Navigating the digital landscape in the agri-food sector

Chances & Strategies to Grow & Expand your Business Using Modern Technology

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MODULES

1. INTRODUCTION TO DIGITAL TRANSFORMATION IN AGRI-FOOD
2. BUILDING A DIGITAL PRESENCE
3. E-COMMERCE & ONLINE SALES
4. DIGITAL MARKETING STRATEGIES
5. DATA ANALYTICS & INSIGHTS
6. MOBILE TECHNOLOGY & APPS
7. INTERNET OF THINGS (IOT) IN AGRICULTURE
8. ONLINE NETWORKING & COLLABORATION
9. CYBERSECURITY & DATA PRIVACY
10. FUTURE TRENDS & ADAPTATION STRATEGIES

Future Trends & Adaptation Strategies

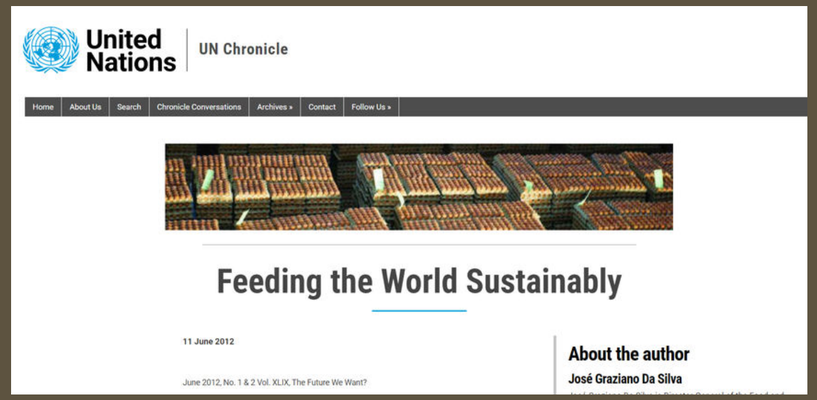
- Identifying key future trends impacting the agri-food sector
- Understanding importance of adaptability in business strategy
- Developing strategies to leverage emerging technologies & consumer behaviors
- Creating a proactive plan for continuous improvement & innovation

Future challenges for the agri-food sector

‘By 2050, we must produce 60 percent more food to feed a world population of 9.3 billion.’

(Forbes)

While facing: changes in weather patterns, more extreme weather events & temperature increases



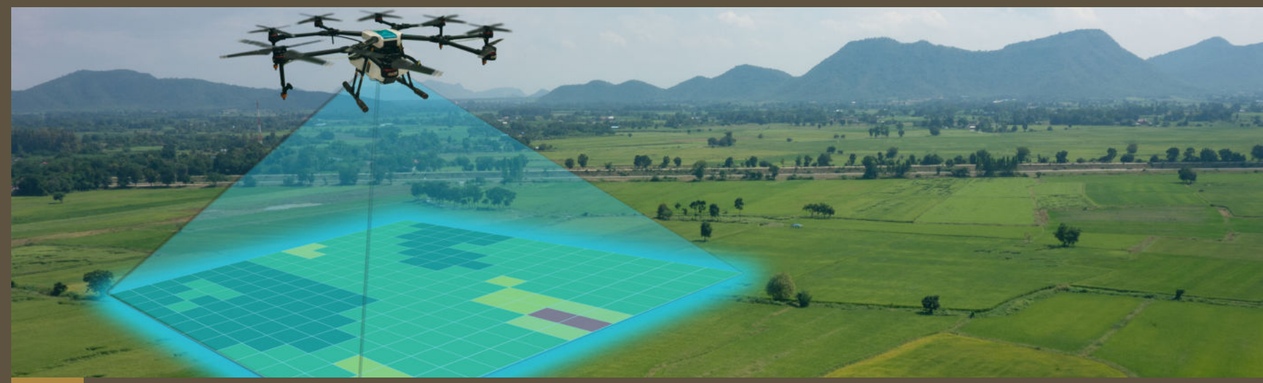
www.un.org/en/chronicle/article/feeding-world-sustainably

www.forbes.com/sites/ganeskesari/2024/03/31/the-future-of-farming-ai-innovations-that-are-transforming-agriculture/

