Precision Turfgrass Management - Getting Started

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Precision Turfgrass Management (PTM) is a new approach that will allow turf managers to better evaluate and treat the natural variability that exists throughout their turf site. Variability can be caused by many factors including soil type, fertility, plant species, disease, and moisture status. Determining which properties are responsible for variability in turf is a difficult task and a challenge to IPM technology.

PTM is comprised of four main components. The Global Positioning Satellites (GPS), first designed by the U.S. Department of Defense as a military navigation system, uses satellites to determine accurate, real-time positioning in space. Global Information Systems (GIS) provide user-friendly software to organize GPS data into a mapping format. This information can be mapped into layers of information to analyze a variety of turf conditions over time. GIS is the same system used by cartographers to create highly accurate maps. Sensors can be used to detect variability in turf. For example, sensors have been developed to detect variability in plants based on the type or intensity of specific wavelengths of light that are reflected from the canopy. Finally, Variable Rate Technology (VRT) provides the application of pesticides or fertilizer at specific rates and locations depending upon the needs of the plant. The combination of GPS, GIS, sensors, and VRT will allow turfgrass professionals to manage their turf according to specific needs of a location, thereby reducing excessive and unnecessary application of pesticide and nutrients, and potential harm to the environment.

Michigan State University is currently working on a research project in cooperation with the Toro Company to gain a better understanding of factors that cause variability in turf and to develop methods to accurately sense variability in turf as a part of PTM.