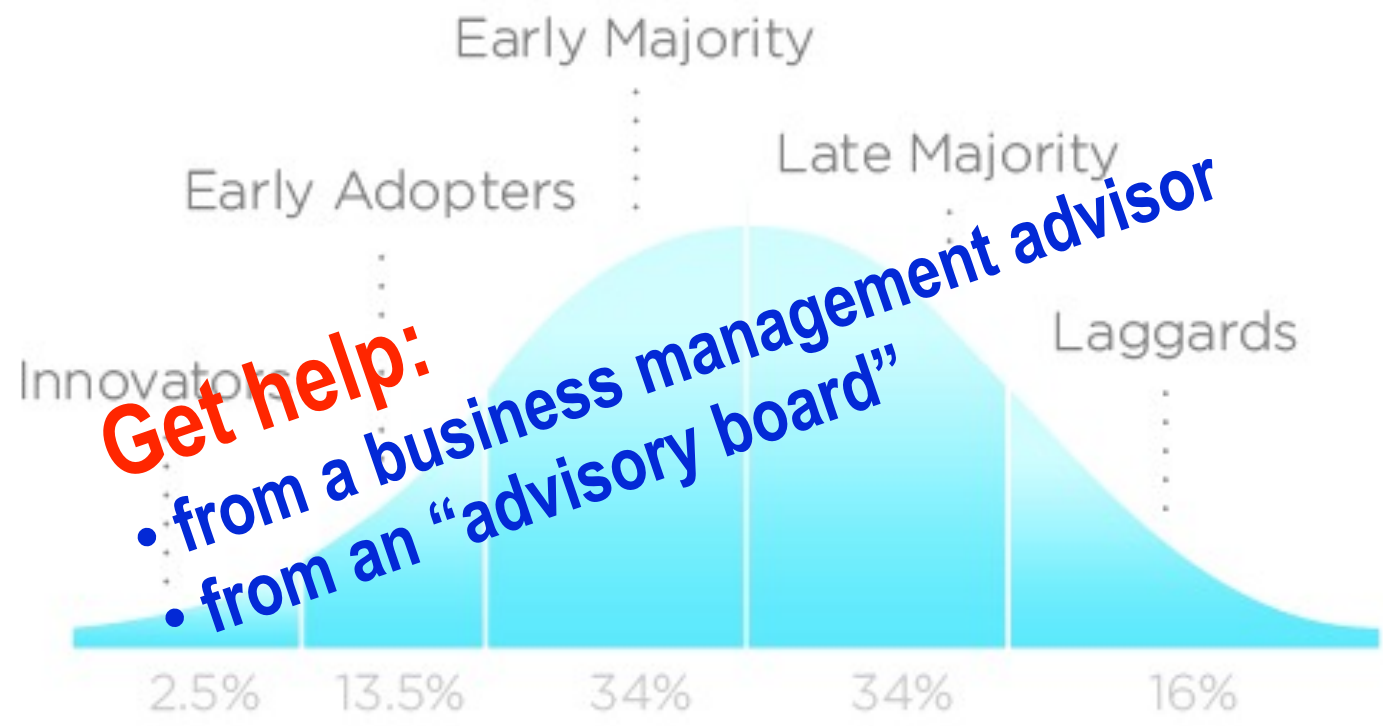
# Where are you on the innovation curve?



## INNOVATION ADOPTION LIFECYCLE

Source: <http://www.theclinegroup.com/>

# Where are you on the innovation curve?



**Get help:**

- from a business management advisor
- from an “advisory board”

## INNOVATION ADOPTION LIFECYCLE

Source: <http://www.theclinegroup.com/>

# *What innovation means for you and your organization*

**Paraphrase quote from Cameron Herold, 1-800-Got-Junk**

*“Make sure that the **change inside** your business is as fast or faster than the **change outside** the business in order to remain **competitive and profitable!**”*

# A Well Fed World: A prospect of plenty!



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