Agronomy Hall
GIS Lab Enhancement

A proposal submitted to the
College of Agriculture Technology Advancement Committee
By
The Department of Agronomy
April 19, 2002

Proposed by:
Peter Sorensen
Dr. John Sawyer
Dr. Mary Wiedenhoeft

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Dr. John Sawyer, Associate Professor and GIS Lab Coordinator, Agronomy

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Dr. Mary Wiedenhoeft, Associate Professor, Agronomy

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Dr. Steve Fales, DEO, Agronomy

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Dr. Eric Hoiberg, Associate Dean, College of Agriculture

Project Leaders:

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Section II. Project Overview and Expected Benefit

A. Provide a description and intended purpose for all project expenditures and identify expenditures from Central Pool funds.

The major consideration for this proposal is to increase the usability, availability, and quality of the Agronomy Department GIS Lab and equipment contained within. This proposal addresses the following issues:

- Replacing two older Pentium I machines in the lab with machines that are capable of running the latest software.
- Acquiring four new GPS units to be loaned out by the lab for undergraduate and graduate education. These will be added to the existing units.
- Expanding the lab in order to provide more high-quality educational opportunities.

Our goal this year is to provide more usable machines and units for student use, in addition to adding more structured teaching opportunities. As more classes begin to focus on the technological side of agriculture, we have seen a dramatic increase in the number of classes wishing to reserve the lab and its units. It has become increasingly difficult to schedule class time, as well as allow individual students adequate time in the lab and with the equipment.

Originally, the lab operated on a first come, first serve basis. While this was the simplest way to handle requests, many students and professors were not served and did not have access to the equipment and lab when needed. Our solution was to move to a reservation-based system, where students and faculty could check out equipment in advance and access lab stations. While this was helpful, we were unable to accommodate all requests between March and November because of the heavy demand. Also, two of the computer stations in the lab are four and five years old, and no longer able to run the newer software needed for classes, research, and other individual projects.

When the lab and equipment are in use by a particular class, it often takes four to six class periods to provide an adequate introduction to the students, along with preparation time by the professor and teaching assistants in the lab. Research projects and other student learning projects are often ongoing throughout the year, resulting in a constant demand for the equipment. Students from other departments and colleges have also begun to use the Agronomy facilities during the past several years, due to the number of joint research projects between agronomy and other departments.

After carefully examining the GIS Lab and interviewing professors and students (undergraduate and graduate), several main needs have been identified.
1) Of the lab’s four individual computer workstations, two are no longer capable of running the software needed for classes and projects. This fact greatly limits the number of students that can use the lab at one time.

2) It is apparent from the comments that several new GPS units need to be acquired. These units, when not in use by classes, are available for checkout by students for individual projects. Because of the high demand for these units in the past two years, many requests for the units have gone unfilled. Many student projects that would require the use of a GPS unit on a daily basis have not been started, as availability has been uncertain.

We have carefully considered the many roles that the lab has filled in the past, and have found hardware and software solutions that will not only allow those roles to continue to be filled, but expanded upon in the future. We have identified a low cost GPS unit that is on the cutting edge of technology. This unit will allow students the most flexibility with individual projects and is one of the easier units to use in an educational setting. This unit has the capability of expansion in the future, which sets it apart from other units considered.

We are proposing to acquire:

- Two new Pentium 4 Computer Stations
  - 1.8 GHz Pentium 4 processor
  - 256 MB ram
  - PCMCIA card reader
  - 17 in. monitor
  - 24x/10x/40x CD-RW
  - Internal Zip 250 drive

- Four new GPS Backpack Units
  - Garmin GPS 17N receiver/antenna (WAAS enabled)
  - Backpack, mounting pole, redundant power supply
  - Compaq IPAQ H3760, 206 MHz, 64 MB
  - All cables and adaptors

- Easy GIS – mapping software
  - Used for collecting, importing, and exporting data
B. Describe specifically how the proposed facilities or services will be made available to students.

1) Hours when facility or service will be available for student use: The facility (and all equipment) is available for use during the hours that the Agronomy Department main office is open.

2) Identify the number of students that will be able to use the facility simultaneously: Due to the small physical size of our lab, we can only provide four computer workstations for use at a time. We will be able to provide seven GPS units for checkout and use. During our busier period of March through November, we can serve between twelve and fifteen individual students or groups per day. The equipment could accommodate a thirty-student class size.

3) Identify the student populations that will benefit from the proposal: We believe that all students around the university can benefit from this proposal. Our history shows extremely heavy use within the entire College of Agriculture, and an increased use for joint projects between the Agronomy Department and other Departments. There are several Agronomy classes, which use the equipment each semester, and all students enrolled in those classes will also use the equipment.

C. If the project requires special new technologies, describe how these requirements will be met.

The proposal will allow for the purchase of new technologies in the area of the GPS receiver. The receiver that we have identified is a low cost, WAAS enabled, 12-channel model that in the future has capability to be expanded upon for other uses. These facts alone set it apart from any other unit available. Due to the high demands of the latest geo-software, new high-end computers are also needed.

D. Identify university facilities that will be needed for the project.

- This project will be based out of Room 2142, Agronomy Hall. A scaled sketch of the floor plan is appended.

Section III. Support and Maintenance

The Agronomy Department is committed to supporting this lab. This lab has never been funded by CAC, and in recent years has found it difficult to acquire the funding needed to keep the equipment and software current. During these years however, the Department has supported the upkeep of the equipment and lab. Staff is also available to assist students with maintenance, equipment, and computing issues.
## Section IV. Budget
### Table 1. Full Itemized Budget

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Number</th>
<th>Unit Cost</th>
<th>Total Cost by Funding Source</th>
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</thead>
<tbody>
<tr>
<td><strong>Hardware</strong></td>
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</tr>
<tr>
<td>Pentium 4 1.8 GHz, 256 MB RAM</td>
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<td>$4,360.00</td>
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<tr>
<td>CD-RW, Internal Zip 250 Flash Card Reader</td>
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<tr>
<td>Compaq IPAQ H3670 Pocket PC 206 MHz, 64 MB RAM</td>
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<td>$599</td>
<td>$2,396</td>
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<tr>
<td><strong>Software</strong></td>
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<td></td>
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<tr>
<td>Easy GIS Mapping Software</td>
<td>4</td>
<td>$499</td>
<td>$1,996</td>
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<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Garmin 17N Portable GPS Units</td>
<td>4</td>
<td>$999</td>
<td>$3,996</td>
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<tr>
<td>WAAS receiver, GPS Backpack Redundant power supply</td>
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<tr>
<td>Serial Interface Cables Autopower adapter cords</td>
<td>4</td>
<td>$99</td>
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<td><strong>Total</strong></td>
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### Table 2. Minimal Itemized Budget

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