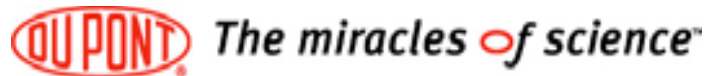


Grow Canada: Grow Fuel
- *A View from the Plant Science*
***Industry* -**

presented to the
Canola Council of Canada conference
Biodiesel: Powered by Canola

Lorne Hepworth, President
CropLife Canada
July 2006







Representing Canada's plant science industry

stewardshipfirst



Urban Pest Management
Council of Canada

We Stand for Safety:

- protecting human health and the environment
-putting stewardship*first*
- a rigorous, science-based regulatory system
- an informed public

We Stand for Innovation:

- enhancing quality of life through the benefits of our technology
- continuous research
- integrated pest management and responsible use
- realizing competitive advantage

**WHERE INNOVATION
TAKES ROOT**

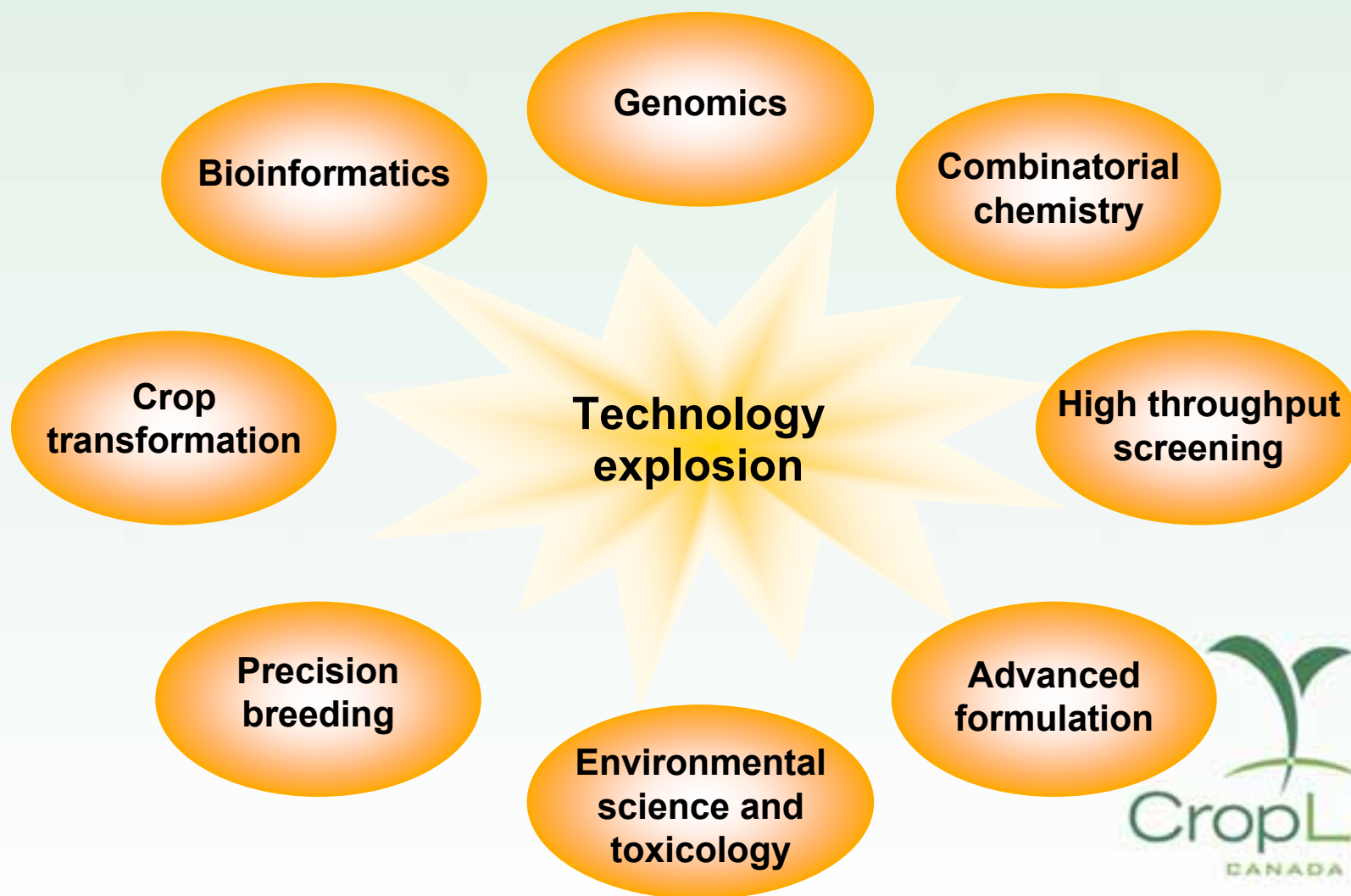



GrowCanada

**THE TRANSFORMATION OF
AGRICULTURE WILL BE DRIVEN
BY RESEARCH, INNOVATION
AND ADOPTION OF NEW TECHNOLOGY.**



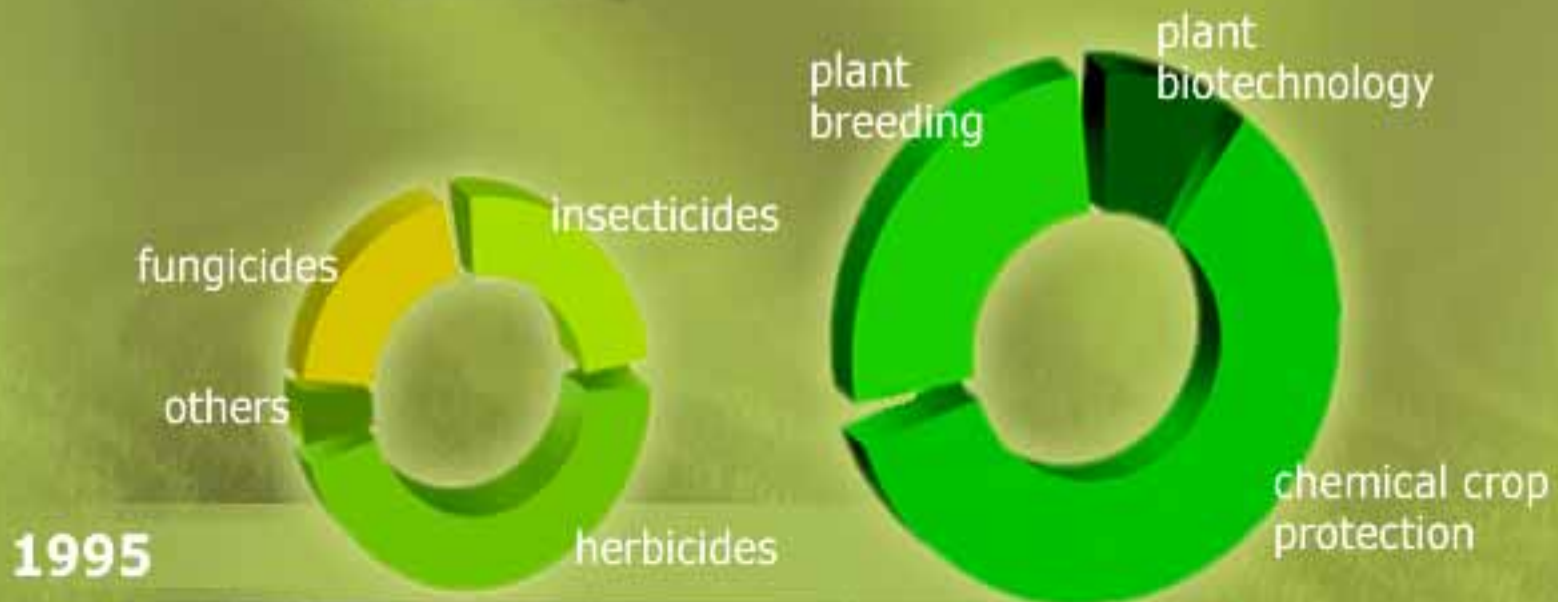
Transforming crop production - the technology toolbox



THE NEW BIOECONOMY CREATES EXPONENTIAL VALUE.

