

# World Demand, future risk and where food use is going



# Global Food Demand

- To meet global food demand in 2050, agricultural production must be 60 percent higher by weight than in 2005.

*Alexandratos and Bruinsma, 2012*

# Global Food Demand

- Increases in food demand are due to:
  - population growth,
  - changes in diets,
  - higher incomes
  - and urbanization

# Global Food Demand

- Global agricultural production for commodities in major commodities is projected to grow at 1.5% annually, on average, compared to 2.1% in the previous decade.
- Overall demand for agricultural products (including food, feed, fibre and biofuels) is expected to increase 1.1 percent per year from 2005/07 to 2050, down from 2.2 percent per year in the past four decades.

# Cereals and Oilseed Increases

- World cereals production must increase by 940 million tonnes to reach 3 billion tonnes;
- meat production must increase by 196 million tonnes to reach 455 million tonnes;
- and oilseed crops by must increase by 133 million tonnes to reach 282 million tonnes.

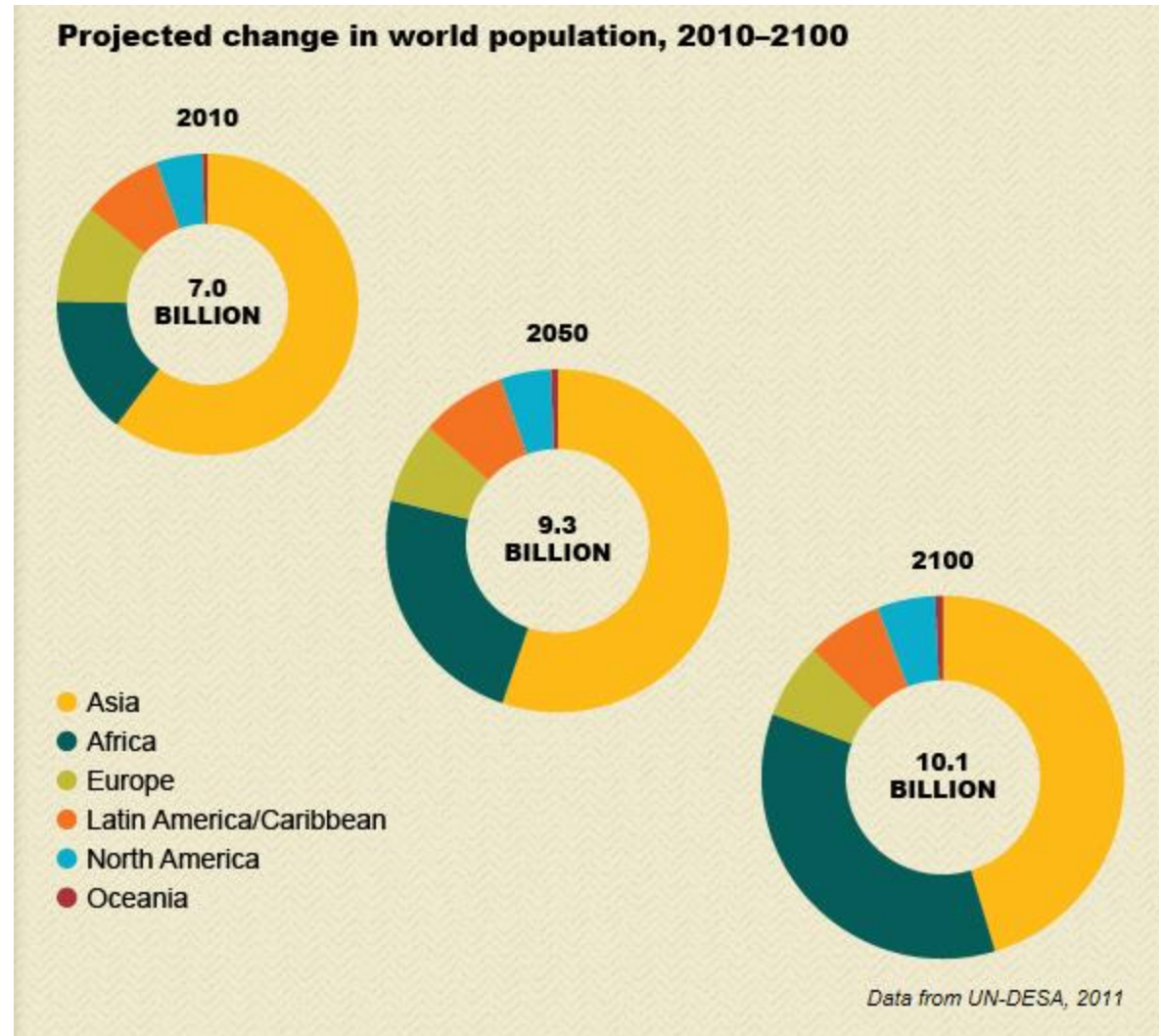
# Canada Share of Global Food Demand

**If the increases are realized**

- Canadian cereals production would need to increase **28.2 MMT by 2050;**
- Canadian oilseed production by **5.87 MMT**

# Population

- The world population, is forecasted to increase 32%



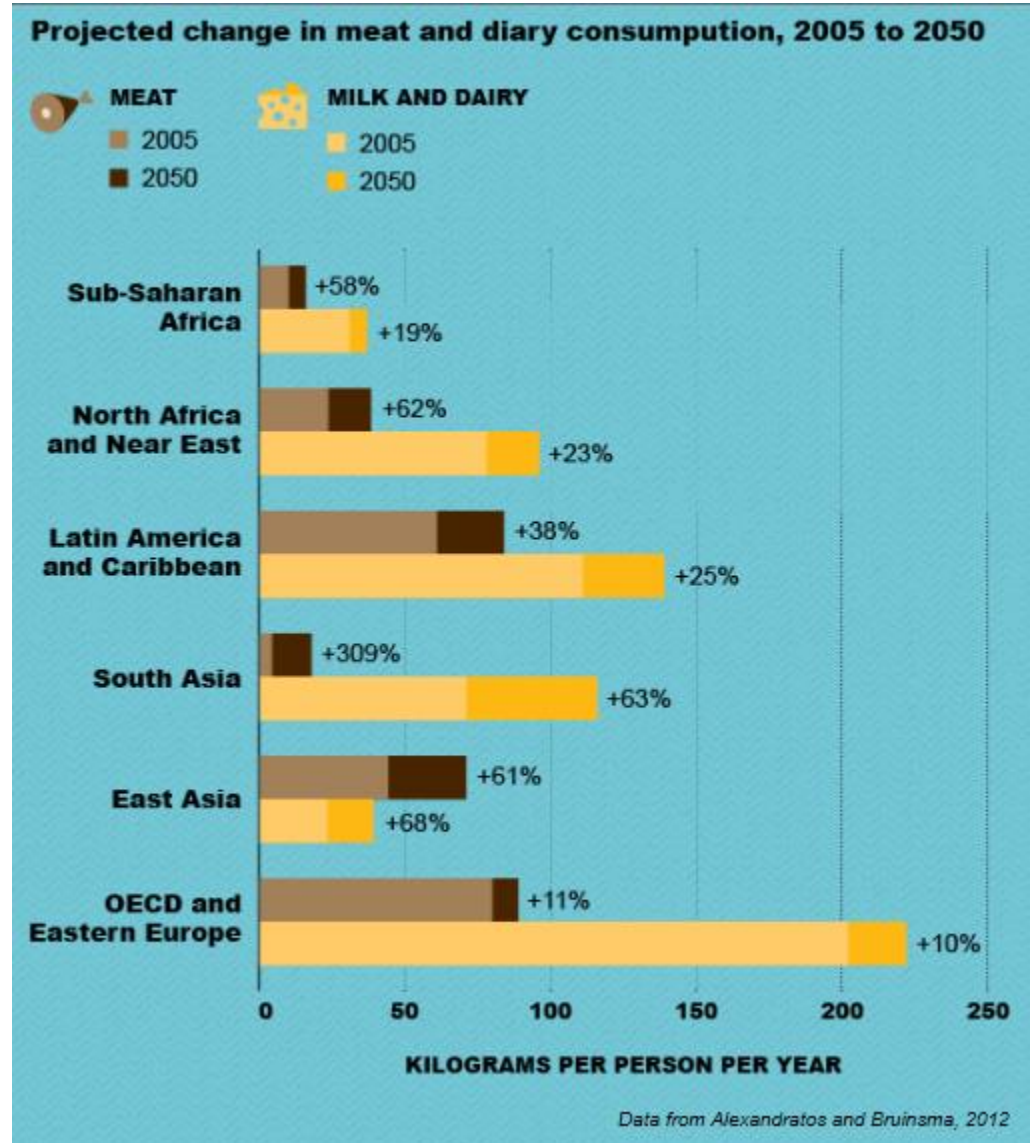
# Population

- Asia will remain the world's most populous region in the 21<sup>st</sup> century, but Africa will gain ground
- The world population is expected to rise throughout the 21<sup>st</sup> century, although this growth is projected to decelerate markedly in 2050 to 2100.



