“Agriculture and technology: The sky is the limit (literally)"

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Outline

• GIS & Agriculture
• Other Agriculture Technologies
• Local Use
• MSUE Resources
What is GIS?

- A **geographic information system** (or **GIS**) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.
GIS & Farming?

- Weather forecasting
- Insurance
- Parcel mapping
- USDA programs assessing crop health
  - Topography
  - Vegscape
VegScape VEGETATION INDEX & CROP MASKED MAPS

- NDVI
- NDVI Ratio to Previous Year
- NDVI
- NDVI Ratio to Previous Year
- NDVI Ratio to Median
- NDVI Ratio to mean
- Ratio Median NDVI or RMVCI
- Mean NDVI or MVCI
Michigan Agricultural Mapping Tool
Agriculture & Technology

- UAVs and Drones
- Mapping and VRT
- Apps
- Big Data
Evolution towards Digital Agriculture

Market for Digital Agriculture: CAGR >13% to reach US$ 7.87 Billion by (2022)

Sectoral Distribution of Digital Agriculture

- 7.6% Technician support services
- 32.4% Geographical information systems
- 15.2% Guidance systems
- 17.8% Yield monitors
- 27.0% Variable-rate application control systems

Guidance systems are used on about half of planted acres for several major crops.

USDA, Economic Research Service using data from USDA’s Agricultural Resource Management Survey (ARMS) Phase II.
GPS soil mapping is used on more planted acres of corn, peanuts, and soybeans.
VRT use has risen to about a fifth of planted acres of corn, peanuts, soybeans, and rice.

USDA, Economic Research Service using data from USDA’s Agricultural Resource Management Survey (ARMS) Phase II.
Data Transfer Limitations

39 percent of rural Americans (23 million people) lack access to 25 Mbps/3 Mbps.

20 percent of rural Americans lack access to service at 4 Mbps/1 Mbps.

31 percent of rural Americans lack access to 10 Mbps/1 Mbps.

Americans living in rural and urban areas adopt broadband at similar rates where 25 Mbps/3 Mbps service is available, 28 percent in rural areas and 30 percent in urban areas.

Local Agriculture Technology

- GPS
- Auto-steer
- Light Bar Guidance
  - Differential GPS
- Yield Check

A lot of interest!!!
Barriers to use

- Lack of infrastructure
- Sociological
- Low commodity prices
- Difference in type of agriculture--livestock-forage based.
What is MSUE?

“A Resource for A-Z”
Mission Statement

Michigan State University Extension helps people improve their lives through an educational process that applies knowledge to critical issues, needs and opportunities.
Catalog of Programs and Services

Michigan State University Extension programming can vary from year-to-year. However, we have put together a catalog of MSU Extension's regularly available programming and services available in a regularly scheduled class or by request. For upcoming events in your area, visit your county page or the events feed.

*Full MSU Extension Catalog of Programs and Services (pdf)*

**Sections**

- Agriculture (pdf)
- Business & Community (pdf)
- Family (pdf)
- Food & Health (pdf)
- Lawn & Garden (pdf)
- Natural Resources (pdf)
- 4-H & Youth (pdf)

*note: 4-H & Youth programs and services available throughout all sections of catalog*
Resources at MSU

Aerial Imagery Archive v2.0

We are happy to offer an easy way to acquire imagery at the Aerial Imagery Archive. Our online request system gives you unprecedented access to the largest collection of historic aerial imagery for Michigan. Thousands of images and terabytes of data are now available at your fingertips.

Learn how to access the Archive

PS - You can still visit us in person. We like it when visitors stop by.

Upcoming Training

Join us for our one- and two-day CEU certified workshops, taught by our staff of Certified GIS Professionals, covering the principle tools of geospatial technology.

March 6-8, 2017
- Introduction to ArcGIS - 2 days
- ArcGIS II - Beyond the Basics - 1 day
  - 1 Seat Left.
  - Class is full.

August 21-23, 2017
- Introduction to ArcGIS - 2 days
- ArcGIS II - Beyond the Basics - 1 day

November 6-8, 2017
- Introduction to ArcGIS - 2 days
- ArcGIS II - Beyond the Basics - 1 day

April through September

New Hands-On Drone Training!
Geographic Information Systems - GIS

- General consulting
- Needs assessment
- Planning and Implementation
- Data development (digitizing, parcel mapping, scanning, field collection, data mining, etc.)
- Data manipulation (coordinate conversion, resolution resampling, file format conversion, etc.)
- Attribute standardization
- Geodatabase schemas
- Data processing and automation
- Geoprocessing analysis
- Network analysis
- Geocoding/address matching
- Land cover/land use data development and updates

Remote Sensing & GIS (RS&GIS)
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