The Emerging Ag World

What is to come?
What is to be done?

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Our Industry

- The Food & Agriculture sector is changing rapidly
  - Technology, regulation, climate change, trade agreements, obesity/NCD & many other issues
- Companies & investors seek global markets
  - 95% of the world lives outside the United States
  - Highest demand growth is in emerging economies
  - Highest potential rates of return are global
- What are the main long-term changes?

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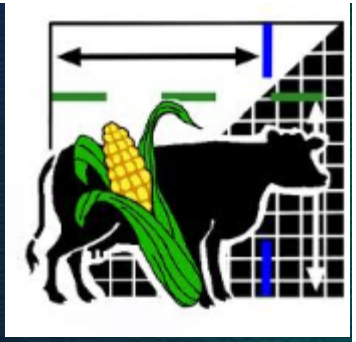
World Agricultural Megatrends

- Major changes affecting world agriculture between now and 2030:
  1. Shifting Production
  2. Rising Food Security Concerns
  3. Growing Global Middle Class
  4. Changing Rich Country Consumption
  5. Environmental Constraints
  6. Science Anxiety
  7. Rising Non-Trade Concerns
  8. The Energy Issue
  9. Moving Beyond the WTO
  10. Farmer Exclusion from Growth

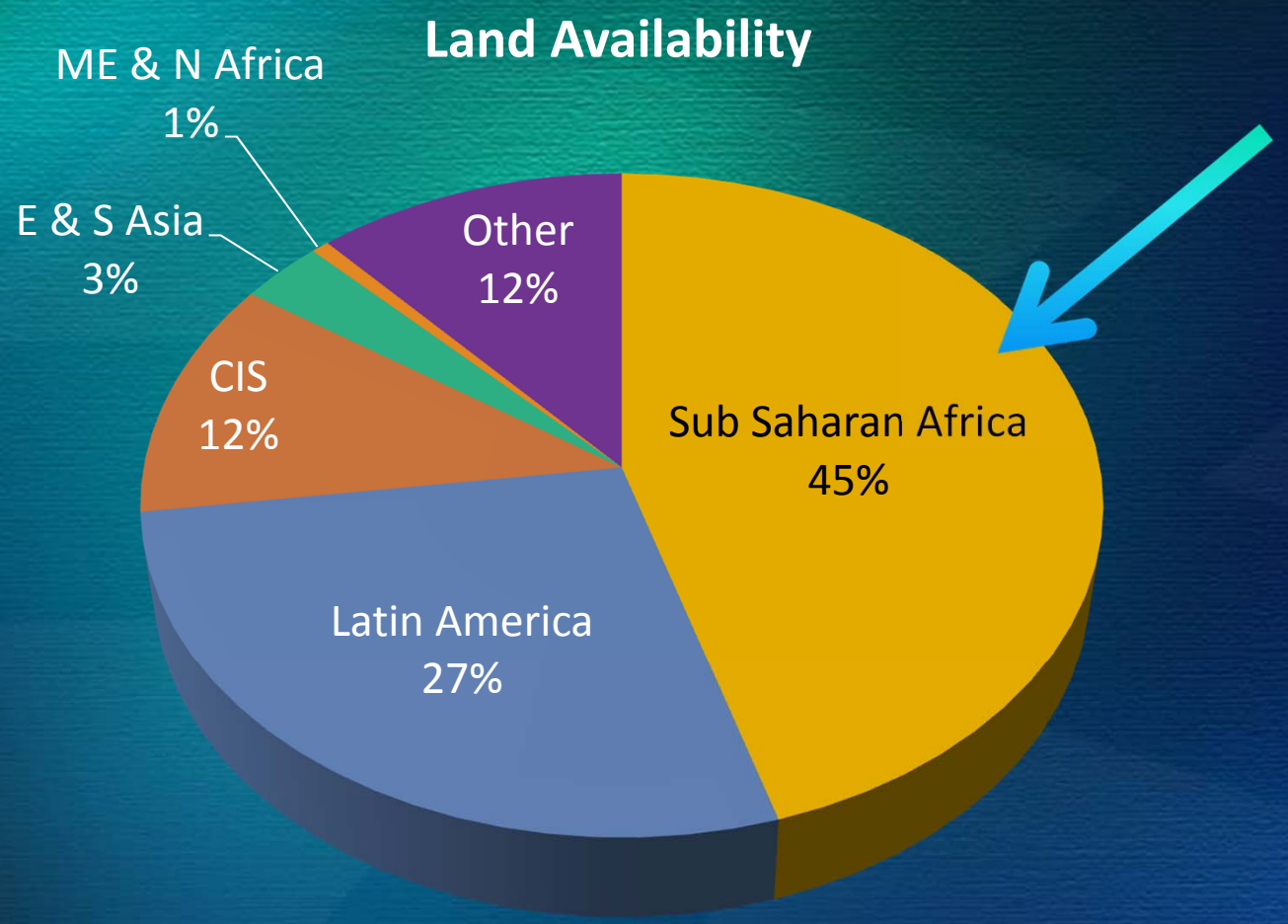
1. Shifting Production



- Increasingly globalized supply chain
  - China will increase production but can't keep up
  - Concentration in Russia, Ukraine, Brazil, USA, Europe & Africa
  - Increasing trade flows & murkier national origins
- New technology introduction
  - More use of IT in production & logistics
  - Intensification such as hydroponics
  - Nano, biotech & in-vitro meat production
- People move off the land, increasing farm size
- Future 2030: New technology & more dependence on Ukraine, Brazil, US, Europe & Russia
- Action Items:
  - Increase productivity
  - Land ownership/tenure reform
  - Firmer embrace of technology
  - Trade liberalization & rebalancing trading system to new entrants