# Dietary Change

- Sugar, fat, and animal product consumption are increasing in almost all regions of the world



# Dietary Change

- Food consumption is increasing on a global scale—from 2,250 calories per person per day in 1961 to 2,750 calories in 2007 to a projected 3,070 calories by 2050
- Despite increased consumption, South Asia and sub-Saharan Africa will continue to have the lowest daily food caloric intake per capita.
- South Asia will quadruple its meat consumption from 2005 to 2050.

# Dietary Change

- Consumption of cereals, followed by vegetable oils and livestock products, has increased fastest.
- Low- and middle-income countries are expected to consume more meat and dairy to 2050.
- By 2050, Latin America, Near East/North Africa and East Asia will have a per capita food consumption similar to that of high-income countries in 1990.

# Dietary Change

## **Meat and Dairy Demand**

- Global animal protein consumption has more than doubled since 1970.
- Meat consumption in low- and middle-income countries—except for China and Brazil—is projected to grow 75 percent from 2005 to 2050
- On average, every citizen consumes 39 kilograms of meat per year.

# Dietary Change

## **Meat and Dairy Demand**

- Producing calorie energy and protein from livestock takes an estimated 2.5 to 10 times more energy than from grain.
- The production of animal protein must be more than tripled if the projected global population of 9 billion people in 2050 were to consume meat and dairy at current North America and Europe levels (PBL 2009).

# What are the Risks to Food Demand



# Risk to Food Security

- Production shortfalls, price volatility and trade interruptions remain a threat to global food security.
- Rising prices for both crop and livestock products are projected over the coming decade due to a combination of slower production growth and stronger demand, including for biofuels,"

# Food Waste

- Roughly one-third of food produced for human consumption, about 1.3 billion tonnes per year, gets lost or wasted globally—





# Food Waste

- Per-capita consumer waste is estimated to be 95 to 115 kilograms per year for Europe and North America, but only 6 to 11 kilograms per year in Sub-Saharan Africa and South Asia (Gustavsson et al. 2011).

# Biofuels – Risk or Help?

- One of the most contentious issues on the plant
- Two-sided argument
- Driven by subsidies and government policies



# Bio Fuel-Emissions

- The two key factors that determine whether biofuels lead to lower or higher greenhouse gas emissions than fossil fuels are:
  - How the biomass (the basis of the biofuel) is produced and harvested. This process could emit carbon through, for example, fertilizers and machinery.
  - Where the biomass is produced. Biofuel production that leads directly or indirectly to land use change emits high levels of carbon.

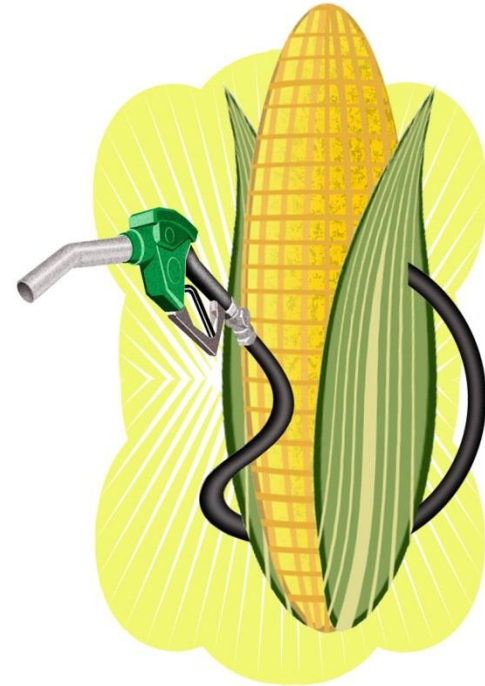
# Biofuels – Risk or Help?

- 40% of the US corn crop is used for biofuel
- 60% of EU rapeseed is used for biofuel
- Largest biofuel industries in North America, Central & South America followed by Europe



# Biofuels – Risk or Help?

- When compared to fossil fuels, manufactured liquid biofuels do not necessarily produce fewer greenhouse gas emissions - But they do consume needed food supplies



# Biofuels – Risk or Help?

- It is generally accepted that bioenergy has the potential of either increasing or reducing food security
- The effects of biofuels development on national food security can be significantly different



# Biofuels – Risk or Help?

- The general trend is that food is becoming more expensive
- Besides biofuels, other factors are driving up food prices.



# Bio Fuel

- Using good cropland to expand [liquid] biofuel production will likely exacerbate global warming the same way as directly converting forest and grasslands (Searchinger et al. 2008: 1240).
- Continued expansion is largely due to biofuel policies, primary among them use mandates and tax incentives, (USDA 2011) and high crude oil prices.



# Climate Impacts on Crops

- Global impacts of climate change on yields cannot be estimated due to variation among locations and crop types. But the overall impact on grain is negative
- —the potential yield loss is about 5 percent for each degree Celsius of global warming.



# Impacts on Food Security

- Many crop yields are expected to decline due to long-term changes in temperature and rainfall and increased climate variability.
- The outcome may be higher food prices,



# Impacts on Food Security

- Farming families may benefit from higher food prices—
- Climate shocks like droughts and floods impact how people access food through work, trade and transfers, such as from relatives who live in other climates (Devereux 2007).

