

The Agritech Opportunity

Presentation Overview

- Global context
- Key technologies
- Capitalizing on Agritech
- Agritech communities



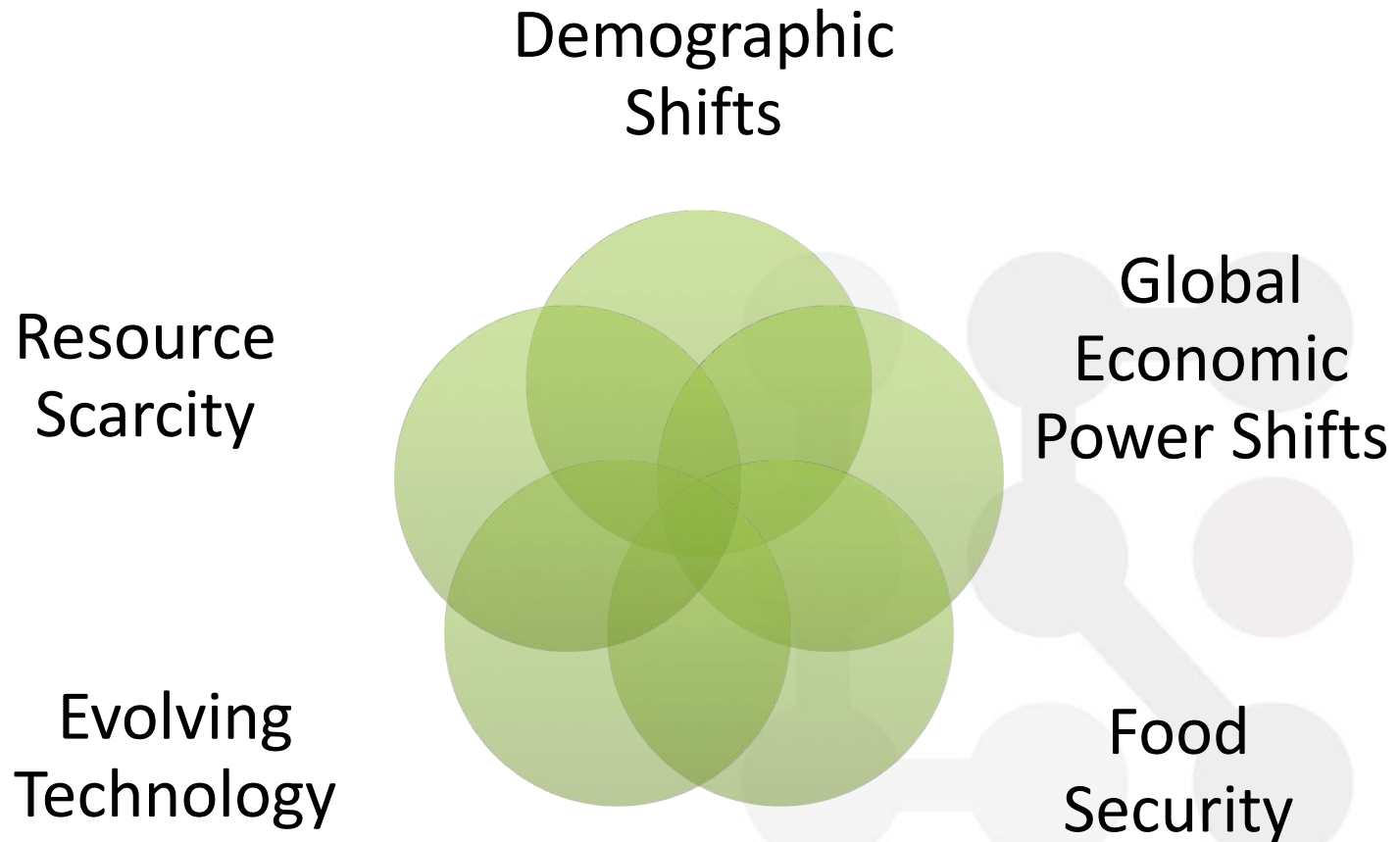
Global Context – MegaTrends

Food and Agribusiness

Massive economic, social, and environmental footprint

- \$5 trillion industry
- 10% global consumer spending
- 40% employment
- 30% greenhouse-gas emissions