1. Shifting Production

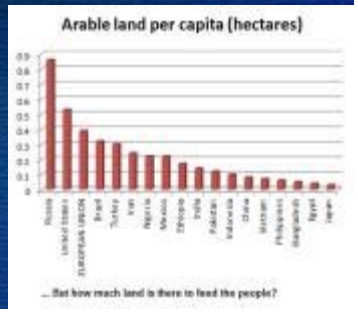
- Where land is underutilized…



Source: FAO

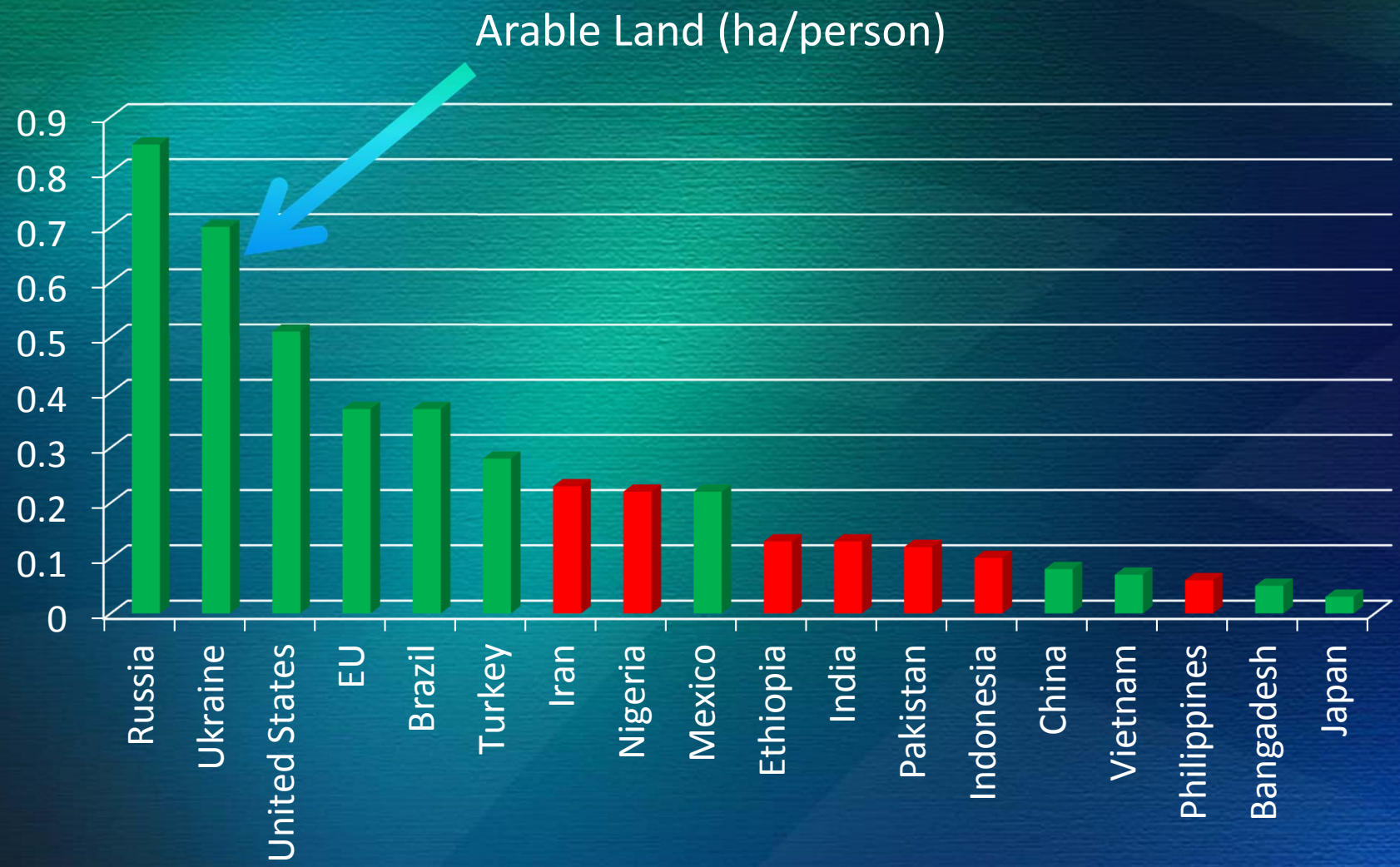
2. Food Security Concerns

- Links of food and national security
  - Rising competition for resources such as land & water
  - Increasing land & other input prices
  - Could affect political stability & military priorities
- More defensive moves in export & imports
  - Reducing price & supply volatility
  - Protecting local production in many markets
  - Market access a concern in export dependent countries
  - More technical trade issues
- Future 2030: More use of safeguards, SPS & anti-dumping Attempts to secure resources & local production
- Action Items:
  - Support training & technology
  - Reduce import/export trade barriers
  - Need to allow scale to develop in agriculture
  - Embrace new producers – we need them