1) Key future trends in the agri-food sector

Sustainability & Eco-Friendly Practices

- Increasing consumer demand for sustainable & ethically produced food
- Innovations in sustainable farming techniques & supply chain management



Digital Transformation

- Growth of e-commerce & online sales channels
- Integration of technology in agriculture, e.g. precision farming, IoT,

1) Key future trends in the agri-food sector

Health & Wellness Trends

- Rising consumer interest in health-conscious & organic food options
- Impact of dietary trends (e.g. plant based, KETO, gluten-free) on product offerings

Personalization & Consumer Engagement

- Use of data & analytics to understand consumer preferences
- Strategies for personalized marketing & customer experience

2) Importance of Adaptability

Agility in Business Strategy

- need for businesses to pivot quickly in response to market changes
- Example: Facing more drought events due to shifts in weather patterns > usage of drought resistant crops

Continuous Learning & Innovation

- encouraging a culture of innovation within the organization
- importance of ongoing training & development for staff

3) Leveraging Emerging Technologies

- applications in demand forecasting, inventory management & customer insights
- 3 Key Challenges farmers face & their AI solution:

PESTS

- Pests destroy approx. 40% of global agri-food production per year

> early accurate identification
> e.g. Trapview: devise traps & identifies pests > informs farmer

SOIL QUALITY & IRRIGATION

- Decreasing soil quality
- Loss of water due to leaky irrigation systems

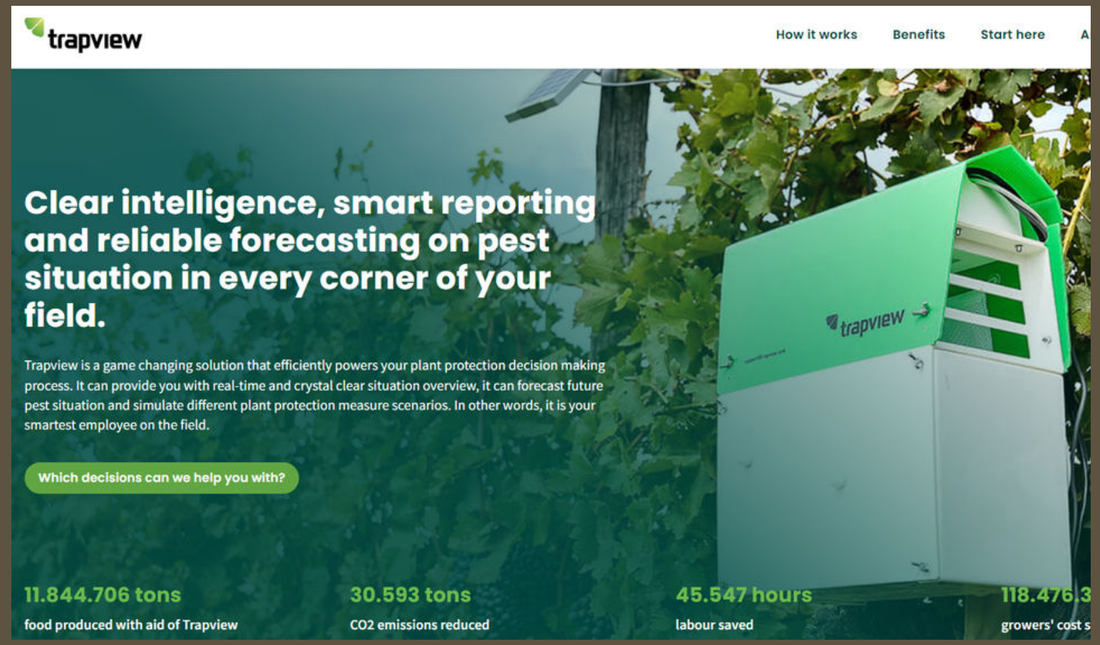
> data from in-ground sensors, drones, farm machinery, satellites
> e.g. CropX: real-time date of soil health > adaption of water usage & soil amendments

