

Digital Imagery

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There are several “new” digital tools that can be very helpful to Weed Scientists. Whether it is in preparing snap shots, slide presentations, posters, written summaries, documenting the performance of various weed control measures, or just plain fun, digital images offer another dimension in picture taking. The following contains a review of some of the equipment that is available and that I have found to be useful.

A good computer (cost about \$2,000 - Pentium II, 400 mhz with various options) is the back-bone of the system. Whether one prefers a “Mac” or a “windows” machine is not important. What is important is that the machine have a relatively fast processor and enough memory to run the graphics software needed to work well with digital images. Currently the most popular system is a Pentium processor with a clock speed of at least 400 megahertz, 64 megabytes of RAM memory, high quality video out-put and monitor, a hard disk with 6 gigabytes of memory, a CD drive, and a large capacity removable storage device such as a “zip” drive or a read/write CD. The storage devices are necessary to store images and graphics files. These files are often 20 to 40 megabytes in size. A “zip” drive (\$200) disk can hold 100 megabytes and a read/write CD drive (about \$600) CD can hold 650 megabytes. The “zip” disks (about \$10 ea.) or CDs (about \$10 ea.) can be transferred from computer to computer (e.g. the slide scanners, image software, and camera software may be on one computer and the slide imager or high density color printer on another).

Scanners are helpful to create digital images from photos or slides that can then be printed or imported into graphics software like PowerPoint for preparation of presentations. Slide scanners can be obtained for between \$800 - \$2000 (I use a Nikon LS -20 Coolscan II). Slide scanners can be used to digitize and archive valuable slides for later use. Slide scanners can be obtained that have stack feeders for digitizing large batches of slides. Flat bed scanners are useful for scanning prints and page graphics (about \$500). There are many formats for storing scanned images. One has to be careful in selecting a format, which makes the most efficient use of memory while still compatible with the intended graphics software. It is relatively easy to have some files of more than 15 megabytes.

Digital cameras are a relatively new and exciting addition to our camera bag. A Camera can be purchased which will produce images of 1536X1024 pixels resolution for around \$800 (add about \$200 for additional flash memory if you intend to take a lot of high density pictures). Images from these cameras can be viewed directly on the camera screen, projected on TV screens, printed on a color printer, or imported into a graphics software package and used in a slide, written, or computer presentation. The resolution is not quite as good as an ordinary slide or photograph, but in many cases it is difficult to distinguish the difference. The key is the speed and ease with which images can be taken and imported. This is much easier than taking a 35mm shot, developing the image, digitizing the image, and then importing it into the graphics software. It is also much cheaper given the cost of slide digitizers. Once the image is taken it

can be altered digitally to improve contrast, color balance, remove unwanted background, resized, etc.

Other sources of images include videotape, stored images on CDs, and the Internet. Images may be downloaded from these sources and utilized in publications, printed, or inserted into slide or computer presentations.

Color printers (about \$400 for a really good one) can be used for preparing color “prints” of digitized images or slide presentations. Epson has several in this price range which can print at a resolution of 1440X720 dots per inch. This is particularly useful in the preparation of posters. Color posters can be made as a large, one-sheet, printout on expensive large-scale color printers. These posters are easily transported to meetings and merely tacked to the poster board as a single sheet. This makes poster presentations considerably simpler. Unfortunately the large-scale printers are very expensive. However, if one has access to one through a commercial print shop or a university or government shop, they make excellent use of graphics software.

A slide imager (about \$5,000) is a device that (we have an older Montage FR-2) allows the computer to print the graphics that have been produced by graphics software to a camera in order to produce 35-mm slides for presentation. Polaroid and Montage are two of the brands available. Generally the higher the resolution, the higher the cost of the imager. A resolution of 4,000 lines or better gives good results.

Slide development equipment is usually not necessary as “E6 one hour” or at least overnight developing is available in many areas. Should one need to develop and mount slides, a good developing system can be purchased for about \$1,000 (we use the Jobo CPE-2 plus system with GEPE slide mounter and mounts). After purchase of the equipment, slide development costs are about \$4 a roll with mounts. Slide developing and mounting with such a system usually takes about one hour. The system we have develops two rolls at a time.

Success depends on the user. All of the above equipment will give one the potential for preparation of some very nice and sometimes sophisticated slide, computer, or hard copy presentations. Experimentation with the graphics software should produce desirable backgrounds, interesting ways to present data, excellent talk outlines, and imported pictures to augment the presentation. Thorough familiarization with the software manual should allow one to realize what the potentials are. A little work and a lot of imagination can result in beautiful results.