2. Food Security Concerns

- Low Land Availability in Large Growth Markets



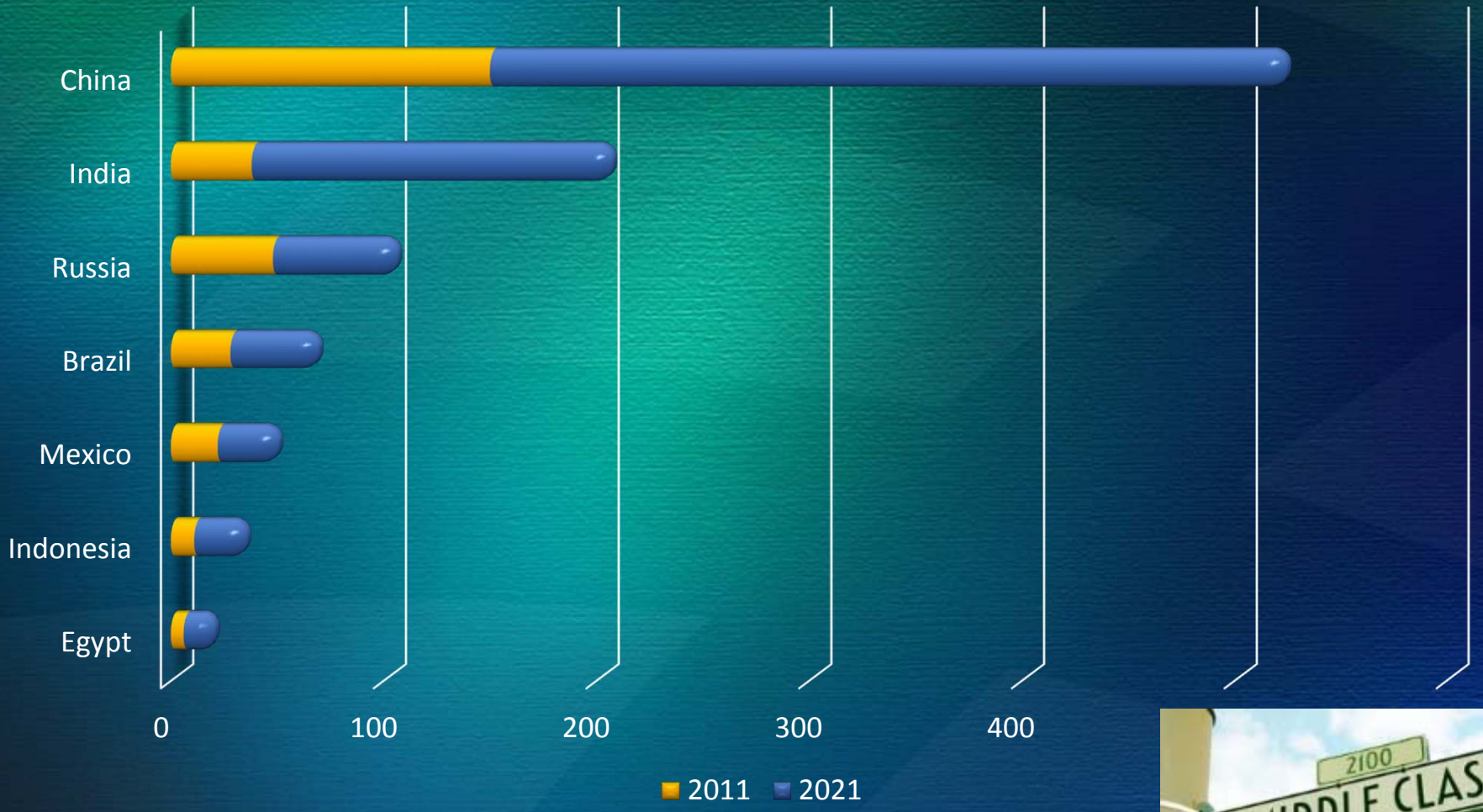
Source: FAO

3. Rising Global Middle Class

- Increasing demand in developing countries
  - Middle class will increase by 104% by 2020 in poor & middle income countries versus 9% in rich countries
  - Eating out & meat consumption to increase sharply
  - In East Asia & Sub-Saharan Africa, per capita meat consumption by weight is projected to increase by 55% & 42% by 2030
- Modernized distribution spreading
  - Cold chain & logistics to cut waste, reduce consumer prices, boost nutrition, raise food safety & increase farm prices
  - More sales through modern retail outlets
- Future 2030: Continued strong increases in food demand could press resource limits & strain transport
- Action Items:
  - Adaption to huge consumption increases
  - Improve logistics to facilitate trade & cut waste
  - Reduce trade barriers to control prices

3. Rising Global Middle Class

- Middle Class to increase by 83% by 2021



Source: Global Insight
Note: Households with PPP incomes greater than $20,000

3. Rising Global Middle Class

- More stress on production systems

Source: FAO, USDA

4. Rich Country Consumption

- Demand for ag products has been flat
  - Move away from red meat
  - Move away from “artificial” products
- Consumption changing
  - Obesity/NCD affect 500 million & kill 10-12 million
  - Local, organic, “natural”& “healthy” food
  - Nutrition, allergens & new concerns to arise
- Future 2030: Exports will likely drive future growth & food characteristics will become more important
- Action Items:
  - Give consumers control & change products to meet demand
  - Address food & health – custom nutrition & health claims
  - Increasing information content & big ag data
  - Need export/trade growth & secure market access
  - How to feed the world with more demands on ag sector?

