



Field Boundary Maps

Introduction

A cropland field boundary map (Figure 1) delineates the shape and area of individual fields on a farm. These fields can then be managed as a single unit or subdivided into smaller zones. Outdated maps can create uncertainty about total acreage of a field and pose challenges for field management. With advances in technology, it is now much easier to create and update maps allowing for more accurate field mapping and field identification. This factsheet presents five reasons to ensure boundary maps are updated and what to consider when updating maps.

Reasons to Update Field Boundary Maps

Field Management Planning and Operations

Field boundary maps are useful in field management planning and operations. They help in planning efficient and precise application of manure, fertilizer, and implementation of integrated pest management (IPM) at the field or subfield level. As the primary management unit for planning and trend identification, field boundary maps can lead to improved farm worker efficiency, optimized yields, and reduced cost of operation. Field maps provide universal

identification and location of fields for farm staff, custom applicators, and crop consultants.

Yield Data Gathering

Field boundary maps assist in collecting accurate yield data for fields across the farm by ensuring all data collected are connected to a field location and area (acreage). They assist in accurately reporting aggregated yield data such as yield per management zones within a field, yield per field across the farm, and overall cropland yield at the farm level. Accurate and updated maps also save time in yield data cleaning and data processing (Figure 2). See [Agronomy Fact Sheet #107](#) for more information about data cleaning. With accurate yield data, trends in yields over time from the farm to subfield levels can be identified.

Yield Stability Zone Mapping

Cleaned yield data combined with updated boundary maps can be used to create yield stability zones for a farm. The yield stability maps show where yield is consistently high or low, or variable over multiple years. They can also highlight field and subfield characteristics. For more information about the benefits and the

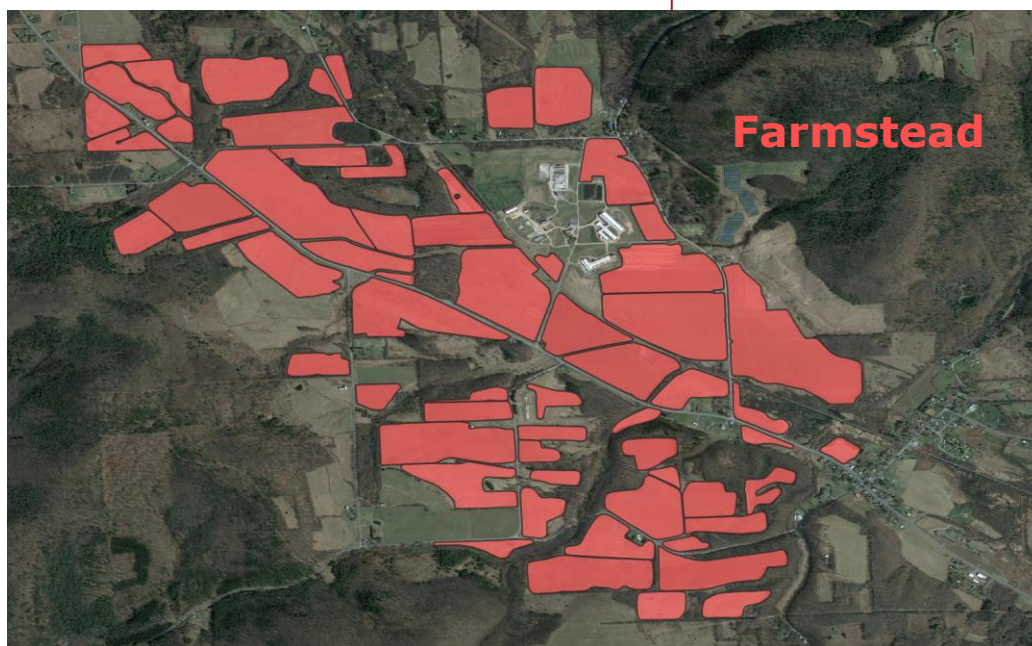


Figure 1: Field boundary maps of a farm can contain various kinds of information, also known as attributes (e.g., field name, field acres, GPS coordinates, etc.).

importance of creating zone maps, see [Agronomy Fact Sheet #108](#).