WEEDS

- Weeds decrease crop yield & quality by approx. 30%

> identifying weeds through drones & robots
> e.g. Carbon Robotics: identifying weeds in field > robots eliminate identified weeds via laser

Example: Trapview



- integrated pest management solution
- real-time & clear situation overview
- forecast future pest situation
- simulate different plant protection measure

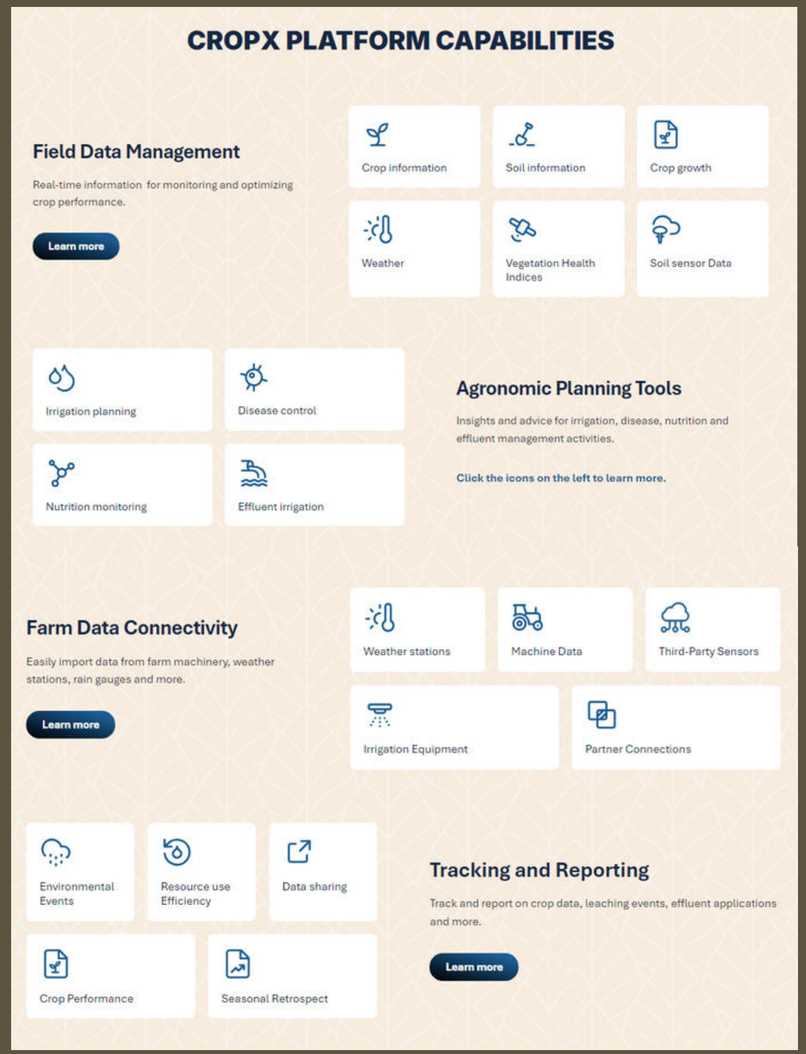
traps > real-time info about pest situation

data to cloud > analyzed

solution options for producer based on real-time data > minimize pesticide usage, lowering costs, minimizing risks

source & more information: trapview.com

Example: CropX



- management for all farms, fields, crops in one place
- tracks soil to weather data
- pests
- recommends pesticide, fertilizer application
- controls irrigation

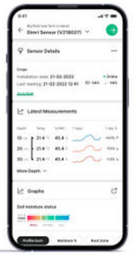
cropx.com/cropx-system/

Example: CropX

Reliable, Accurate and Easy to Install

The new CropX soil sensor is a simple, innovative and cost-effective solution for irrigation management across any crop type or irrigation practice. Combined with an industry leading agronomic software platform, the CropX soil sensor is part of the most agronomic farm management solution on the market today.