5. Environmental Constraints

- Changing weather patterns
  - Water stress from erratic rain & limited availability
  - Increasing impact of agriculture (bees)
  - Emerging plant/animal diseases/AMR
- More need for sustainability
  - Soil erosion & biodiversity issues
  - Reducing waste in production & inputs
- Falling utilizable arable land
  - Urbanization & need to supply in Asia/Africa
  - Offset by increases in Ukraine, Africa & elsewhere
- Future 2030: Likely falling returns to scale because of environmental constraints. How to utilize waste?
- Action Items:
  - Focus on long-term water, land & other resource sustainability
  - Define property rights more clearly (land/water)
  - Data-driven agriculture

6. Science Anxiety

- Loss of faith in regulators
  - BSE, Dioxin-chicken in Europe
- Questions about biotech in some markets
  - Resistance in Europe
  - Complicated in China
  - Africa caught in the middle
- Could affect support for research & development
  - Undermine emerging and existing technologies?
- Future 2030: Persistent science skepticism could hurt yields & drive need to improve regulatory regimes
- Action Items:
  - More pro-science policy on biotech & other technology
  - Support agricultural extension, research & development
  - Much better public communication!

7. Non-Trade Concerns

- These NTC include:
  - Environmental (agriculture contributes 12–14% of greenhouse gas)
  - Social impact, human rights & child labor
  - Animal welfare, vegetarian & vegan (cage/crate free)
  - Religious issues – Halal
  - Food safety, aging & health issues
- Rising activity of NGO & Social Media
  - Focused on means of production
  - Major interest of younger generations
- Future 2030: Trade increasingly affected by NTC but may split along class lines. Multifunctionality is spreading
- Action Items:
  - Improve agriculture's environmental footprint
  - More effective risk communication & transparency
  - More technology to support consumer choice & prevent fraud
  - Value-added opportunity for producers

8. The Energy Issue

- Energy demand is rising
  - Consumption projected to increase by 45% between 2006 & 2030
  - Already diverts 30% of US corn, oils & sugar
  - Put pressure on food & feed prices
- Energy supplies are also rising
  - North American & other energy production
  - Return to early 20th century food/feed/fuel land use patterns
  - Next generation biofuels & new tech on the horizon
- Future 2030: Energy prices affected by demand & supply changes
- Action Items:
  - Reduce energy intensivity
  - Need to balance resource (land/water) use
  - Adapting to changes in energy & consumer prices
  - Prepare for disruptive technologies

9. Beyond the WTO

- WTO is stuck
  - Different visions for global agriculture (EU, United States, India…)
  - Doha died from many actors & need for unanimity
  - Gridlock defining “sound science” (Codex)
  - Dispute Settlement often not effective (EU-US ag, Brazil Cotton)
- Countries moving to FTA and other agreements
  - More than 600 bilateral or regional trade agreements in place by 2010
  - Increasing FTAs could complicate sourcing rules of origin
  - US move away from multilateral trade agreements (TPP)
  - Most agreements not likely WTO consistent
- Future 2030: WTO marginalized by FTAs & other agreements
- Action Items:
  - Increase gains from trade
  - Negotiate new FTAs aggressively
  - Stronger enforcement mechanisms, esp SPS/TBT

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10. Farmer Exclusion from Growth

