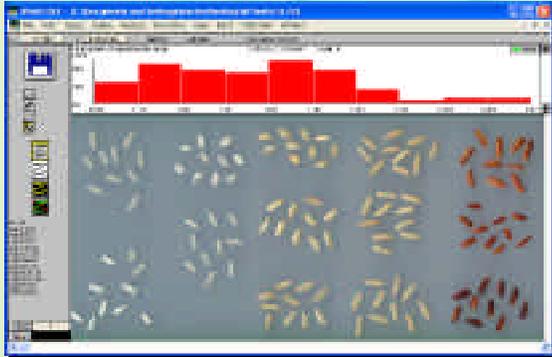


# WINSEEDLE™

## For Conifer Needle or Seed Morphology and Disease Analysis

WinSEEDLE™ (which comes from **SEED** and **NEEDLE** to designate both) automatically analyses seeds or needles much more precisely than conventional camera or conveyor based area meters.



WinSEEDLE can be purchased as a software program alone (for **Windows**based computers) or as a complete system including all the necessary image acquisition material.

WinSEEDLE™ measures straight or curved seeds and needles morphology (length, width, area, volume) and the **Pro** version can also color classify them and quantify disease areas.



The Pro version can classify seeds and needles in groups based on their color (brown and green as in the sample above or different brownish tint as in the example to the left) and analyse them separately. It can also quantify the area occupied by each color for disease or insect damage analysis. Very subtle color differences can be detected. For color analysis, a scanner is recommended as image acquisition device.

### WinSEEDLE Image Acquisition Components

WinSEEDLE can analyse images acquired with a scanner or a digital or analog video camera.

When portability is not required, we recommend our systems based on high quality, high resolution desktop scanners as image acquisition devices. Our scanners produce high quality images free of illumination problems (non-uniform lighting) and are extremely easy to use. Desktop scanners cannot be used in the field but are easily transportable and usable in remote locations where electrical power is available. Our scanners come in two sizes with maximum scan areas of 22 x 30 cm for Standard Area (STD) and 30 x 42 cm for Large Area (LA). Our scanners also have a special lighting system that prevents the formation of shadows around the needles or seeds.



Needle digitized with a bad lighting setup. Shadows can be seen around the needle and can significantly reduce the accuracy of the measurements.



Needle digitized with Regent's lighting system. No shadows are present.

**See our web site for specifications and pricing of the latest cameras and scanners sold by Regent Instruments.**

Our scanners also come with accessories like the positioning system illustrated below.

*This positioning system can accommodate up to 35 different scan areas or tray sizes for scanning seeds or needles. Made by Regent Instruments, it can be installed and removed in a few seconds. It*



*allows you to scan more effectively (by repetitively placing the sample at the same position in a few seconds and by bypassing the scanner preview step). When more than one tray is used, an operator can place the sample in one of them while the other is being scanned or analysed.*

WinSEEDLE is TWAIN compatible, that means it can obtain and analyse images directly from many TWAIN compliant image acquisition devices (scanners, digital cameras, frame grabbers, etc...). Although WinSEEDLE can work with many scanner models, **it is advantageous to purchase one from Regent**. You get our custom manual that illustrates how to scan biological samples for analysis with our programs. It helps you to obtain the best images for accurate measurement and also gives some tips specific to the scanner that you use. Our scanners come with a fixed permanent calibration that is made by Regent Instruments. This calibration is read by our programs to increase the precision of measurements made from images acquired with the scanner. They also come with general image scanning and editing programs that can be used for other applications (photo or document scanning, artwork...).



**RÉGENT INSTRUMENTS INC.**

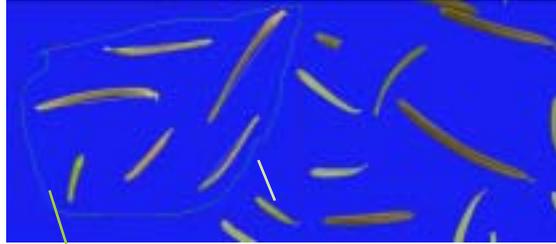
# New Features of WinSEEDLE 2005

For Seeds and Conifer Needles Analysis (*Seedle* = *Seed* + *Needle*)

In addition to be offered with more optical scanner models, the WinSEEDLE program is now more flexible and has a richer set of features.

## New features of the Pro version

You can analyse whole images or sub-regions of them. Sub-regions can have any shape including circular, rectangular or any irregular shape made with the lasso tool.

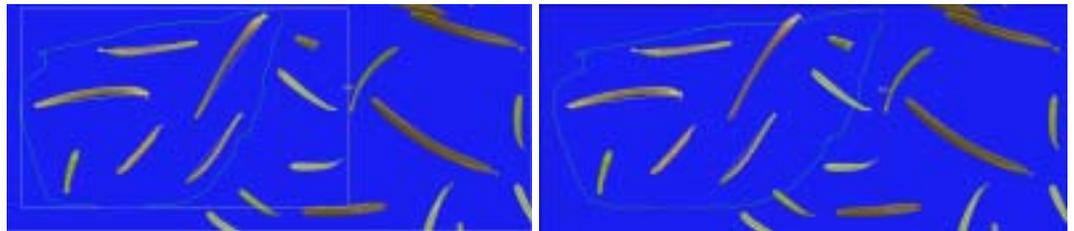


An irregular shape region to analyse only some needles of the image.