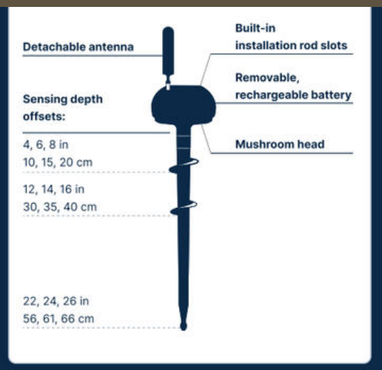
- **Fully enclosed all-in-one soil sensing to cloud solution** - built-in telemetry and power source eliminate the need for an extra device
- The **patent-pending spiral design** improves the accuracy of soil data readings by preventing preferential water flow
- A CropX sensor can be **installed by anyone quickly** - made even easier with a new tapered design, smaller spirals, and built-in installation rod slots



DESIGNED FOR FLEXIBILITY

CropX redesigned the soil sensor to make it even more reliable and customizable

- Measurements of VWC and EC at all 3 depths and temperature at the top two depths
- Virtual sensing - calculating moisture every 4" from 8"to 26", or every 10 cm from 20 cm to 66 cm
- Sensor depth offset – for installation at varying depths to match optimal crop rooting needs
- Automatic soil water budget line detection



CropX soil sensor data collection

Intervals of data measurement and transmission to the CropX cloud can be remotely configured and adjusted to each crop's unique needs. The data is geo-tagged based on GPS coordinates creating geospatial time series for all measured data.

Moisture: Measurement of volumetric water content (VWC) values via ADR sensors. Moisture values are converted from electric impedance to VWC levels using a proprietary self-calibration method. Moisture values have an accuracy of +/- 0.5% across a range of 0-60% VWC.

Temperatures: Temperatures are measured with an accuracy of +/- 0.5°C (max) and an operating range of -10°C to +70°C. Each unit also measures the internal temperature of the unit above ground, which can help with increasing the precision of weather data.

Electric Conductivity (EC): Measurement in decisiemens/m, with an operating range of 0-5 decisiemens/m (bulk), representing the soil salinity level, which can be used to manage crop salinity regime

Learn more about CropX solutions today!
CropX Technologies, support@cropx.com

cropx CropXGlobal @Crop_X CropX-Ltd www.cropx.com

- full solutions > hardware + software
- e.g. soil health, irrigation

example here: all-in-one smart soil sensor

more information:
cropx.com/resources/brochures/

Example: Carbon Robotics

- world’s first precision laser weeder
- AI-driven
- highly precise weeding, while crops stay untouched