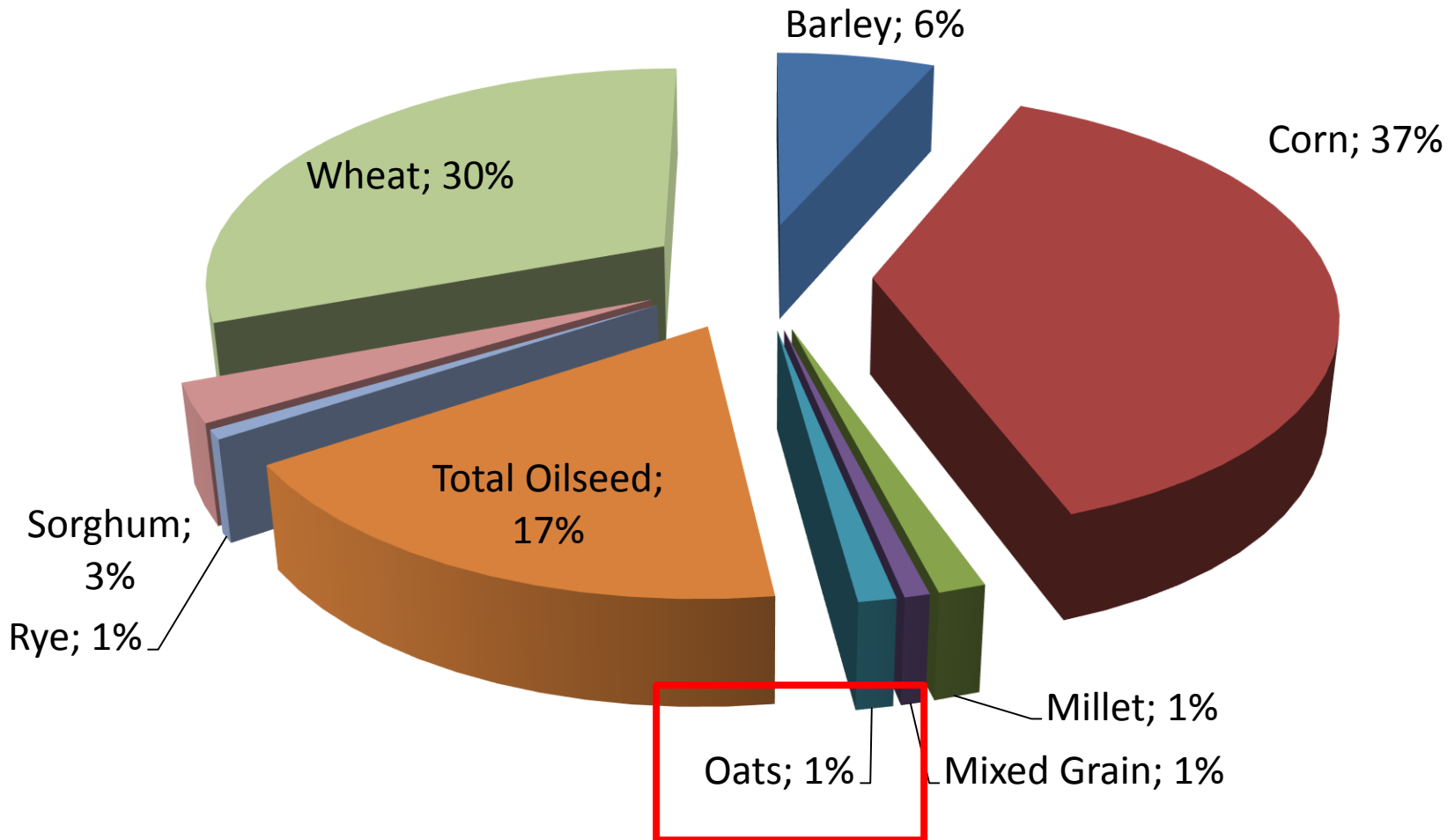
# Sustainable food production

- A huge “buzz word,” sounds good but still a long way from reality
- Soil damage, climate change, water and energy availability are all challenges for farming and food security
- Sustainable agriculture can benefit from 'system' approaches and farmers' participation