Global Agribusiness Context – MegaTrends



Global Context – MegaTrends

- Global population projected 10 billion by 2050
- World's middle class will increase from 1.5 billion to 4.5 billion by 2050
- 'E7' increasing influence on global trade, double growth of G7 countries
- 'F7' countries projected 30% growth over next five years
- Number of megacities expected to double by 2030 - majority of global population will live in urban areas
- 70% increase in food demand by 2050
- Increase production output at double current rates by 2030

Global Context – MegaTrends

Resource Scarcity

- Global population of 8.3 billion will require 50% more energy, 40% more water, 35% more food

Food Security

- Increasing priority for countries that do not produce sufficient food for their populations
- A key part of 'national interest' agenda
- Investment in food-producing nations to better control the food value chain and secure food for their citizens

Global Context

AGRITECH IMPROVING YIELD, EFFICIENCY, AND SUSTAINABILITY

Agritech is the use of technology in any growing environment that will assist in feeding the projected 10 billion by 2050 and maintaining a healthy planet



Technology – Getting More Out of Less

- Innovation will be instrumental
- Precision agriculture improving crop and livestock yields and food output
- Resource scarcity requires innovative farming methods and improved crop technology
- Evolution of agriculture into manufacturing
- Sowing, watering, fertilizing, harvesting, soil monitoring are computer-controlled
- Farms are becoming more like factories: tightly controlled operations, turning out reliable products, shielding as far as possible from the vagaries of nature

Technology – Getting More Out of Less

Precision Agriculture

Analytical capabilities of key data sets such as weather, soil, market prices enable farmers to reduce production costs, increase yields, and optimize resources



- Machinery manufacturers (John Deere: FarmSight, New Holland: PLM systems) integrated precision agriculture technologies
- Specialist software providers (Trimble, Raven, TopCon, and Outback)
- Retrofit services are important for agricultural machinery dealers
- Mobile developers: apps data on cash prices and market quotes, weather, fields, pest identification, inventory and budgets, and weeds etc.
- SellSmart free app developed by Grain Farmers of Ontario to help farmers sell their crops
- iTK, (Montpellier, France) built mathematical models describing behaviour of main grape varieties

Technology – Getting More Out of Less

Precision Agriculture



- Sensors are improving and becoming cheaper
- Multispectral sensors can be attached to machinery
- Mounted on a tractor's spraying booms estimates the nitrogen needs of crops to be sprayed
- Agricultural drones fly multispectral cameras
- WaterBit, (Santa Clara) developed wireless, moisture sensor to optimize water use at a fraction of the cost of existing products
- Integration of aerial and satellite data applications
- Mavrx's (San Francisco) Uber-like arrangement with 100 light-aircraft pilots

Technology – Getting More Out of Less

Big Data



Manage and derive value from critical data points and capture value from data at scale

- Created a dynamic industry with strategic partnerships and acquisitions (Trimble + AGRITREND)
- Rocky Mountain Equipment (RME) and Decisive Farming (AB)
- Disparate nature of the value chain presents challenges
- Significant progress required to extract maximum value across agribusiness value chain to convert the data into actionable solutions

Technology – Getting More Out of Less

Robotics

Robots are taking care of the most tedious and repetitive tasks in the field



- Australian Centre for Field Robotics developed RIPPA (Robot for Intelligent Perception and Precision Application), a four-wheeled, solar-powered device identifies and takes out weeds individually
- Rowbot Systems (MN) developed bot travels between rows of partly grown maize plants, applies supplementary fertiliser to the plants without crushing them
- Vision Robotics (San Diego) developed lettuce-thinning machines reducing need for hand-picking
- Abundant Robotics (Hayward, CA): Agribot automated apple harvesting system that does not bruise or damage the produce – Google Ventures invested \$10 million
- Wall-Ye robot (France) designed for vineyards
- AGROBOT (Spain) uses a camera to recognize strawberries and work out which are ripe for the plucking



Technology – Getting More Out of Less

Crop Science



Advances in irrigation and biotech-driven seed and crop protection have critical role in improving crop and livestock yield

- Precise genetic manipulation ‘genome editing’ resembles natural process of mutation
- Agricultural biotechnology is rapidly developing: microbes in biotechnology and their diversified applications e.g. biofertilizers, bio-pesticides, bio-herbicides, bioinsecticides, fungal based bioinsecticides and viral based bioinsecticides
- Convergence of big data analytics and cloud computing with biological expertise is accelerating innovation in agriculture

Technology – Getting More Out of Less

Urban Farming

- Vertical farming could provide a sustainable means to improve food supply
- Advances in LED light technology
- Advanced greenhouse technology hydroponics or aeroponics
- Environmental controls that regulate temperature, humidity and light
- Developments are emerging around energy use, vertical farming's biggest limitation



