

Application of ArcGIS and Farmworks software for Variable Rate Fertilization

Time: March – April 2013

Module Description: Variable rate technology (VRT) aims to improve fertilizer use efficiency and reduce nutrient losses by varying fertilizer rates on an as needed basis within a field. Variable rate applicators utilize GPS guided prescription maps and “on-the-go” sensors, or a combination of maps and sensors. Precision agriculture techniques enable agricultural producers to improve crop production efficiency and reduce environmental impacts by adjusting rates of fertilizer in a site-specific fashion. The module will cover the use of ArcGIS 10 software for development of prescription maps and also the practical application of prescription map for variable rate fertilization using Farmworks variable rate application software.

Learning Objectives

At the end of this module, students should be able to

1. Show proficiency with generation of prescription maps in ArcGIS.
2. The application of Farmworks Site-Mate computer software to use prescription maps for variable rate fertilization.

Module Contents:

Lectures:

- 1 Introduction to GIS
- 2 Global Positioning Systems and Functionality
- 3 Variable Rate Technologies
- 4 Combining GPS and GIS information to develop management zones
- 5 Variable Rate Fertilizer (Software and Spreader Functionality)

Labs:

- 1 Data Import, Attribute Assignment and Basic Map Presentation in GIS
 - 2 Interpolation techniques in GIS
 - 3 Preparing Field Management Zones and Prescription Maps
 - 4 Demonstration of Practical use of Prescription Maps on Valmar 1255 Variable Rate Fertilizer Spreader using Farmworks Site-Mate Software
1. Individual research project
 2. A short oral presentation of the individual research report.

Marking Scheme:

1. Exam at the end of module from Component 1 - 60%.
2. Research project - 30%.
3. Oral presentation - 10%.

Instructors:

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