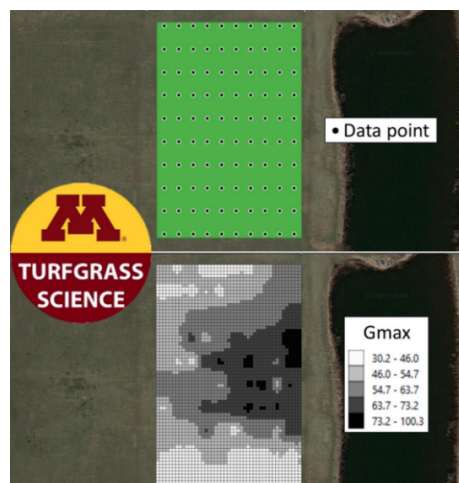




# Protocol for mapping sports field properties

A step-by-step, easy-to-follow protocol for collecting and analyzing surface properties of sports fields using commercially available devices and free software.



Technology ID

2020-238

## Category

Express License

Software & IT/Algorithms

Software & IT/Education & Training

Software & IT/Open Source

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## Applications

Sports field management

- Data-driven maintenance decision for natural and artificial turf fields
- Surface property audits for irrigation, surface hardness, infill depth, etc.
- Identification and proactive maintenance of hot spots to potentially reduce player injury
- Informing administration, coaches, and players of the consequences of improper field usage

## Key Benefits & Differentiators

- **Written and video instructions** are downloadable and easy-to-follow
- **Practical, affordable, repeatable** approach for mapping sports field properties
- Sampling devices do *not* require GPS functionality
- Useful for effective monitoring and proactive planning
- Cut down on cost by using freely available software for analysis and visualization

## Step-by-step protocol for sports field data mapping

Maintaining uniformity within a sports field is critically important as uneven surface properties such as soil moisture, surface hardness, turfgrass quality, etc. may directly lead to decreased field playability and increased injury occurrence. Periodic assessment of sports fields is especially important as several factors such as field construction, weather, sports type, and foot traffic can continuously alter the surface properties. While the technology required to collect and map such surface properties is already commercially available, its adoption has been rather poor. This is primarily due to lack of knowledge around how to collect and analyze the data effectively. In addition, costs associated with measurement devices and software can pose

increased barriers. To help get over these hurdles, researchers at the University of Minnesota have created a detailed protocol to walk the users through the entire process. With this step-by-step protocol (written instructions & videos), users can easily

- collect location-specific surface property data with commercial sampling devices (that do not require GPS functionality),
- create, visualize, and analyze detailed data maps of entire sports fields using a free software (QGIS),

This self-teaching protocol package will enable sports field maintenance crews to better utilize existing technologies to make data-driven management decisions in a cost-effective and methodical manner.

## Phase of Development

Protocol available for download.

### Researchers

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### Ready for Licensing

This technology is now available for license! The University is excited to partner with industry to see this innovation reach its potential. Please contact us to share your business' needs and your licensing interests in this technology. Click the "License this Technology" button on the right panel to license and download the protocol. The University is currently offering this protocol for free. The license agreement helps us keep track of the users.

A protocol specific to [golf course soil moisture mapping](#) is also available.