Agritech Investment

- Investment in agribusiness grown significantly in past decade
- Considerable rise in number of investment funds, deals, and investment value
- Since 2004, global investments in food-and-agribusiness sector grown threefold, to more than \$100 billion in 2013
- M&A activity increased 18% p.a. between 2002 and 2012
- Canada: Farmer's Edge 7th largest deal in 2016 (\$58m)
- Funding portals - agfunder.com



**AGRI INVESTOR
FORUM CHICAGO 2017**



The Opportunity

Technology is a Growth Driver

- New technologies provide higher quality jobs
- Potential to disrupt existing markets and to create billions of dollars of economic value
- Best potential to support innovative, inclusive, and sustainable growth
- Lower barriers to entry - access to better, cheaper equipment, development, and design tools
- One-person startups can create market-shaking innovations
- Technology and innovation driving emergence of small niche players
- **Clearpath Robotics (Waterloo)** launched in a basement seven years ago with just \$50, increased employment from 38 to 155 in just two years
- **Farmer's Edge (MB)** began as vision of two agronomists in 2005, now 350 employees, offices in U.S. Brazil



Collaborative Connected Communities

Smaller Communities Can Capitalize

- Opportunities are accessible
- Transition from physical world to virtual world
- Remote commercialization, design, configuration, and delivery of products and services
- Sense of community builds synergies
- Talent attraction and retention

Leveraging Opportunities

Agri –Technologies - Robotics
Precision Ag Crop Science

What assets do we have in our
community?

How can we translate our
assets into opportunity?

Asset Analysis

Reconfiguration

Roadmap

Reconfigure

Realign

Reinvent



Cultivation Corridor, Ames, Iowa

- Launched in 2014, with brand based identity as opposed to place based
- Public/private partnership (the Greater Des Moines partnership, Ames Chamber of Commerce, Iowa State University, non-profits and private sector companies)
- Goal to accelerate value-added agriculture business development by attracting companies, talent and capital from across the globe to the state
- Objectives are firmly rooted in challenges associated with a growing global population and the science, technology, and production practices that will help address them
- Positioning as a cutting edge cluster-based economic development organization on the world stage
- The ‘world’s most dynamic agbioscience region’ with strap line ‘The science that feeds the world’
- Actively recruiting ambassadors to articulate the benefits of the region
- **Ag Tech Accelerator** supported by investors DuPont Pioneer, Farmers Mutual Hail Insurance Company, John Deere and Peoples Company

Food Valley, Netherlands

- Branded location with global recognition as an agri-food hub
- Membership based with a global reach, fees generate revenue
- Online innovation platform to leverage global network and facilitate collaboration for collaboration between like-minded individuals and entities in the sector
- Regular events program: a global conference, competition for home grown companies
- Events program part of driving branding and awareness
- Highlights innovation as part of its value proposition
- Ambassador program that nurtures talent



Sumas Regional Consortium for High Tech (SRCTec) Fraser Valley, BC

- Facilitates innovation and entrepreneurial ventures in the Fraser Valley
- Driven by a local champion
- Events program: AgTech Venture Forum, Toronto, May 2017, Pacific Agriculture Show, roundtables, networking events
- AG-Tech Venture Acceleration Program for entrepreneurs 31 months, twenty-six client ventures
- Global focus: partnership to provide BC tech companies with education,
- Resources and network to access China's agricultural markets
- The Raymond Szabada Technology Centre of Excellence (RSTCE) in development

Incubator and Commercialization Networks Models

Significant in spawning and nurturing cutting edge companies

Bioenterprise, Guelph, Toronto

Business accelerator offering commercialization services to help promote the creation, growth and expansion of businesses engaged in Agri-Technologies



University of Guelph Agri-food Innovation Hub

The Catalyst Centre (CC) technology transfer and industrial liaison office
Critical mass of agritech innovation agents



Farm491, Gloucestershire, U.K.

UK's first agriculture technology focused incubator – a new start-up facility at the Royal Agricultural University



THRIVE AgTech, Silicon Valley

Connects expertise of tech companies to on-the-ground knowledge of agricultural companies, investors, and entrepreneurs

Led by Silicon Valley Global (SVG) partners, an investment, technology and advisory firm
THRIVE DEMO day at Forbes AgTech Innovation Summit





Thank you

Gillian Hatton
ghatton@locstrategies.com

416-277-5269