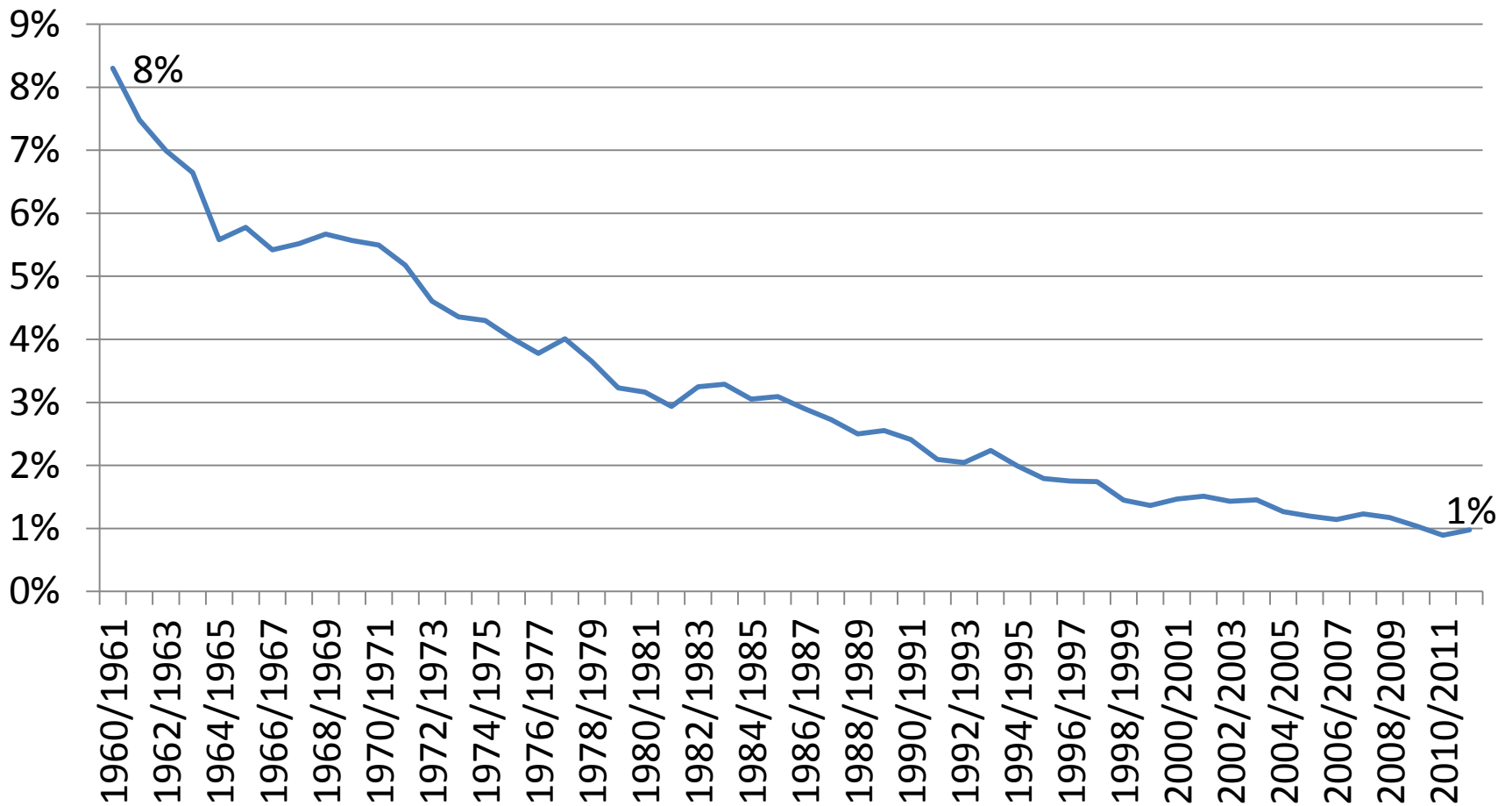
# Where Do Oats Fit Into All This



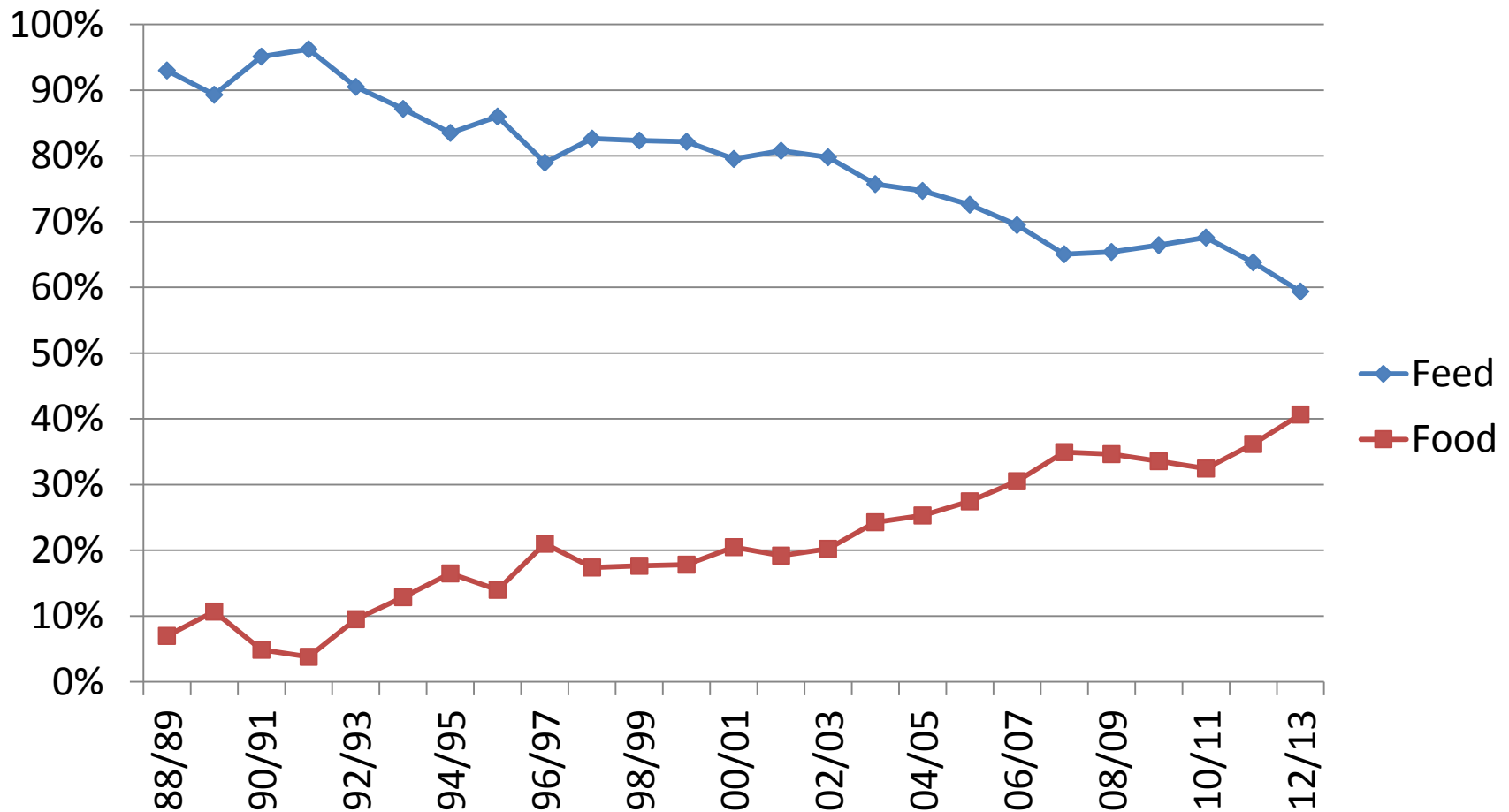
# Oats Are a Small Global Factor



# Oats as a Percentage of Total Cereal and Oilseed Production



# More Oats Consumed for Feed

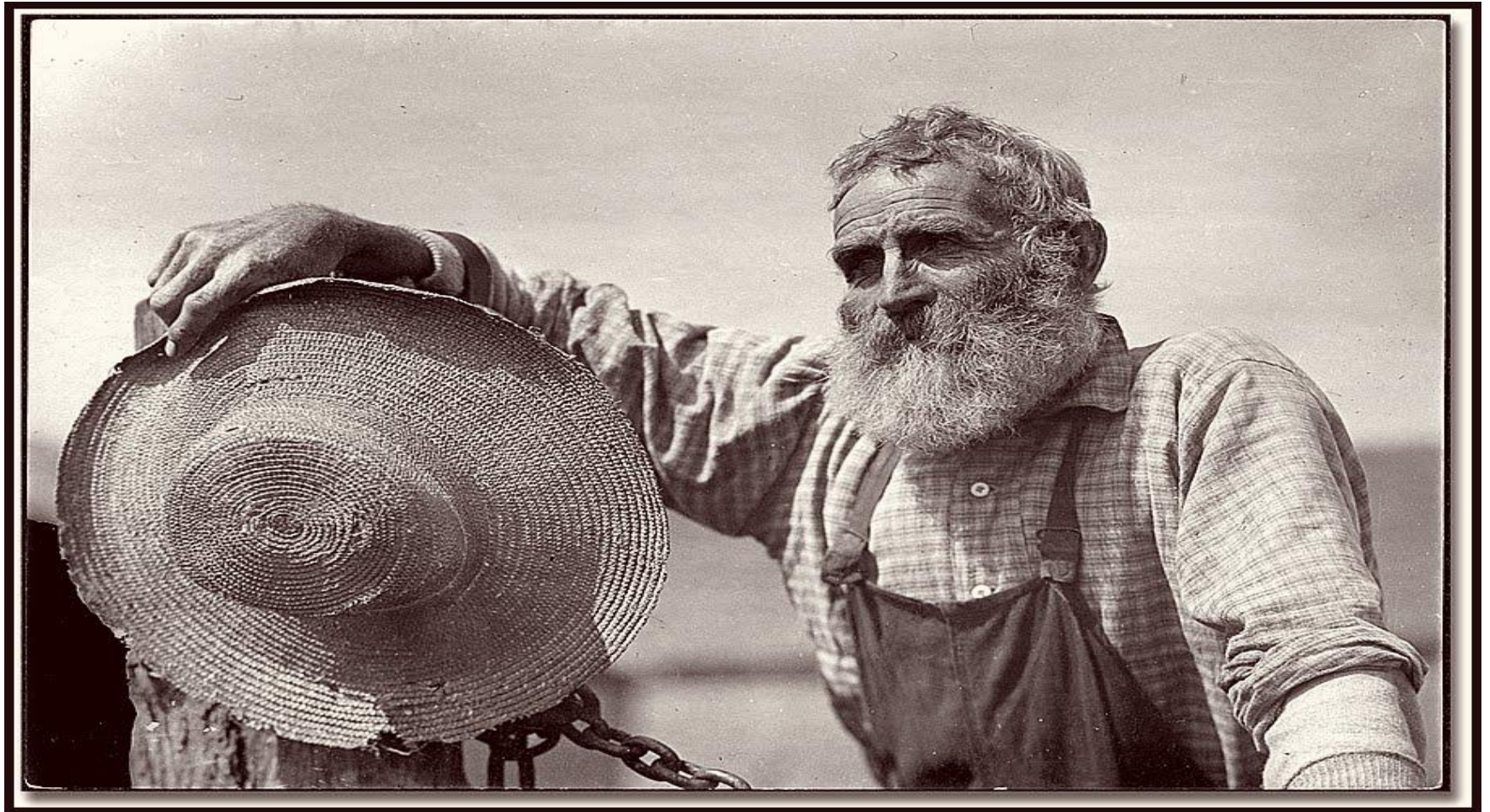




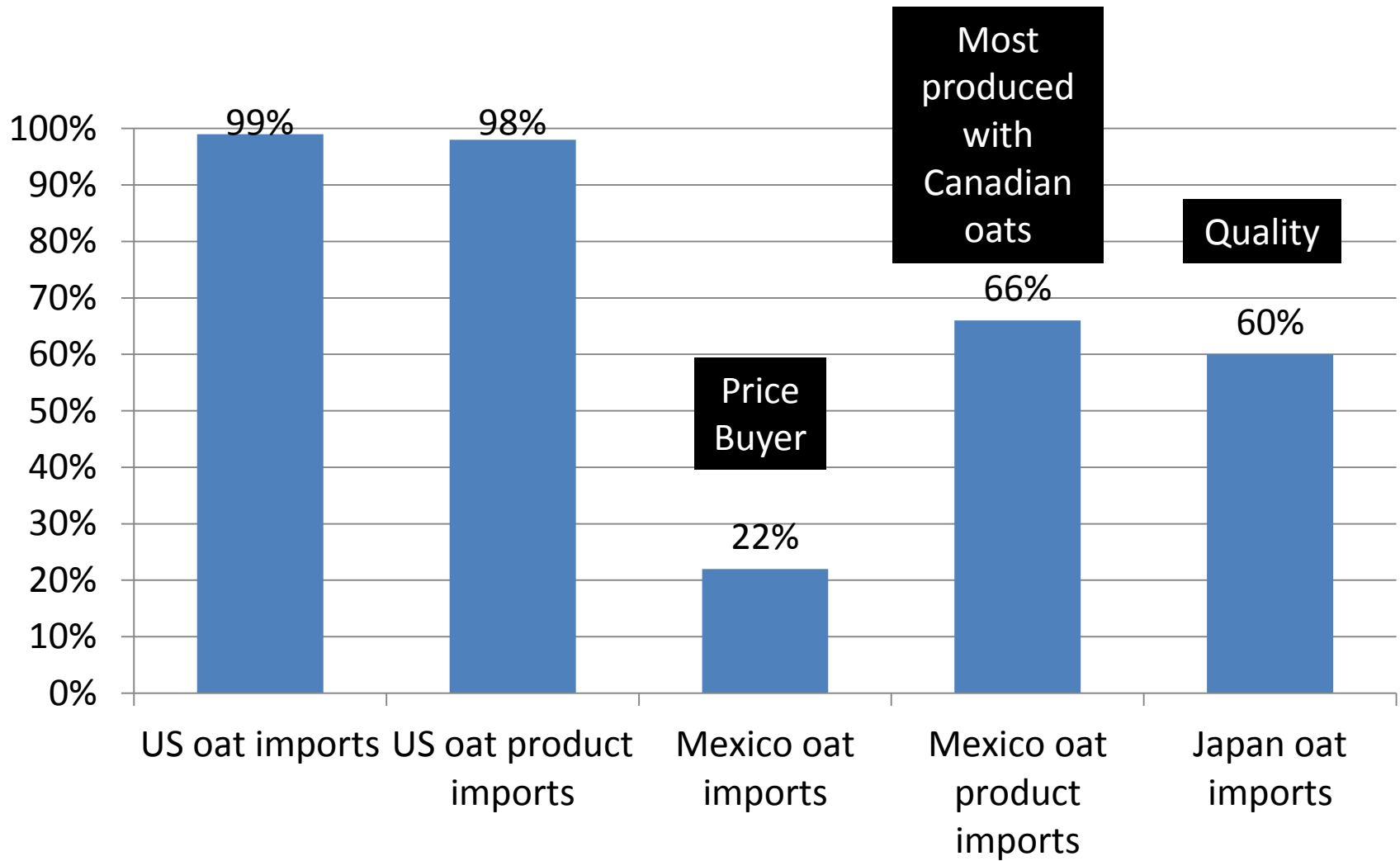
# Greatest Risk for the Oat Market

- Declining value for oat growers and feed users