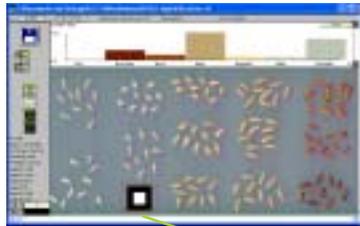
A rectangular region to analyse the color of one group of seeds.



Analysed regions can be resized at any time (*the analysis is automatically updated*) and can be recreated after in other images.



Regions of the image can be excluded from the analysis (*they have no effect on the analysis, it's as if these regions didn't exist in the image*). You can create practically an unlimited number of such exclusion regions and of any shape.



An exclusion region around an object used for calibration (which must not be analysed).

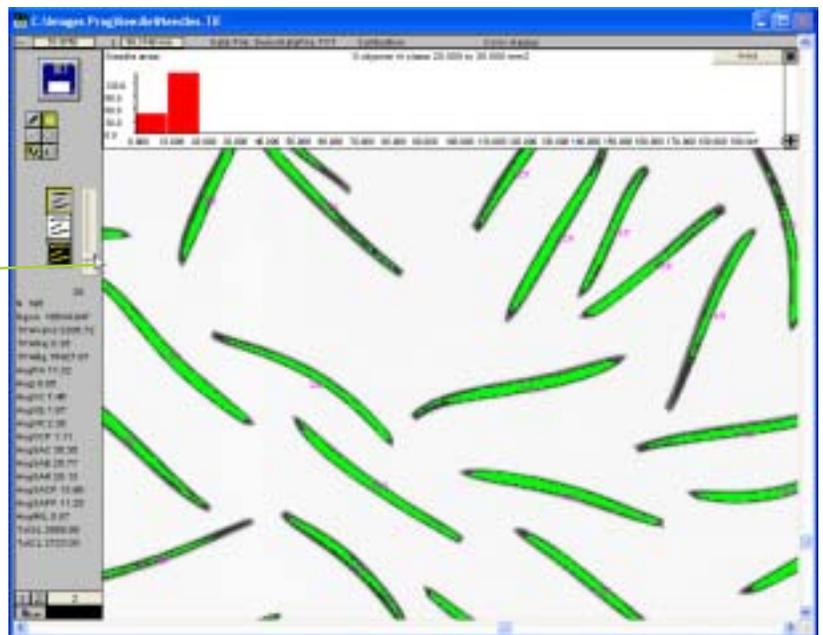
### Other new features of the Pro version

- Batch analysis can be done on the whole image or in a sub-region of it (of any shape).
- The histogram above the image can display area per color class or group.
- You can display a single color channel (Red, Green or Blue) of an RGB color image and analyse only that channel.
- Information about the dominant color class (area, hue, saturation intensity, and class name) is saved with the data.

## Features of the Reg and Pro versions

Pixels classification (into seedles and background) can be verified and specified interactively for the whole image or sub-regions of it before or after the analysis. This step is optional.

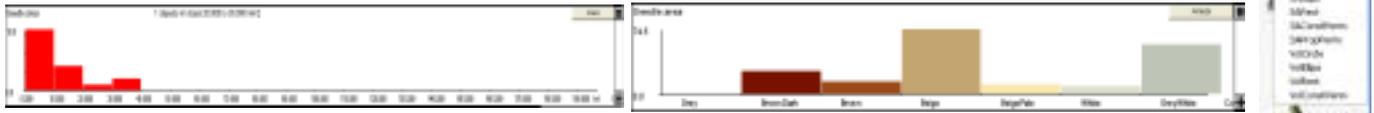
As you move the slider, pixels classified into the seedle group are drawn in green over the original image. You must adjust it so that all seedles are covered by green (but not the background surrounding them). After this simply click the image and the analysis is updated automatically.



## More features of version 2005a

- The pixels classification image can be edited (like it was possible for the original image before) to manually classify pixels into seedles and background. The analysis is automatically updated when the edition is complete.

- The seedles frequency distribution histogram above image has been redesigned and improved. The classes boundaries can be set more easily and more than 16 different data types can be displayed and save to data files. The *Pro* version can in addition display area per color class or group.



- Calibration of images from a camera can be done with a single mouse click when Regent's new calibration targets are included in the image.
- More options are available as to how and when calibration of images from a camera are done (manually or automatically after load). Targets used for calibration can be in the same image as the object to analyse or in separate image(s).
- New functions have been added to remove background light variations for images that come from cameras.
- You can choose to reject or not seedles truncated by image boundary.
- The analysed image has more color encoded information (the color used to indicate if an object is analysed, a debris, cut by image boundary, rejected manually...).
- Form coefficient measurement has been added.
- Global area data are more specific about rejected objects (area is available for background, valid objects and rejected objects).
- The area of the analysed region (of any shape) is saved with the data and displayed on screen.
- Image edition is more precise.
- New and improved manual.

## To learn more

As with all updates, there are always a few improvements to make WinSEEDLE use more pleasant and new features to allow more measurements. Please contact our sales department to get more information.