

USE OF GEOGRAPHIC INFORMATION SYSTEM (GPS) IN NURSERIES

BRENT OLSON AND CHAD LORETH

Brent Olson is Area Forester for the Loess Hills State Forest, P.O. Box 158, 219 Front Street, Pisgah, Iowa, 51564; (712) 456-2924. When this paper was presented, Chad Loreth was Natural Resource Technician, Forestry Division, Iowa Department of Natural Resources. Chad now works for the Minnesota DNR.

brent.olson@dnr.state.ia.us

Olson, B.; Loreth, C. 2002. Use of GIS in Nurseries. In: Dumroese, R.K.; Riley, L.E.; Landis, T.D., technical coordinators. National Proceedings: Forest and Conservation Nursery Associations—1999, 2000, and 2001. Proceedings RMRS-P-24. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station: 53-54. Available at: <http://www.fcnet.org/proceedings/1999/olson.pdf>

Key Words

Bareroot nursery, nursery cultural practices, research, Arcview

The use of GIS in nursery operations provides a variety of opportunities.

- All planning activities can be incorporated into an accessible database.
- GIS can be used to create ways for employees to access and analyze data.
- The program can be used for historical record keeping.
- Use of GIS in planning can improve the efficiency of nursery operations.
- GIS can easily be used as a management tool.

Arcview 3.1 is the GIS system currently in use at the Ames Nursery. This program enables the user to accomplish multiple tasks which include:

- Heads up digitizing;
- Importing and creating database files
- Hot-linking to digital photos, text files, and a variety of other file types
- Importing GPS data, as well as data from CAD and DOQ
- Production of maps

Nursery management can benefit significantly from the use of GIS in a number of areas. At Ames, three areas of operations use GIS.

- Administration can use GIS for:
 - Cost accounting
 - Equipment inventory
 - Purchasing, including seed, equipment, chemicals, fertilizers, etc.
 - To assist in management planning

- Nursery research can use GIS for:

- Tracking outplantings
- Nursery history plots
- Soil testing
- Stock inventory
- Irrigation
- Permanent photo plots

- GIS can also be used to track cultural practices such as:

- Irrigation
- Chemical application
- Fertilization
- Undercutting and wrenching
- Seeding
- Top pruning

GIS coverage for Ames Nursery initially included a variety of information.

- Topographic maps (DRG)
- Ortho Quads (DOQ)
- NRCS Soils
- GSB information
- State-wide coverages

As the program has progressed, the nursery has developed (and is developing) site specific coverage, which includes:

- Nursery soils, including pH and sand, silt, clay, and loam content

- Irrigation tracking, including sprinkler systems, drains, valve locations, WDS, A/BGRD
- Building mapping and maintenance for administration, chemical storage, fertilizer storage
- Weather station information
- Road locations and maintenance
- Windbreaks, including shrubs, conifers, and hardwoods
- Past and present stock tracking
- Timber

- Property lines
- Seed collections sites.

In developing the planned use of GIS for other nurseries, the following is recommended:

- Identify uses of GIS for your program.
- Purchase PCs that are capable of running GIS.
- Research software packages for the PCs
- Develop lists of items to be digitized, and utilize existing data or coverages.
- Develop a task list and time line.