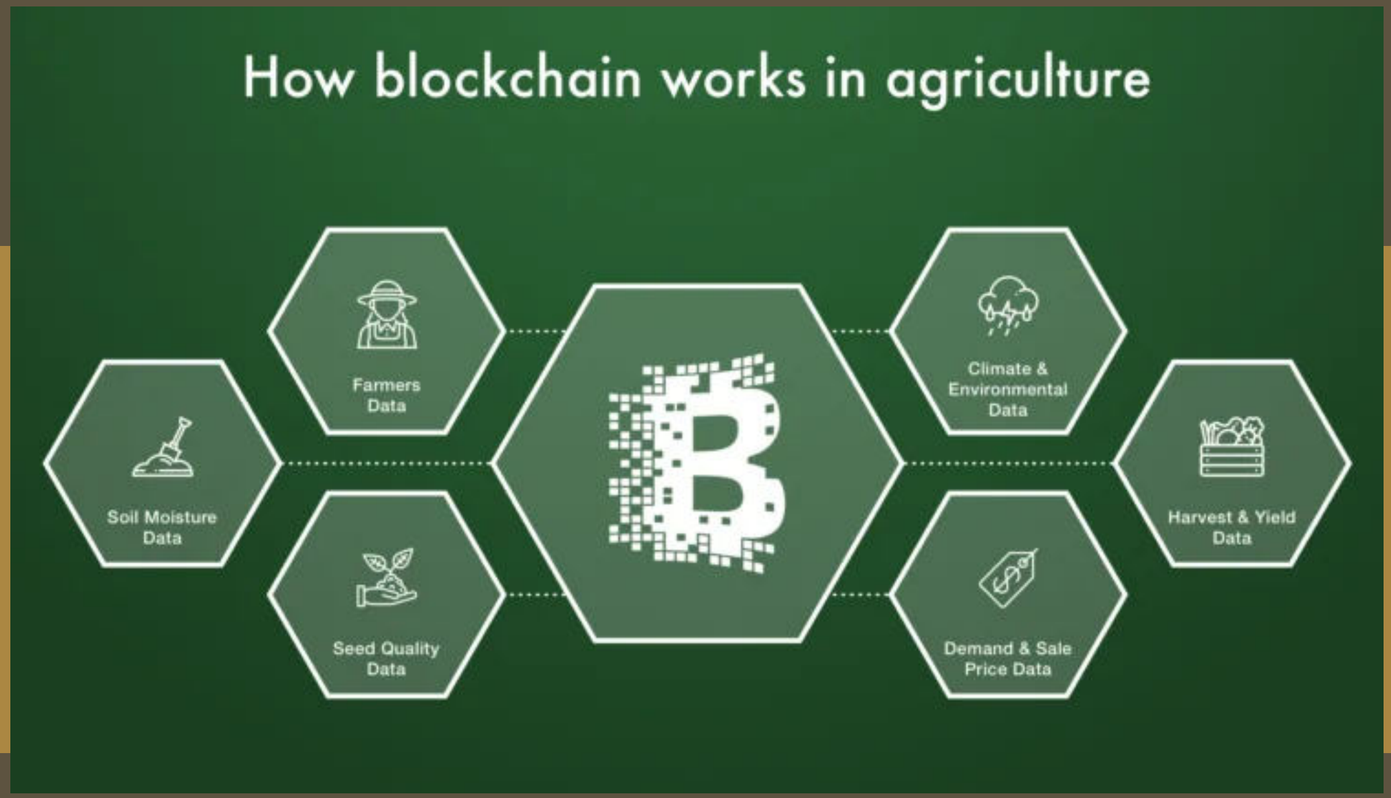
carbonrobotics.com/laserweeder

3) Leveraging Emerging Technologies

Blockchain Technology

- Enhancing transparency & traceability in supply chain
- connect farmer with customer

- transparency farm > table
- easy tracking
- fair pricing
- smart contracts in agri-insurance
- example: IBM Food Trust > food supply data, used by Walmart



bitcoinik.com/how-blockchain-can-transform-the-agriculture/

3) Leveraging Emerging Technologies

Automations & Robotics

Benefits in production processes & logistics:

- increased efficiency: streamline production process, robots don’t need breaks
- cost reduction: high initial investments, long-term savings in labor
- precision & consistency: perform tasks with high precision, enhances product quality
- labor shortage
- safety improvements: heavy lifting or chemical usage, reduced risks for human workers
- scalability: robotics easily able to scale up production upon higher demand
- hygiene increase
- more lightweight compared to heavy farm machinery
- offers smart solutions for sustainable & regenerative agriculture

Automations & Robotics

- **Seeding** – Driverless tractors and robots are gradually taking over from human-operated machinery for the purpose of sowing seeds.

- **Harvesting** – Due to the ongoing labor shortage, robots are increasingly being utilized on farms, often equipped with picking arms to collect ripe fruits and vegetables.

- **Packing** – The process of packing fruits and vegetables for distribution to retailers typically involves conveyor belts and robotic arms that organize the produce by type. These systems can be programmed to distinguish between good and bad items, ensuring that only the finest products reach the supermarket.

- **Palletising** – Traditionally performed by a forklift truck and operator, palletising has become automated in many cases through the use of palletising robots or robotic arms.

Automations & Robotics

- **Crop Maintenance** – Robots can be programmed to handle various crop maintenance tasks such as pruning plants, weeding, applying insecticides or nutrients, and managing irrigation.

