

# **Development and Application of CD ROM Based Forest Management Information for Training Private Forest Landowners and Professional Resource Managers**

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## **Abstract**

Innovative educational approaches can expand opportunities to reach and impact clientele. Development of CD ROM technology and use on most current computer platforms introduces exciting opportunities for development and application of educational materials to clients served by Extension Forest Resources programs at The University of Georgia. CDs allow high quality images, limited video footage, and graphics to be integrated with text to develop expanded training materials and programs. The CDs can be used in several ways to deliver educational programs. In lieu of traditional slide programs, specialists can use a CD equipped laptop computer and digital projector for CD based presentations to combine the graphics with still and video images in concise form to reinforce salient points and procedures. The greatest flexibility is for clients to use CDs for self tutorials and reference on their computers at home or work. In Georgia, CDs are being developed for use in educational program areas for training forest landowners and natural resource managers. The Master Timber Harvester Program is a statewide educational effort to train the state's 2,500 loggers and procurement foresters in sustainable forest harvesting operations. This program uses the interactive electronic classrooms of the Georgia State-wide Academic and Medical System (GSAMS) network. Four-day training sessions are held at various sites throughout the state. Specialists present their program segments from central access sites and can interact with students at the remote sites via live video/audio links. One training module in this program deals with silvicultural concepts and systems as they relate to harvesting. A CD is being developed which details harvesting-related silvicultural terms, intermediate treatments, regeneration systems, and specific management treatments for insects and diseases. The CD makes extensive use of color graphics, photos, and short video clips to relate concepts to the logging audience. Other CD development projects include prescribed fire training for landowners and recertification materials for professionals, and diagnosis of pine plantation establishment problems.

**Key Words:** Silviculture, electronic classroom, forest harvesting, prescribed fire, forest pests.

## **Introduction**

Extension forestry programs are often designed to be delivered to diverse audiences. The audience can range from forest landowners and the general public, who generally have no formal training in forestry/natural resources, to specific groups with forestry or related natural resource backgrounds. Specialists must continually develop and revise educational materials for these audiences to provide relevant, effectual educational programs. A

particular challenge, is the development of materials for more intensive or comprehensive training programs.

Several extension programs at the University of Georgia involve specific trainings for foresters and natural resource professionals in concentrated subject matter areas in one to four days of "classroom" instruction. Classes are held at off-campus locations, often utilizing *Distance Learning* facilities where the instructor will lecture from a transmission site to remote classrooms across the state. While these classrooms allow audio and video interaction between the instructor and class, the need to keep the interest of nontraditional students is critical if the educational goals are to be achieved. In most instances, these "students" have not been in a formal classroom setting for many years and soon tire and tune-out speakers as the intensive sessions proceed. Teaching style, energy, and presentation of course materials all have an impact on maintaining the interest and participation of the class.

An exciting development that is now commonly available to most users of office or home computer systems is the digital compact disk (CD) for information transfer. A CD allows sound, visual (both still and video), audio, and animation to be integrated into a presentation (Grosney et al. 1995). The CD may be used at a desktop local computer or tied electronically to remote sites. The flexible and dynamic applications of CDs allows the development of multimedia training presentations that can capture audience attention and foster the learning experience (Rice and Wintersteen 1995).

At The University of Georgia, The Entomology and Forest Resources Digital Information Work Group was formed to foster the development of multimedia applications for extension programming. Extramural grants have supported acquisition of computer hardware/software and personnel for project development (Douce et al. 1996). Project development is overseen by two Work Group Co-directors with a staff of two computer specialists, student workers, and allied faculty and staff. A video production position was created in the Extension Forest Resources Unit to shoot and produce video footage and is a part of the Work Group.

## **Extension Programs**

In addition to the grant supported projects described by Douce et al (1996), CDs are in development as teaching tools for three specific extension forest resources programs.

### **Master Timber Harvester**

Logger education in Georgia is an integral component in the American Forest and Paper Association's (AF&PA) Sustainable Forestry Initiative™ (SFI™) (AF&PA 1994). Georgia AF&PA member companies provided support through grants to develop and administer the Georgia Master Timber Harvester Program. This three year program, started in 1995, is designed to train 2,500 logging owner/operators and procurement foresters in Georgia in concepts of sustainable forestry, harvest planning, Best Management Practices (BMPs), business management and safety.