Field Information Record Keeping Across Years

Field boundary maps are an asset when documenting field information over the years. These maps can provide details about cropping history, nutrient applications, and other field management operations, which can be used for future planning. The maps provide consistent measurements of areas for any field-related and farm-specific calculations (e.g., field nutrient balances and/or whole farm nutrient mass balances; see [Agronomy Fact Sheet #25](#) and [#85](#) for more information about whole farm nutrient mass balances). Yield trend analysis can then help further identify problem spots (e.g., wet spots) and facilitate addressing crop production challenges where possible.

Facilitates Adoption of New Technologies

Boundary files are a bridge to adopt and use new technology and within-field management. The digital format of these files can be integrated to various mapping software packages. This, in turn, allows for the addition of other map layers (e.g., variable rate applications, electronic conductivity mapping, planting, remote sensing imagery) for more efficient management.

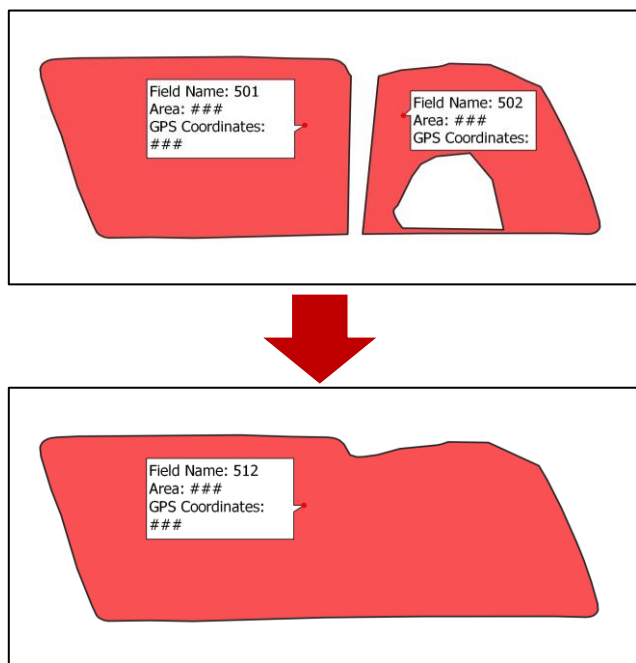


Figure 2: Previous field boundary maps (top) can become inaccurate due to repairs, expansions, and changes over time and should be updated (bottom) to make data processing easier and current field information accurate.

Considerations for Making Boundary Maps

Important things to consider when creating and updating field boundary maps include:

1. Various tools can be used including equipment mounted GPS units, cloud-based services, and other mapping software. Independent of software used, boundary maps *should have consistent field names*.
2. Keep names of fields simple and short. Numerical names (e.g., 626) are best as they reduce the risk of mistakes when entering field names in displays.
3. Check that fields on the maps have accurate acre coverage (which ensures the before mentioned documentation and calculations are correct).
4. If field boundaries must change, keep names consistent and update the map with each change.

Summary

Accurate and updated cropland field boundary maps help farmers and farm advisors become more efficient with their time and resources. Various tools can be used including equipment mounted GPS units, cloud-based services, and other mapping software.

Additional Resources

- Cornell Nutrient Management Spear Program Agronomy Fact Sheets #25: Whole Farm Nutrient Mass Balance; #107: How and Why to Clean Corn Yield Monitor Data; #108: In-Field Zone Management of Field Crops; and #85: Feasible Whole Farm Nutrient Mass Balances: <http://nmsp.cals.cornell.edu/guidelines/factsheets.html>.

Disclaimer

This fact sheet reflects the current authors' best effort to interpret a complex body of scientific research, and to translate this into practical management options. Following the guidance provided in this fact sheet does not assure compliance with any applicable law, rule, regulation or standard, or the achievement of discharge levels from agricultural land.

For more information



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