CHEMICAL CROP PROTECTION
25 BILLION €

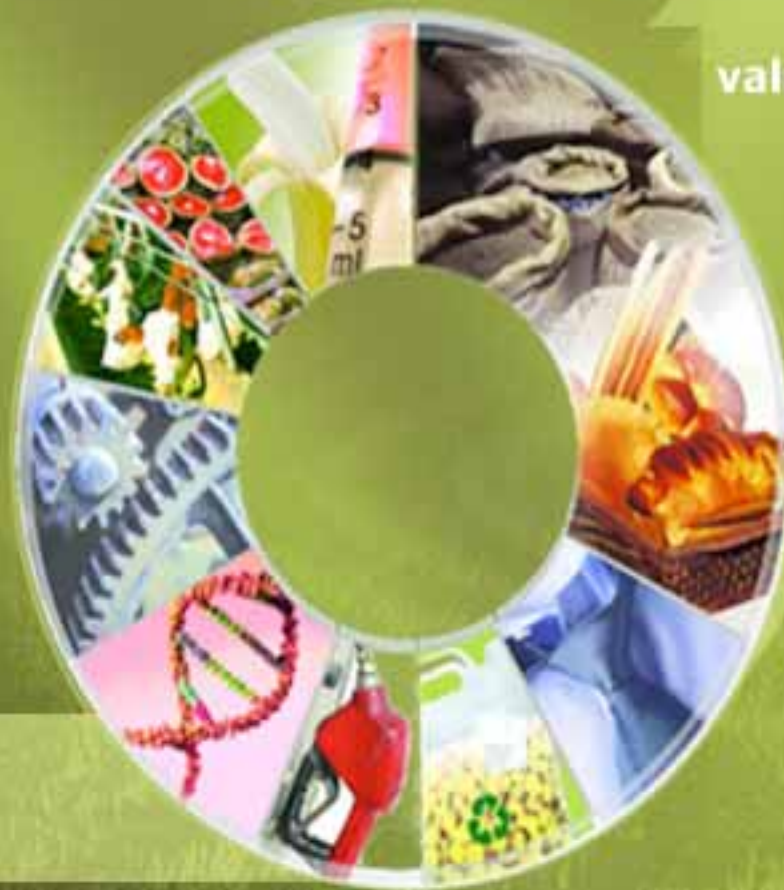
CROP PRODUCTION
40 BILLION €



**NEW PRODUCTS. NEW BUSINESS.
NEW MARKETS. NEW SOLUTIONS.**

**BIOECONOMY
500 BILLION €**

value



2015

New markets – examples

■ Current agri markets
■ New markets

Value capturing	Output traits (GM, non-GM)	Higher value crops	Animal feed Bio-fuels	Fresh produce Health, dietary components
	Input traits	Bt corn HT canola HT soya	Herbicide tolerant turf	Cereals with reduced mycotoxins
	Crop protection and/or seeds	Conventional agri business	Professional products	Home & garden products Allergen control
		Grower/ distributor	Professional/ industrial	Consumer/ retailer
		Customer group		



What are CropLife members doing in biofuels?

- Committed to pursuing sustainable technologies including within the energy sector
- Committed R&D to developing crops that are more amenable to renewable fuel production for both ethanol and bio-diesel
- Committed to uptake of these technologies
- Energy crop seed market estimated at \$7 bil



Canola

- Canada's oil – Cinderella crop
- Advantage – a crop platform for technology development identified by plant science industry for investment - benefits Canada



The Supply Challenge

- Canola Council of Canada 2015 targets:
 - Phased in B5 diesel fuel requirement
 - 1.5 bil liters of biodiesel
 - 80% from canola = 2.5 bil tonnes
 - 14 mil tonnes crop (9.66 mil t in 2005)
- E.U. imported 120,000 t of canola oil for biodiesel(2006) = 120 mil liters of biodiesel



Biodiesel: Canola supply

Seed/Trait developers

- Increase crop yield (e.g. hybrids - 23% increase)
- Increase oil content – from 42 to up to 48%?
- Drought tolerance to make more amenable to growing in a larger geographic region means more acres
- Process more amenable to transesterification



Biodiesel: Canola processing

Distributors/processors

- Ownership/operation of biodiesel facilities
e.g. E.U.
- Increase in existing plus new crushing capability in Canada
- Improved oil extraction technology



Is goal attainable from a supply standpoint?... Yes!

- Plant science role does not take into account
 - 5% of off-spec crop potentially available (146 mil l.)
 - More acres from “room in the rotation” or just generally available
- Believe in farmer ingenuity
 - “Build it and they will come”
- Farmer track record on adopting new technology
 - E.g.s.: Hybrid corn, GMO crops
- Farm production track record:
 - 3.2 mil t. in 1989 increased to 9.66 mil t. in 2005



But.....

- Market over exuberant or a new reality?
 - Lot of plants/expansion – seen once before
 - Strong consensus on drivers: environment, energy security, and rural economic considerations
- Are biofuels/biodiesel competitive?
 - Other sources: Palm oil, cellulosic biomass competition
 - Other types: hydrogen
 - Role of subsidies and incentives
 - Not a perfect solution or complete or cheapest solution
 - World will need all alternatives that are viable
- Crops for “Food v. Fuel” debate



CANADA: POISED FOR LEADERSHIP ON THE WORLD AGRICULTURAL STAGE.



1995 - The first Genetically Engineered (GE) crops

2005 - 1 Billion acres globally of GE crops

2015 - A New Bioeconomy



An exciting new era

- Agriculture once again poised for greatness
- Not been a happy place, youth not attracted
- Competition for our goods emerging
 - Food:
 - Challenge of feeding the world has not gone away
 - Rise of organic decrease food production per acre
 - Feed: improving economies means more animal protein
 - Health:
 - Designer foods and feeds – nutraceuticals, functional foods
 - Trans fats
 - Energy:
 - Bio-fuels are more environmentally friendly
 - security: more recent phenomenon – 25 by 25
 - Challenge of weather has not gone away



What's needed?

- Agreement on a “new vision” for agriculture – includes the bioeconomy – includes bio-fuels
- Real commitment to an Innovation Strategy
- Science-based regulation – enabling
- Communication for an informed public
- Working together across the value chain
- Leadership by government and industry



**AGRICULTURE IS MORE THAN FOOD.
IT IS OUR FUTURE.**



**WHERE INNOVATION
TAKES ROOT**




GrowCanada