



## Farm Applications of fGIS - A Free GIS Program

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A free GIS (geographic information systems) program called fGIS can perform many of the geospatial functions required by farmers. As I indicated in this column earlier this year, fGIS can do more than simply view GIS layers. Farmers have specific GIS needs; most can be accomplished with this program.

Some of the GIS functions required by farmers include displaying field boundaries with other boundary data, such as section lines, roads, drains and surface water. Farmers need to overlay soil and fertility information and yield data on their field boundaries. Farmers use GIS programs to relate information from aerial photographs and satellite images to their crops and fields. Farmers are using GIS increasingly to develop management zone maps used to apply varying amounts of crop inputs across their fields.

So how well does fGIS work for these functions? Field boundaries and boundary data are added easily to fGIS, but it does have a limited choice of data formats. The program accepts several GIS file formats for feature data, such as fields and boundaries, roads and section lines. It can use ESRI shapefiles, MapInfo layers, Tiger files and ArcInfo import files.

Most digitizing and editing functions required by farmers can be performed using fGIS. Users can use this program to make new point, line or polygon layers and edit existing layers. The software can add, alter and delete shapes within layers and edit layer attributes. It has excellent tools to create new polygons within existing polygons to identify areas in fields, such as weed patches and output area information in acres. The software also can clip county soil maps with field boundaries.

Most common image types, including MrSid, JPG, BMP, TIF and common satellite image formats, are accepted by fGIS. Images can be clipped to the map display area, but not by specific boundary layers. To clip an image to a specific area, users need to zoom in until just their desired field or farm is displayed before performing the clip function on an image. The program adds a world file to the clipped image so it can be displayed in the correct location in a GIS program.

Displaying yield data is more of a problem in fGIS. This program works well with yield data as long as it is in ESRI shapefile format. The program is designed to import point data that is stored in comma or tab-delimited text format. However, because there are so many points in crop yield data, it takes several minutes to import yield data in TXT format. Once the TXT yield data is imported, it also slows down the performance of fGIS until it is converted into a shapefile. The difficulty fGIS has with large point data files is a significant disadvantage as a farm GIS program.

The software has very useful tools to relate spatial data between layers. For example, farmers could use these spatial selection tools to identify yield levels for specific management zones or soil types. Both image and regular GIS layers can be displayed as partially transparent, so fGIS could be useful to make visual comparisons between layers. These same functions could be used to prepare prescription fertilization or planting maps, as long as the computer on a variable-rate applicator or planter can use a shapefile format.

A free download of fGIS is available at [www.digitalgrove.net/fgis.htm](http://www.digitalgrove.net/fgis.htm). Step-by-step instructions for fGIS will be available on the NDSU geospatial technology education Web site at <http://134.129.78.3/geospatial> beginning this month. More information about geospatial technology is available from the NDSU Agricultural and Biosystems Engineering Department Web site at [www.ageng.ndsu.nodak.edu](http://www.ageng.ndsu.nodak.edu). Follow the links to Extension programs and geospatial technology education.