

Using Cheap Filters to Soften Lighting Hot Spots for Digital Imaging

Paul Bachi
Plant Disease Diagnostic Laboratory
University of Kentucky, Department of
Plant Pathology

Taking good quality digital images of many types of objects, including insects and plant samples, can be difficult when these objects have surfaces which are highly reflective. Shiny surfaces cause bright hot spots which can block out details of the object as well as play havoc

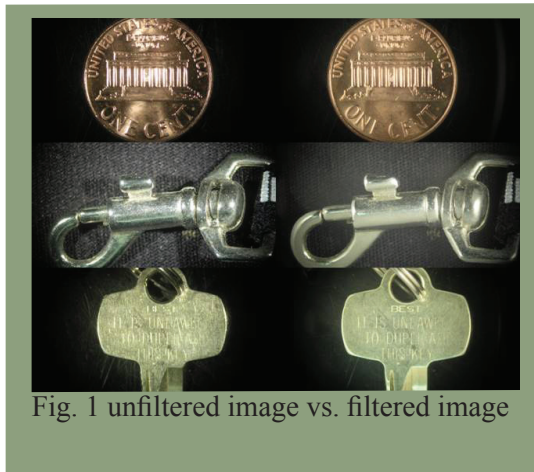


Fig. 1 unfiltered image vs. filtered image

with camera settings. Shadows can obstruct important features when using a direct lighting source. (figure 1)

We purchased a portable lighting tent for the diagnostic laboratory in 2008 after noticing other diagnosticians getting such even lighting, without any obstructive shadows, in their images of plant samples. After having personally experienced the high quality of images taken within the portable lighting tent, I went about trying to get the same effect for samples under the dissecting scope. Never wanting to reinvent the wheel, an internet search brought me to

a work by Dr. Alexander Riedel (Museum of Natural History - Karlsruhe, Germany). The work showed filters made from a Styrofoam cup and vellum.

I used a Styrofoam cup and some tracing paper. Cut the bottom out of a Styrofoam cup and place the cup upside down over the object of which to take images. I did not cut small holes in the side of the cup, one for each fiber optic light arm, because the desired affect was achieved without the holes.

As far as the tracing paper is concerned, you can construct a cylinder but I found a curved piece of the paper worked just as well. (figure 2) With bulkier samples you could make tracing paper cylinders (a lip balm stick or AA battery work well as patterns) adhered to the end of each fiber optic arm but I found the results were not nearly as desirable as with the Styrofoam cup or curved sheet of tracing paper. (figure 3)

The images in this article were taken with Nikon Coolpix 8800 digital camera set on Aperture-priority auto mode. The light was provided by a fiber optic source with two arms set to the same output for each photo.

Diagnostic Tip of the Month

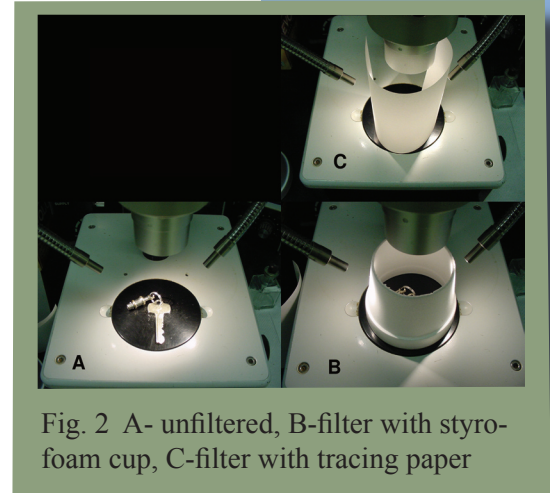


Fig. 2 A- unfiltered, B-filter with styrofoam cup, C-filter with tracing paper

Diagnostic Tip Con't.

Try this the next time you cannot get rid of those blinding, shiny spots or obstructive shadows.

References:

1. Riedel, A. 2005: Digital imaging of beetles (Coleoptera) and other three-dimensional insects. pp. 222-250 in: Häuser, C.L., Steiner, A., Holstein, J. & Scoble, M.J. (eds.) Digital imaging of biological type specimens – a manual of best practice. Stuttgart, viii + 309 pp.



Fig. 3 Tracing paper cylinders

2. Longino, J. T. (2002): Accessed December 2008 at <http://www.notesfromunderground.org/archive/vol912/methods/pictures.html>