  - Resulting in lower trending area and production and depleted oat supplies - **its about net returns**
- Yield lag compared to other crops due to a serious lack of funding
- Reduced funding
  - Less money for agronomic and nutritional research
- Mature demand markets
  - Food demand will not sustain the oat market
  - Need higher feed demand-specifically horse demand
- Oats will fall into contract
  - Substantial cost increases to food companies
  - Loss of research/marketing funding
  - Increased unpredictability

# Mature Oat Markets



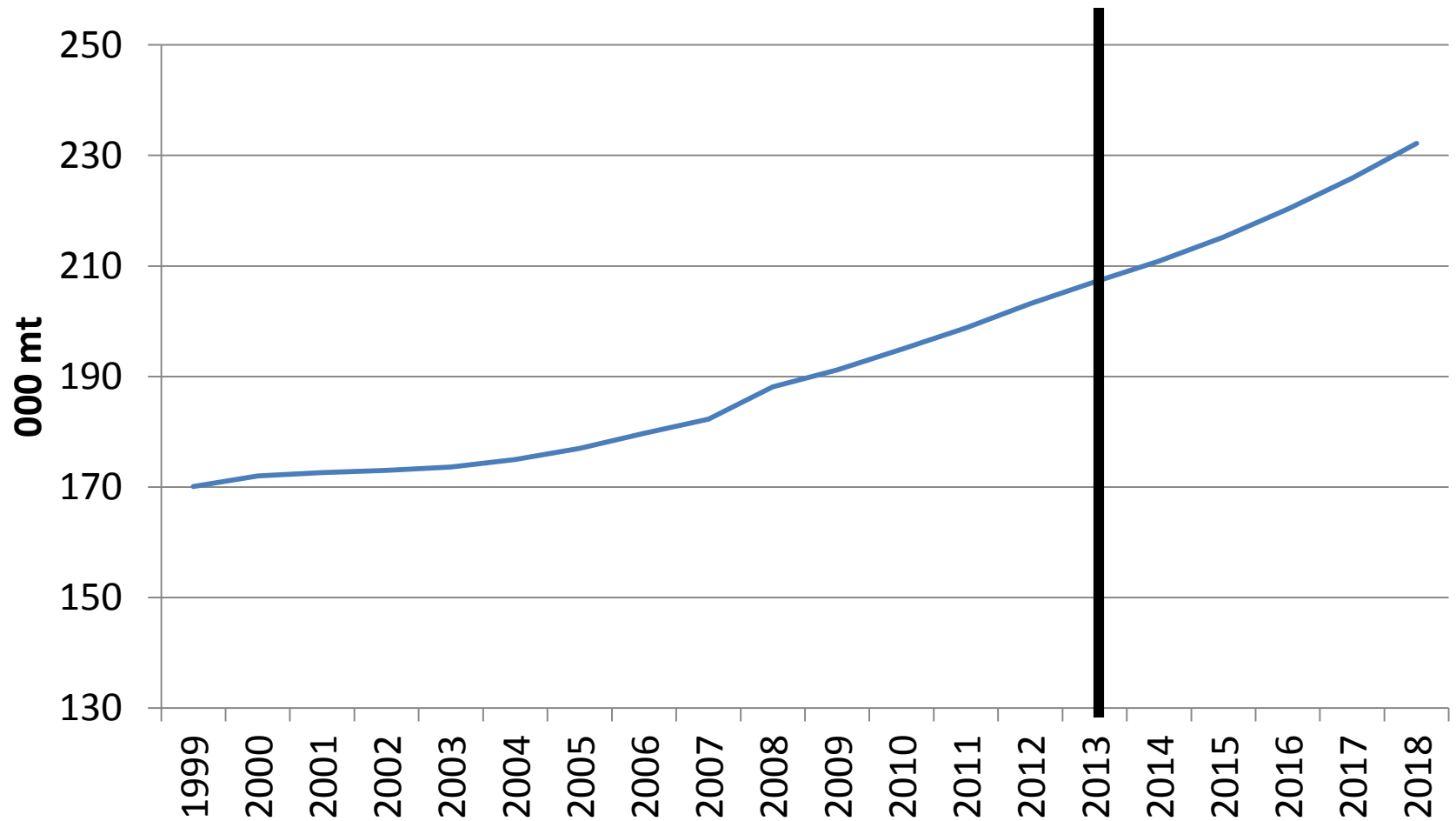
# Mature Canadian Oat Markets



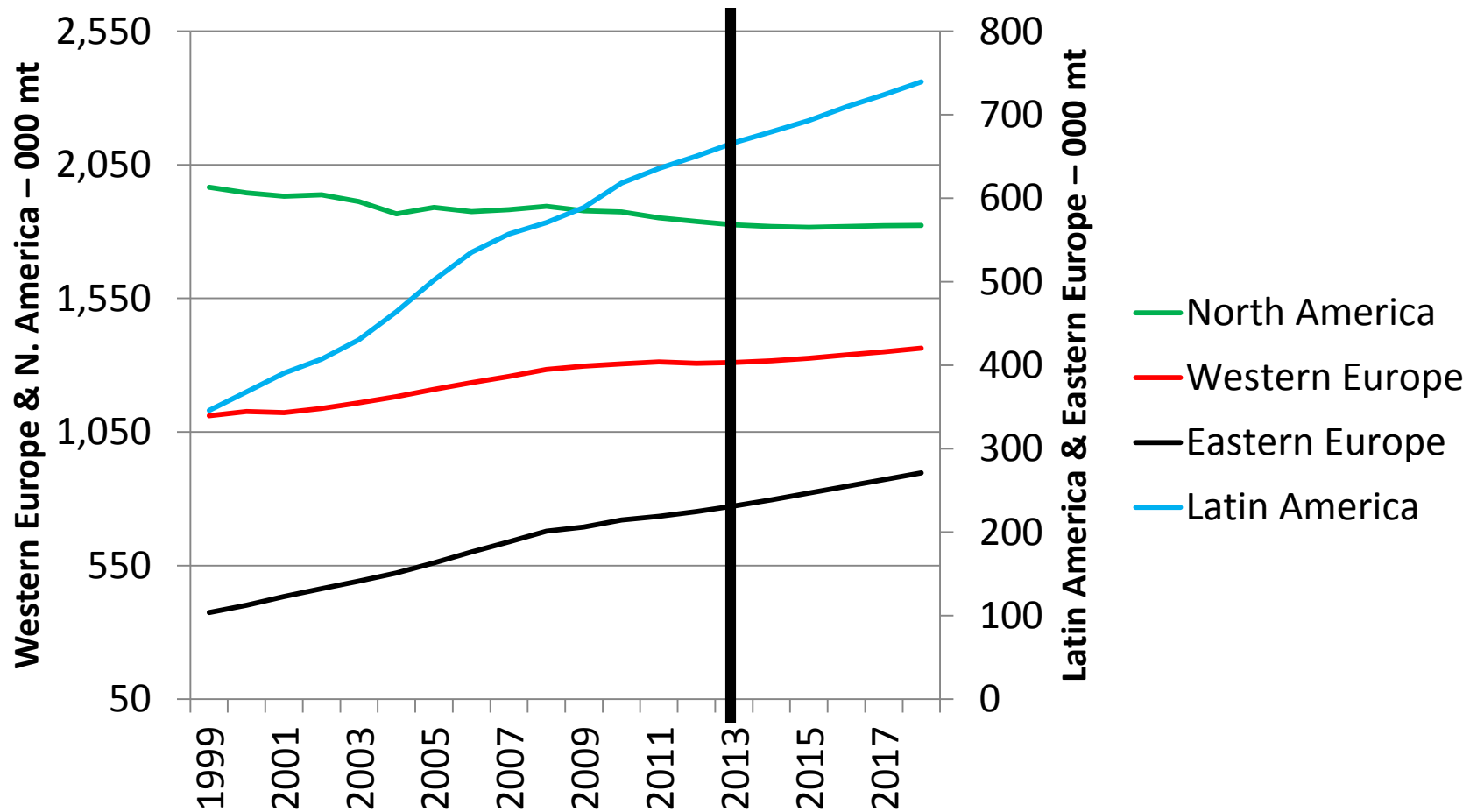
# Mature Oat Markets

- Growth in the oat product & cereal/snack bar markets will be led by food companies & consumer demand.

