Agriculture

GIS In Agriculture: Best Practices For AgriTech Leaders

The power to readily collect and analyze farmland data is one of many reasons why geographic information systems (GIS) are so valuable in agriculture. Field machinery on the ground and drones and satellites in the sky collect GIS agriculture data. Then, this information can be used for a wide variety of purposes, from precision farming and crop prediction to livestock tracking. Major agrifood stakeholders routinely utilize GIS solutions for agriculture to boost short-term profits and realize long-term goals of sustainable development.

What Is GIS In Agriculture?

GIS is a tool that lets users create multi-layered interactive maps that can be used for the visualization of complex data and for spatial analysis. How is GIS related to agriculture? The use of GIS in agriculture enables farmers to map field data, organize and analyze it, and monitor their crops remotely.

GPS, robotics, drone and satellite monitoring have all contributed to farm automation. These technologies underpin collecting GIS data. By visualizing data, GIS helps farmers spot trends and patterns, implement change detection, and quickly address issues. Precision agriculture relies heavily on GIS to collect and interpret massive field data for informed decision-making.

The scope of modern agriculture has expanded beyond domestic farmlands to encompass the entire planet. For agriculture corporations, maintaining a productive crop calls for regular remote field observation and prompt problem-solving. This is why GIS solutions with constant multi-factor danger assessments are so crucial in today's agriculture.

Agricultural GIS Data: Where It Comes From And How It's Processed

Hardware, software, and information all come together in GIS technology. Any device, from a simple laptop or desktop computer to something more complex like a satellite or a drone, can serve as the hardware. GIS software

utilizes maps to display spatial data. Images are created using a variety of GIS technologies and then linked to relevant maps and data that is hidden from view. What you end up with is a map not only showing the location and overall health of your crops but also taking into account other relevant factors such as terrain, soil type, and fertilization. It's time we tracked down where all that agriculture GIS data comes from and how it is processed.

Remote Sensing

Remote sensing involves aerial or satellite scans of the Earth's surface. When it comes to medium spatial resolution land remote sensing data gathered from space, Landsat is unrivaled. The Landsat 8 is an observation satellite that orbits Earth every 16 days. It records nine visible light bands helping assess crop health, nutrient content, insect infestation, or moisture. Not only does Landsat 8 record visible light, but also invisible to the human eye thermal infrared radiation (TIR)

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Agriculture GIS tools visualize the collected data as digital images to better serve broad goals, such as precision irrigation or plant disease identification. In addition to Landsat 8, private companies are increasingly launching their GIS agriculture satellites for niche applications, like monitoring fields, water supplies, temperature fluctuations, and more.

GPS

GPS and GIS integration lets farmers collect real-time data, including position. In other words, agriculture producers may boost resource utilization efficiency by employing gadgets to precisely plot where to use these resources on a given farm. GPS-enabled field mapping helps analyze crop varieties, elevation levels, field boundaries, irrigation systems, etc.

Machinery

GIS agriculture machinery sensors add "ground data" to "data from the sky" obtained by satellites. GPS tracking equipment in sowing machines, smart irrigation systems, and harvesters allows farmers to measure crop production and quality (e.g., moisture or chlorophyll levels) in real time and at a specific location. Some advanced agriculture machines may act autonomously based on the data they collect, while others are used to supplement GIS analysis.

EOSDA Crop Monitoring As An Example Of Agriculture GIS Software

It should be noted that GIS software in agriculture might vary depending on its purpose. Some tools indicate crop types, yields, and distributions. Some visualize soil moisture levels to help users decide what to plant. Some other software helps to compare the economic costs and benefits of forestry vs. logging. Therefore, it is the responsibility of each farmer or agriculture manager to find a GIS solution that provides data for them to make informed farmland decisions.

When it comes to field data, the EOSDA Crop Monitoring digital agriculture platform has you covered in many ways. Historical vegetation and weather data, a summary of the dynamics of the vegetation indices and the soil moisture index, and accurate 14-day weather forecasts are available here. In addition to providing access to GIS-based agriculture data, the platform includes capabilities such as:

scouting, which improves task management and allows scouts to create and send reports to owners in real time;

field activity log for planning, coordinating, and monitoring all field operations.

Having all of these options in one place boosts agricultural businesses and organizations that engage with them.

EOSDA Crop Monitoring also combines data from other sources. For instance, the Data Manager tool in EOSDA Crop Monitoring integrates machinery data into the platform. The system is compatible with SHP and ISO-XML, the two most common file types. A data set may include more than one metric. Based on data from field machines, you can assess the crop's yield, compare it to fertilizer maps, draw conclusions about the effectiveness of the fertilizer strategy, and develop yield-boosting strategies.