- Poverty remains a global challenge
  - 1.4 billion people live in poverty, especially small farmers
  - Poverty increases vulnerability to weather, disease & price volatility
  - Can drive refugee flows & fuel political instability
- Development continues – but too slowly
  - Progress in China, India & elsewhere
  - Slowed by lack of shared vision between donors & private sector
- Future 2030: Progress underway but many will still be poor
- Action Items:
  - Investment in infrastructure
  - Improved capacity in policy & regulation
  - Market access to rich countries
  - Support in meeting importer SPS/TBT requirements
  - Promoting regional integration & harmonization

The Big Picture

- More globalization within a fracturing trading system of FTAs and falling US leadership
- More need for increasing production but subject to more rules & other priorities
- More use of science but increasing skepticism
- More use of science but more disagreements over what this means
- More use of WTO but inconclusive effects

The Big Picture

- Inability to resolve biotech & other issues
- Took time to connect food & national security (Whole of Government)
- Investment becoming very mobile – Africa, Brazil & China (to come)
- Importance of solving urban problems to ease pressure on agriculture
- Proliferation of new stakeholders
- **What is to be done?**

ADM Perspective on Ag Trends

- 3 observations:
  1. Changing global landscape
  2. Changing consumer preferences
  3. The role of technology
- 4 suggestions going forward:
  1. Embracing new technology
  2. Eliminate/reduce barriers
  3. Invest in infrastructure
  4. Practice environmental stewardship

Changing Global Landscape

- Dramatic change last 25+ years = net positive
  - Global poverty greatly reduced
  - New dynamic markets for food & agriculture
  - Increased income → better choices
  - New investment → new set of global players
  - U.S. still a powerhouse, but not alone

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Changing Global Landscape

- New players on global landscape:
  - South America oil seed production now greater than North America
  - Brazil second crop corn exports now rival US corn exports
  - Black Sea region = major wheat supplier
  - China's impact on corn market by ending its stock-piling policy

Changing Consumer Preferences

- Rising income → greater choice in products, increased priority on health and nutrition
- ADM has specifically adapted our portfolio to reflect these trends
  - Enriched taste, texture, nutrition
  - More inclusive appeal to broader consumer base

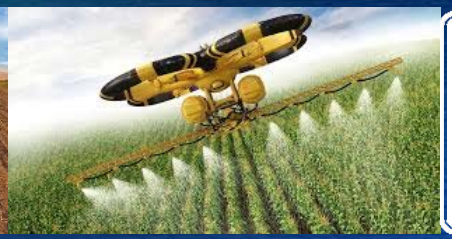
Role of Technology

- Bottom line: produce more healthful foods with enhanced nutritional benefits:
  - Bolster production
  - Reduce environmental footprint
  - More efficiently link producers with consumers

Role of Technology

- On the farm:
  - More precise application of fertilizer/pesticides
  - Satellite imagery for better crop management
  - ADM using drones to gather data on crop damage from storms, integrate info in our internal systems
  - Efficiency increased, costs decreased
  - New technologies promise even more improvements





Embracing New Technology

- Goals: increased production, improved supply chains, reduce environmental impact, decrease production costs
- Will require a joint approach by various stakeholders
- Need to partner with academia, think tanks, NGOs, public health community

Eliminate/Reduce Barriers

- Trade agreements:
  - Critical to success of US agriculture
  - US ag = net trade surplus for 50+ years
  - $130 billion annual exports, 1.2 million jobs
  - We must encourage policies that preserve US access to foreign markets
  - Other producing countries must be able to match their products with consumers globally

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Eliminate/Reduce Barriers

- Encourage smart regulation
- Discourage overly burdensome policies that make it difficult to link rural producers with customers around the globe

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Infrastructure Investment

- Must invest in safe and efficient transportation routes:
  - Roads
  - Rails
  - Ports
- Efficient supply chains key to getting products into the global marketplace



Environmental Stewardship

- Long-term commitment to reduce footprint, contribute to sustainable production system
- Ex: ADM's No Deforestation Policy
  - Palm oil traced back to mill
  - Soybeans grown responsibly
  - Work with growers and local governments
- Ex: ADM commitment to reduce energy, water usage, total emissions by 15%

Thank you!

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