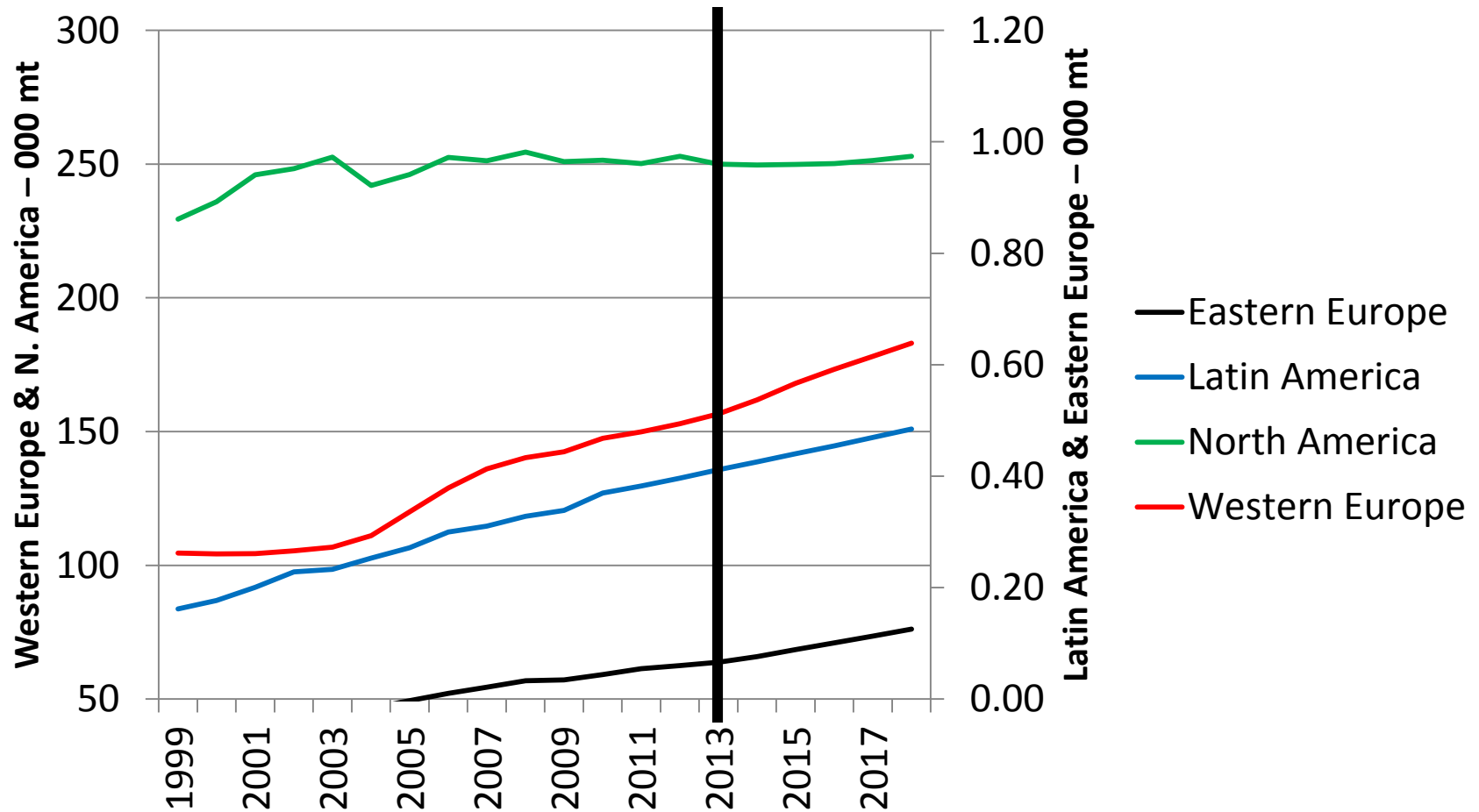
# World Cereal Demand



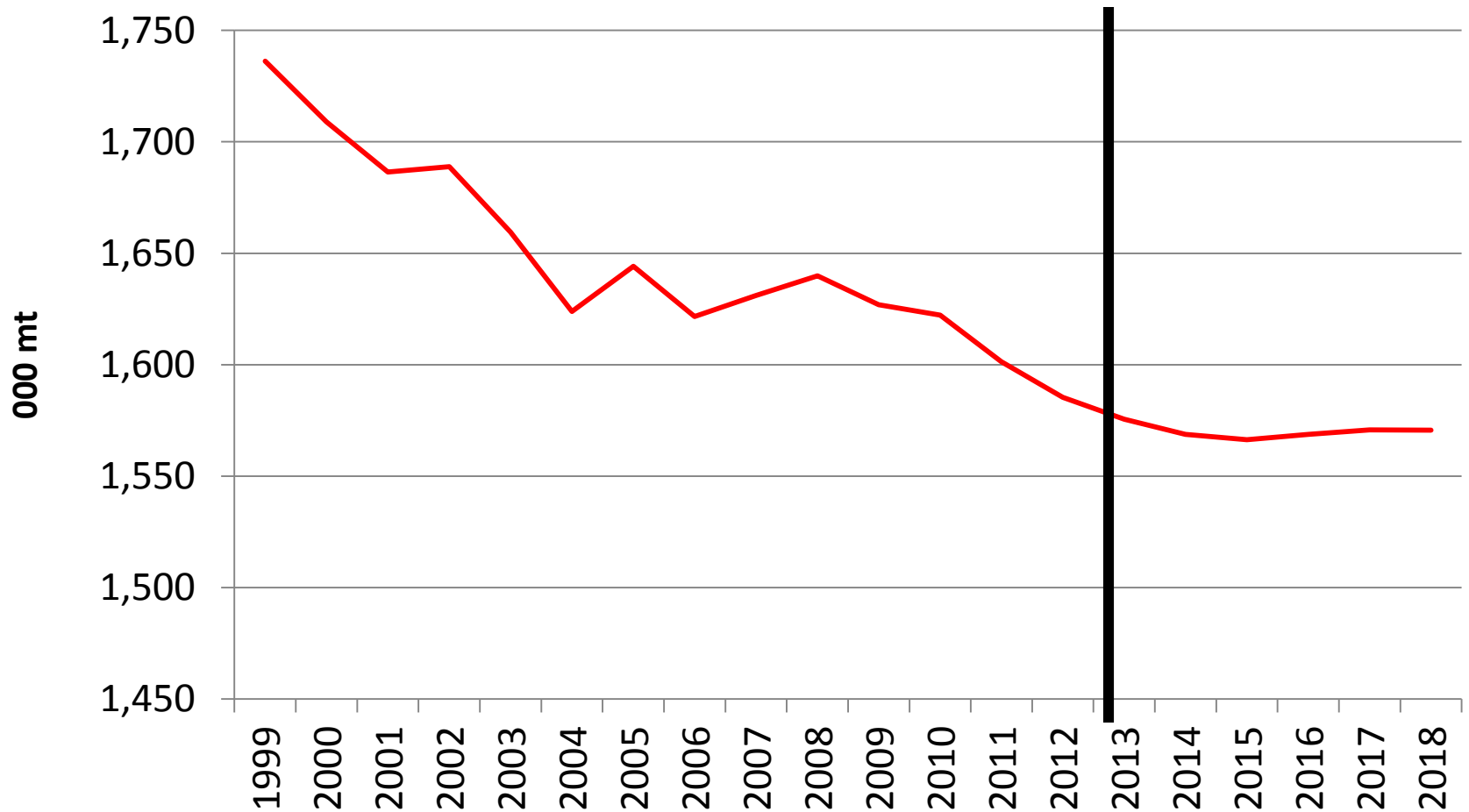
# Regional Cereal Demand



# Regional Hot Cereal Demand



# North American RTE Cereal Demand

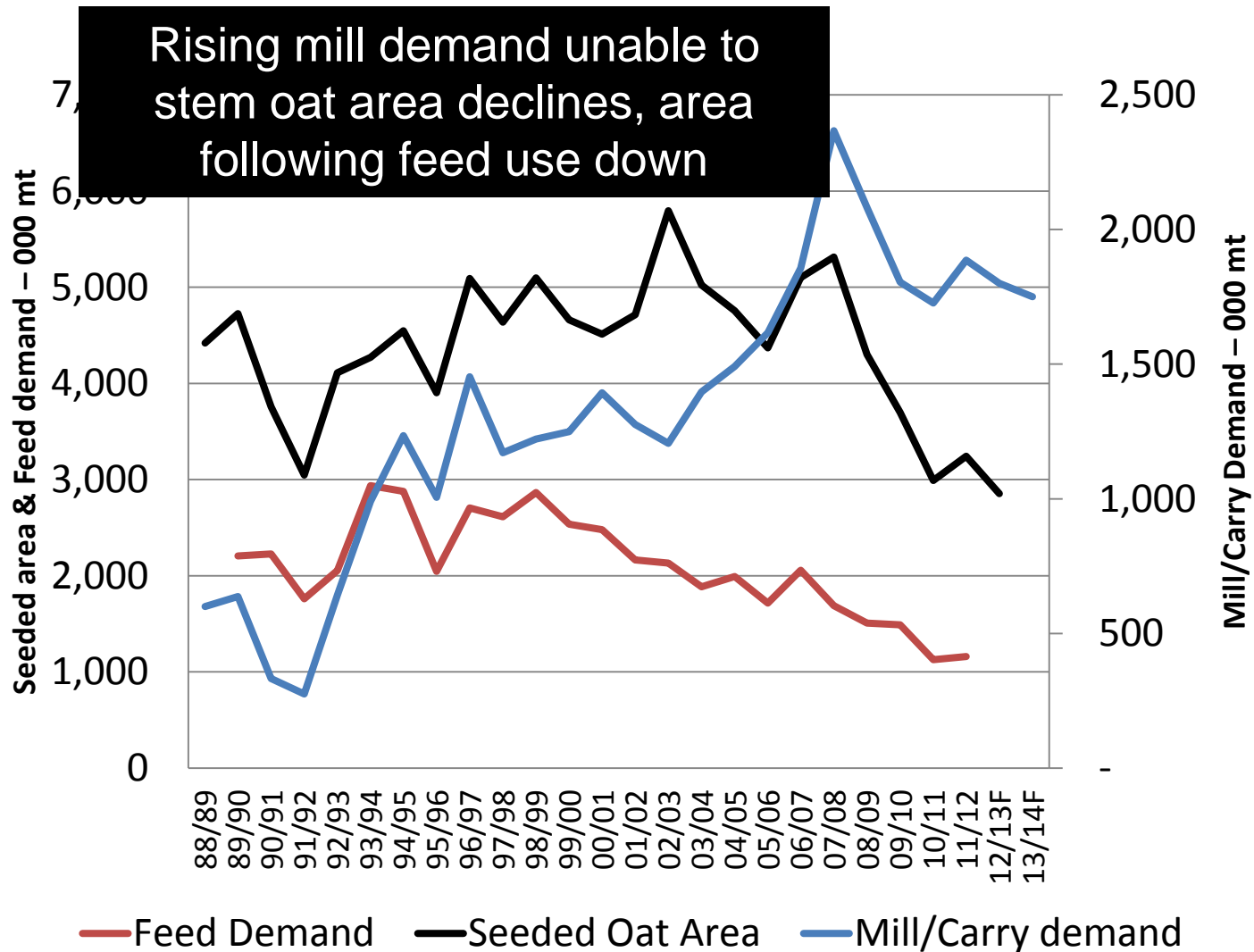




# Food Demand for Oats Not Enough



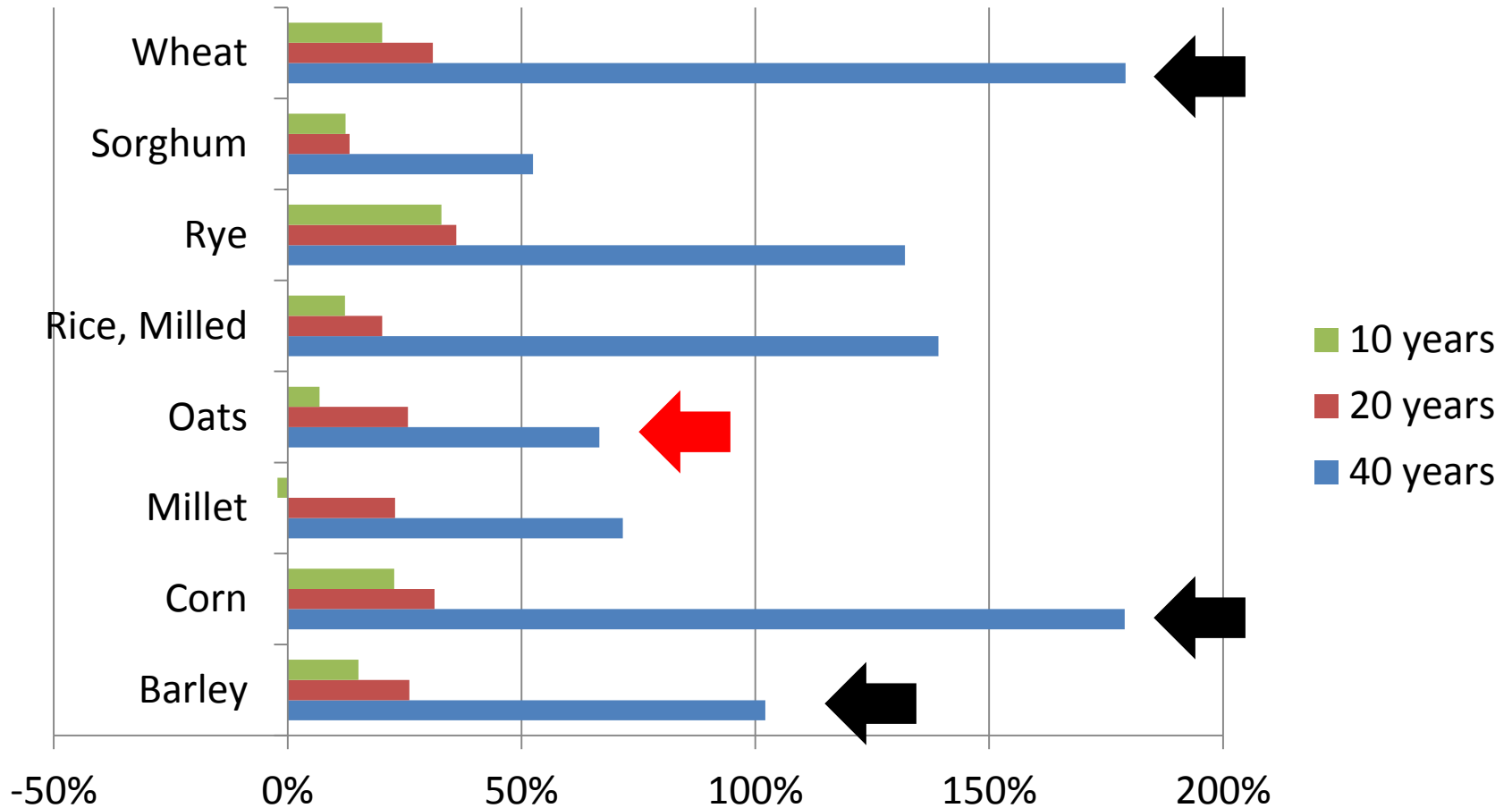
# Canadian Seeded Oat Area and North American Oat Demand



