Invasive Mite Identification: Tools for Quarantine and Plant Protection

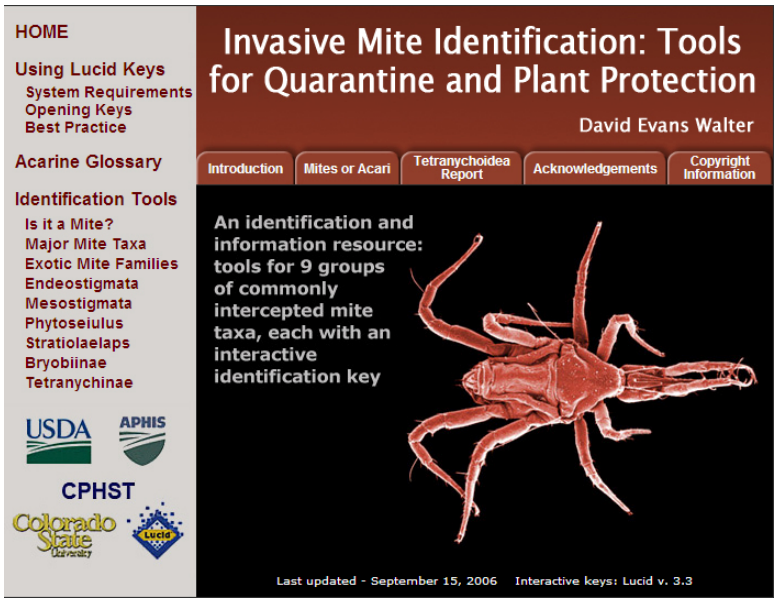
A new Lucid® interactive identification resource by Acarologist Dr. David E. Walter

The Center for Plant Health Science and Technology (CPHST) Identification Technology Program Team is pleased to announce the release of its newest identification resource *Invasive Mite Identification: Tools for Quarantine and Plant Protection*. This resource was created through federal-state collaboration between USDA/APHIS/PPQ/CPHST and Colorado State University, and through additional cooperation with the California Department of Food and Agriculture and The University of Alberta-Edmonton. *Invasive Mite Identification* is an information resource containing an extensive Acarine Glossary and nine different tools covering commonly intercepted mite taxa, each with an interactive identification key.

Invasive Mite Identification was developed using Lucid® version 3.3 (Lucid3) software. The resource was made available on the Internet on September 22, 2006 to support easy access by the USDA/PPQ team. The website address to access *Invasive Mite Identification* is:

http://www.lucidcentral.org/keys/v3/mites/

Invasive Mite Identification is cross-platform; it can be viewed and used on PC or Macintosh. The interactive key component of the tools requires only that your computer has Java Runtime Environment version 1.4.2 or greater installed; Lucid® software is not necessary.



Home page of the Lucid3 *Invasive Mite Identification* resource

Mites (Acari) are considered to be the most diverse and taxonomically difficult group of arthropods encountered in quarantine and plant protection activities. Because mites are typically tiny, omnipresent in crops, soil, timber products, and livestock, they present major challenges to individuals involved in these activities. Some of the best known mites are economically important plant pests. These species cause serious crop losses by directly affecting the growth and reproductive capacity of plants.

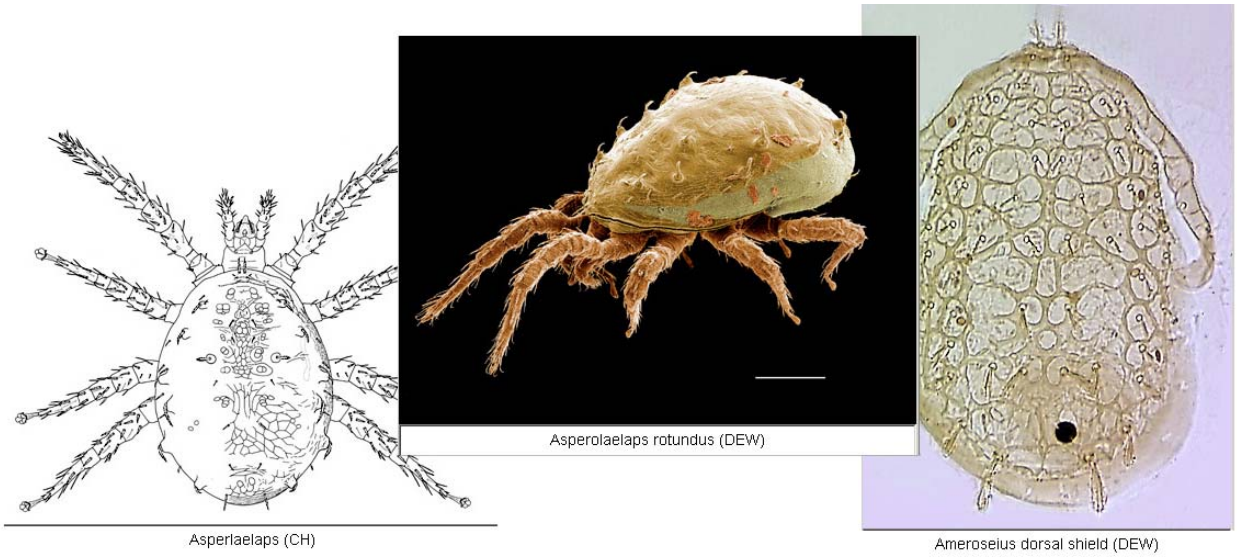
The nine tools within the *Invasive Mite Identification* resource, each with its own interactive key, fact sheets, and images, were developed to support: 1) training in mite anatomy and identification, 2) preliminary identification (i.e., sorting), and 3) advanced taxonomic identification. The tools range in complexity from *Is it a Mite*?, a basic introductory level tool, to species level treatments (e.g., *Stratiolaelaps* and *Phytoseiulus*).

The Nine Identification Tools Available in *Invasive Mite Identification*

- **Is it a Mite?**
- **Major Mite Taxa**
- **Exotic Mite Pest Families**
- **Endeostigmata**
- **Mesostigmata**
- ***Phytoseiulus***
- ***Stratiolaelaps***
- **Bryobiinae**
- **Tetranychinae**

In addition to the above tools, the resource includes an Acarine Glossary that contains over 700 defined terms, and a new, up-to-date taxonomic classification of the Acari.

Lucid3 keys are easy-to-use, electronic, and matrix-based. In a matrix-type key, users can select characters to examine, and are thus not hampered by the pathway structure of traditional paper-based dichotomous keys. Identification is facilitated by multimedia (e.g., images and Html pages) attached to taxa and features. *Invasive Mite Identification is* richly illustrated with over 2,000 drawings, photomicrographs and scanning electron micrographs illustrating matrix features, and the diversity and detailed morphology of mite taxa. Taxon fact sheets contain extensive information on taxonomy, morphology, quarantine issues, identification aids such as dichotomous keys, and references.



Taxa within the Ameroseiidae, in the *Mesostigmata* tool, are illustrated with, from left to right, a line drawing, a scanning electron micrograph, and a photomicrograph.

Julia Scher (CPHST) worked with the author, Dr. David Walter, to prepare the nine mite tools for online publication as the *Invasive Mite Identification* resource. Julia would appreciate receiving any comments about the value and usefulness of this resource and its associated nine tools. She would also like to hear about any problems encountered when accessing or using the tool. Julia can be reached via email (julia.l.scher@aphis.usda.gov) or by phone (916-262-3181).