Classes are taught over a four-day period using the Georgia State-wide Academic and Medical System (GSAMS) distance learning electronic classrooms. Over 270 GSAMS classrooms are located across the state, with at least one site in each of the 159 Georgia counties. These classrooms allow interaction by audio and live camera shots between students and the instructors who present lectures from Athens and other sites simultaneously to GSAMS sites throughout the state.

The Sustainable Forestry Unit includes modules on the SFT<sup>™</sup>, forest ecology, silviculture, forest soils, and wildlife. The silviculture module is designed to allow loggers, not previously trained in forest resources, to become both conversant in silviculture and to understand the role harvesting operations, which are the most visible and often most controversial component of forestry, play in a silvicultural system. Specific topics include the basic silvicultural definitions and terms, how and why silvicultural prescriptions are developed, achieving silvicultural and management goals through harvest operations, thinning, and even-aged and uneven-aged harvest/regeneration methods. Particular emphasis is placed on reducing harvesting related damage to crop trees following thinnings and regeneration cuts and associated site damage. Similar topics are taught in logger education courses throughout the U.S. (McEvoy 1995).

The CD application is useful in integrating word and diagram graphics, with photos (slides) and short video clips to present and highlight salient points. The mixing of media allows more dynamic and effective presentations which are intended to keep the students attention. High quality graphics and video images can be used to effectively convey this information.

## **Prescribed Fire Certification**

In 1992, the Georgia Legislature passed the *Georgia Prescribed Burning Act* recognizing the importance of prescribed fire in managing forest land. As part of the legislation, a certification program for prescribed burn managers was developed for natural resource professionals who have had at least two years of forestry or natural resource management experience and can document participation as having been in charge of five prescribed burns.

The certification program has three components: 1) prospects for certification receive a 161 page study manual one month prior to attending the certification course, 2) an eight-hour classroom certification training program, and 3) a written certification exam. A five-year certification is awarded to all successful applicants.

The eight-hour classroom training program poses the greatest challenge for the instructors as there are 10 distinct modules that are presented: 1) the written plan, 2) weather and fuels, 3) weather forecasts, 4) firing techniques, 5) smoke management, 6) fire behavior, 7) public relations, 8) avoiding problems, 9) safety, and 10) regulations. Two modules, firing techniques and fire behavior, are perhaps best learned in field exercises. However, since field instruction is not part of the certification program, presentation of these modules has relied on extensive use of slides and overhead projections to illustrate techniques and responses. Incorporation of graphics, animation, and video clips of actual fire sequences will greatly aid the presentation efforts of the instructors.

Developing the firing techniques CD involved extensive video taping of prescribed burns. These burns were planned, scripted and executed to depict firing patterns, fire response to changes in fuel types, and weather parameters. Selected clips of video could then be added to still photos (slide format) and highlighted with accompanying text and graphic information. Animation of flame fronts and rates of spread also enhance the visual impacts to the students. Further development of CDs will expand the instructors ability to effectively present relevant material within the limited time allotted for each module.

## **Pine Regeneration Pests**

Another important application for CD multimedia applications is providing

foresters, and others with information specific to evaluating and identifying problems associated with southern pine regeneration. This is a particularly important program in the South. Georgia leads the nation in the number of acres planted to pine each year, and tree plantings in the South accounted for 70 percent (1,689,981 acres) of the U.S. total tree planting in 1995 (Moulton et al. 1996).

Regeneration problems are common on many planted sites and typically result from the interactions of biotic and abiotic stresses. Despite the recognition of the problem (Mitchell et al. 1990), a comprehensive recognition and diagnostic key is still needed. CDs presenting this type of information have proven to be valuable additions to traditional publications (CSU 1995).

One of the problems has been the collection of high quality photos to cover the range of insects, diseases, and other factors contributing to pine plantation mortality. One of the Entomology and Forest Digital Information Work Group projects will provide these images as a part of a national forest Integrated Pest Management (IPM) project. This image subset can then be developed into a CD-based resource applicable to foresters and forest IMP specialists (Douce et al. 1996).

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