- **Livestock Applications** – Many repetitive tasks in livestock farming can be automated, including milking cows, distributing feed, monitoring grazing land, herding.

www.country-guide.ca/machinery/the-robots-are-here-and-ready-to-weed-your-field/

www5.msstate.edu/newsroom/article/2023/05/robot-roundup-autonomous-cattle-herding-studied-msu-scientists-may-be-game

4) Strategies for Future-Proofing Your Business

Regular Market Research

- staying informed about industry trends & consumer preferences
- utilizing surveys & focus groups for direct feedback

Invest in Technology & Training

- allocating resources to adopt new technologies & train staff
- collaborating with tech partners for innovative solutions

Forster strong relationships

- building partnerships with suppliers, distributors & consumers
- engaging with industry networks & associations for shared insights

5) Creating a Proactive Plan for Improvement

Setting Goals & KPIs

- defining clear objectives for innovation & adaptation
- establishing metrics to measure success & progress

Feedback Loops

- implementing systems for collecting feedback from customers & employees
- using the feedback to drive continuous improvement

6) In Conclusion

Understanding future trends and developing adaptation strategies is **critical for success** in the agri-food sector. By **staying ahead of challenges** and leveraging **new technologies** business can enhance their resilience and sustainability in a competitive landscape.

7) Active Engagement Exercises

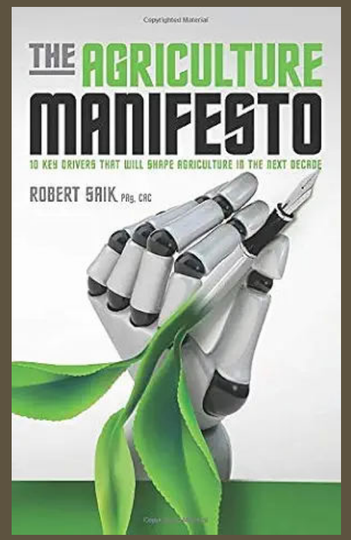
Scenario Planning

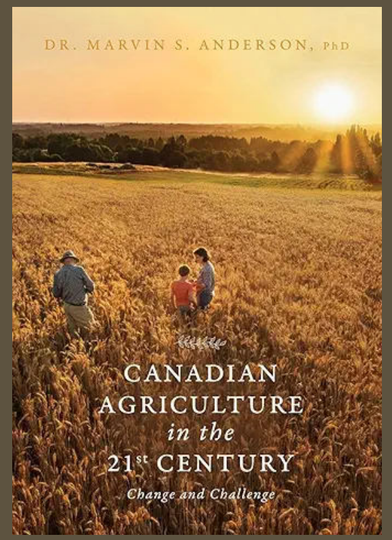
Envision different scenarios in the agri-food sector that could arise over the next 10-20 years. What are some current technological solutions that could be implemented.

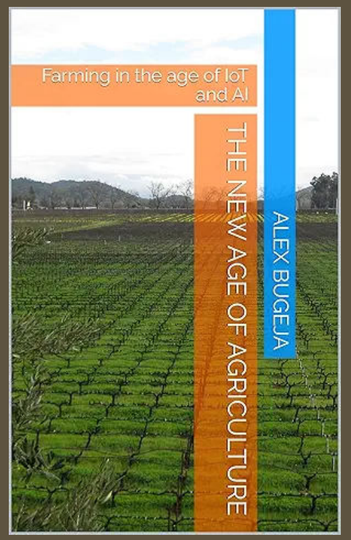
Continuous Learning

Keep on learning and keep up with trends. Enroll into more online courses focused on topics such as sustainable/regenerative agriculture, food technology or climate smart strategies. Example: Courses on the learning platform of the EOAN, on Alison.com or on Coursera.org,

RESOURCES







The Future Of Farming: AI Innovations That Are Transforming Agriculture
www.forbes.com/sites/ganeskesari/2024/03/31/the-future-of-farming-ai-innovations-that-are-transforming-agriculture/

12 Ways Farmers Are Adapting to Climate Change Around the World
www.globalcitizen.org/en/content/how-farmers-are-adapting-to-climate-change/

The robots are here, and ready to weed your field - Country Guide
www.country-guide.ca/machinery/the-robots-are-here-and-ready-to-weed-your-field/

THANK YOU

COURSE CREATORS:
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MADE POSSIBLE BY:
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