# Total Canadian Feed Use



# Oats Lagging Yield Gains



# What Can Be Done

- It all starts with adding value to the crop – for growers and end-users
- Stem and then reverse area and production declines
  - This leads to higher funding for research
- Increase research - agronomic and nutritional
  - Yield, disease resistance
  - Higher beta glucan for humans and horses
  - Improve starch, fiber and hull for horse demand

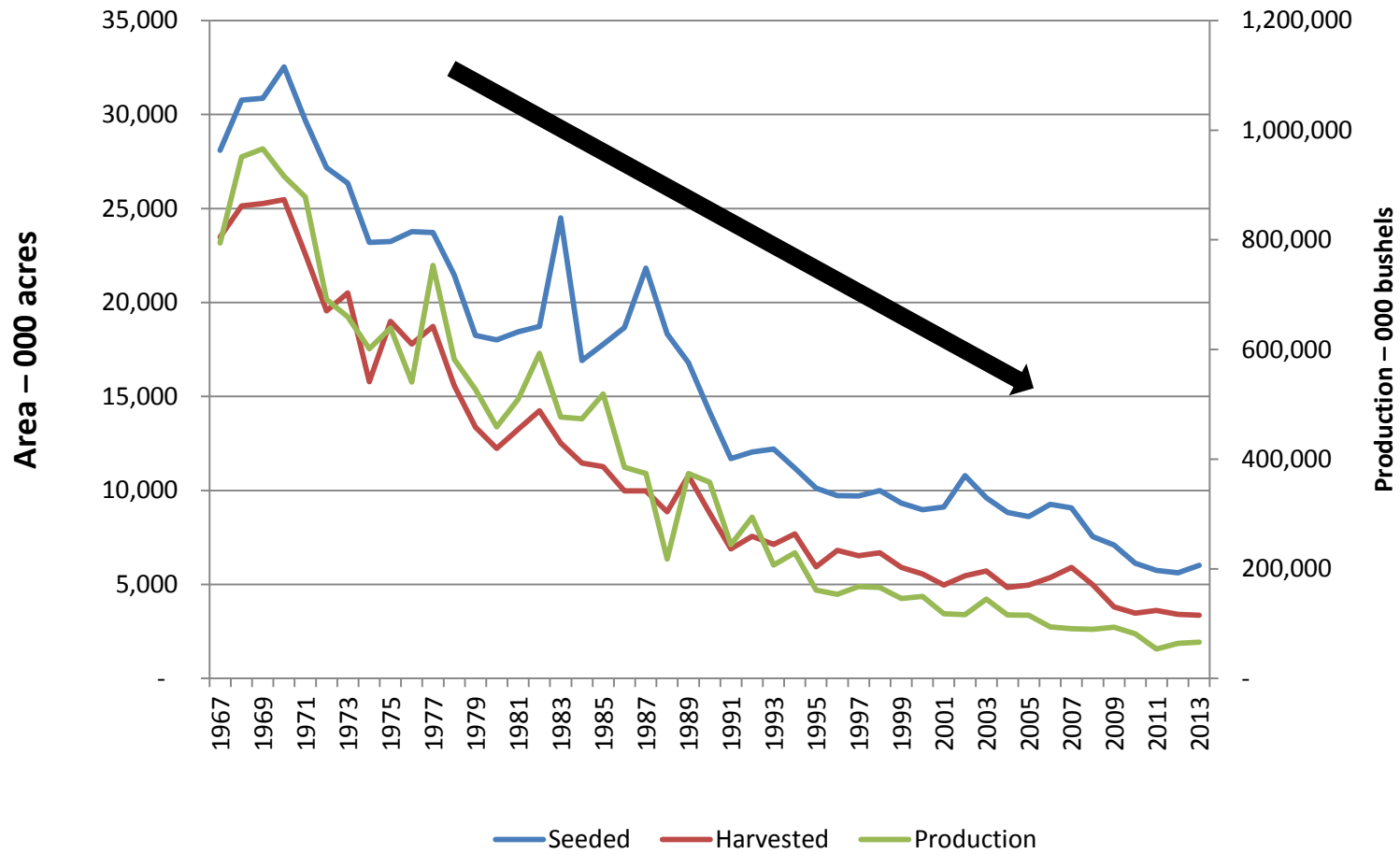
# References

- Nikos Alexandratos and Jelle Bruinsma -FAO
- Joint FAO/OECD study

- Thank you

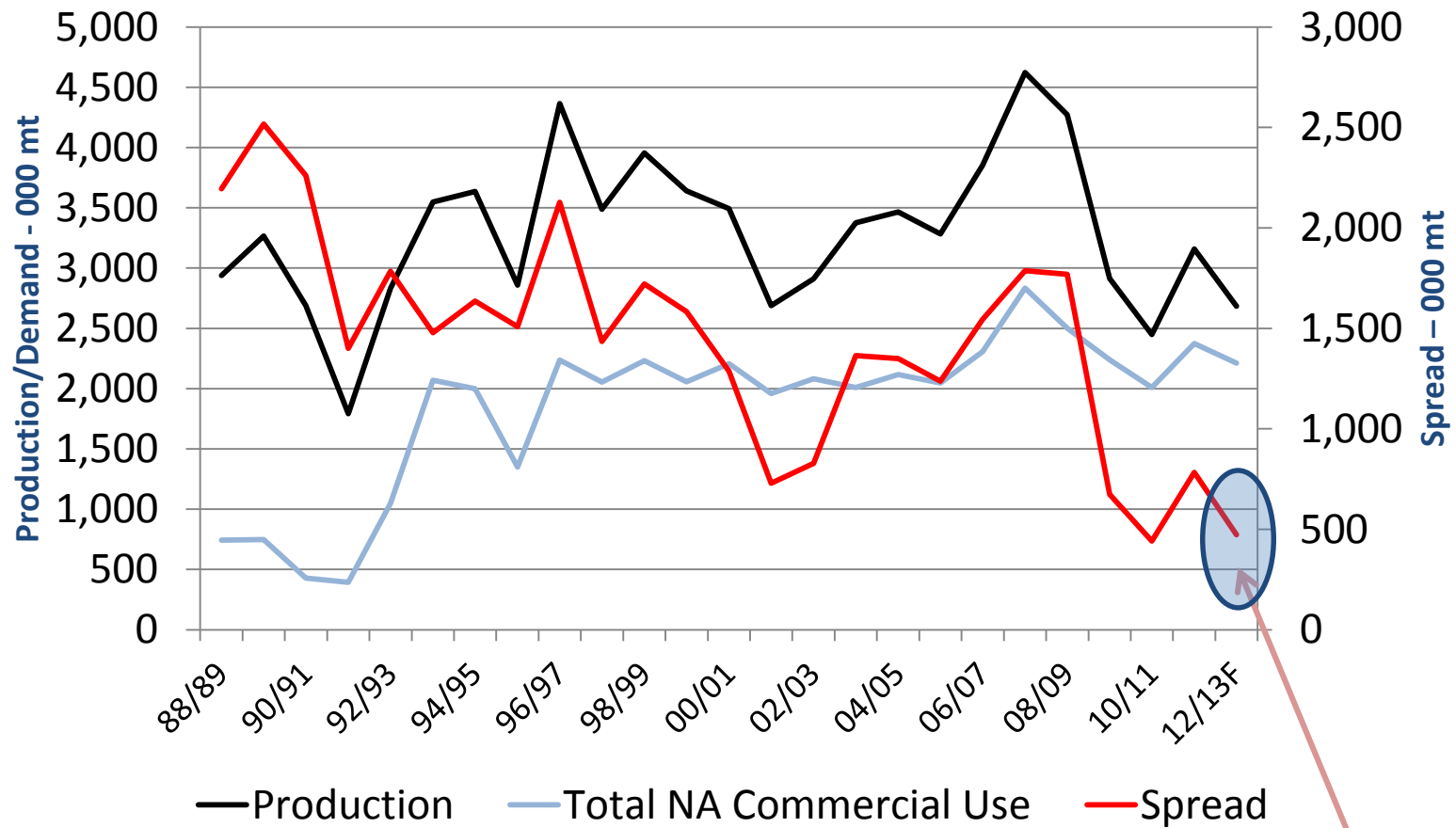
Oatinformation.com

# North American Oat Area Trends





# Canada Oat Production & Commercial Use



Production falling to demand...  
Contracting around the corner!