



November 2017

Hello Everyone,

In this issue of Reflections, we review important recent findings regarding how endothall acts on invasive aquatic weeds and share a reminder about other recent endothall-label changes. We also take a look at enhancements to our app for managing small lakes and ponds, and share some news about our Elite Awards for applicators.

In addition, we have news and photos from the recent annual meetings of South Carolina Aquatic Plant Management Society and the Annual Training Conference of the Florida Aquatic Plant Management Society. UPI Aquatics is proud to have served as a sponsor of both meetings.

I wish you a wonderful Thanksgiving and holiday season!

Sincerely,

Gerald Adrian
United Phosphorus, Inc. - USA

Endothall - Get to the Root of Your Problem!

Earlier this season we reported the following:

A new study classifies endothall as a systemic aquatic herbicide vs. a contact herbicide - reinforcing its status as an excellent choice for a short contact, systemic herbicide in both large- and small-scale management programs.

Endothall, the active ingredient in Aquathol® K, Aquathol® Super K, Hydrothol® 191, Hydrothol® Granular, Cascade® and Teton®, has been registered as an aquatic herbicide since 1960. It has been successfully implemented as an effective control measure for hydrilla [*Hydrilla verticillata* (L. f.) Royle], early-season control of Eurasian watermilfoil (*Myriophyllum spicatum* L.) and curlyleaf pondweed (*Potamogeton crispus* L.), as well as a tool for providing weed and algae control in irrigation canals.

Throughout its history, endothall has been considered a contact herbicide in aquatic systems(1). While this has been the

assumption for many years, recent research conducted by Dr. Scott Nissen and graduate student Mirella Ortiz at Colorado State University has revealed that there is a significant amount of endothall translocated to the roots of hydrilla and Eurasian watermilfoil. The amount of herbicide translocated to the roots of these species are equal to or greater than translocation observed for other systemic aquatic herbicides.

The data is summarized in the table below.

Percentage of Total Absorbed Herbicide Present in Roots at 192 Hours After Treatment			
Herbicide	Eurasian Watermilfoil	Dioecious Hydrilla	Monoecious Hydrilla
Endothall	13.0% ± 1.3	23.6% ± 2.6	29.0% ± 3.4
Fluridone	2.6% ± 0.3 ²	9.0% ± 2.2 ²	-
Penoxsulam	1.3% ± 0.3 ²	6.1% ± 1.5 ²	~20% ²
Triclopyr	2.0% ± 0.4 ²	-	-

UPDATE!

Since our initial announcement of these findings, Ms. Ortiz and Dr. Nissen have completed additional research on these key weed species. This additional research was conducted to observe the amount of herbicide present in the plants once they are moved into untreated water. These data represent what would be expected in short exposure-time applications representing difficult-to-control sites such as shorelines, boat lanes, and flowing water systems. Similar research had been conducted on Eurasian watermilfoil (EWM) treated with imazamox. Imazamox is another systemic product that generally requires several weeks of contact time to achieve desired control levels. This previous research indicated that once plants treated with imazamox were moved into untreated water, 46% of the herbicide moved back out of the plant by 12 Hours After Treatment. In contrast only 26.5% of endothall moved out of EWM after a significantly longer period of time (48 hr) in untreated water, as shown in the table below.

Endothall Desorption as % of Absorbed 48 Hours After Treatment.

Species	% Desorption
Eurasian watermilfoil	26.47% ± 5.26
Dioecious hydrilla	17.4% ± 1.56
Monoecious hydrilla	15.76% ± 3.11

This supports in-field observations that endothall provides excellent control of these species, even when exposure times are limited.

These combined studies indicate the following:

- Endothall can now be classified as a systemic aquatic herbicide, no longer a contact herbicide.
- There is a greater percent of endothall translocation to root tissues compared to other aquatic herbicides classified as systemic.
- The conclusions support the versatile use of endothall as a short contact, systemic herbicide in both large- and small-scale management programs.
- More endothall is retained in the plants for a longer period

of time, compared to imazamox.

According to Dr. Nissen, "Based on our endothall studies in flowing water, we thought that endothall must have some systemic activity, and now we have data that confirms that endothall does translocate from shoots to root tissue. In fact, the ratio of endothall in the root vs. shoot tissue after 192 hours of exposure was greater for endothall than for other systemic herbicides that we have evaluated."

We look forward to hearing additional details from Dr. Nissen and Ms. Ortiz at regional APMS meetings this year, where they will share more in-depth data on this subject. If you have any questions about the study, or about how endothall can benefit your waterways, a UPI representative would be happy to help.

Sources:

1 Gettys, L.A., W.T. Haller, and D.G Petty (2014). Biology and Control of Aquatic Plants, A Best Management Practices Handbook: Third Edition. pp 74.

2 Vassios, J.D. (2012). Herbicide Absorption and Translocation by Eurasian watermilfoil and Hydrilla (Doctoral dissertation). Retrieved

from https://dspace.library.colostate.edu/bitstream/handle/10217/67656/Vassios_colostate_0053A_10996.pdf?sequence=1

3 True Meadows, S.L. (2013). Monoecious Hydrilla Biology and Response to Selected Herbicides (Doctoral dissertation). Retrieved from <https://repository.lib.ncsu.edu/bitstream/handle/1840.16/9246/etd.pdf?sequence=2>

South Carolina Aquatic Plant Management Society holds annual meeting

The annual meeting of the South Carolina Aquatic Plant Management Society (SCAPMS) took place in October in Myrtle Beach, S.C. The meeting attracted more than 100 participants from industry, academia, and government, as well as private applicators. Nine college students, representing Clemson, the University of Georgia and NC State, attended the meeting and presented on their research projects.



Andrew Howell, a student at NC State (right), receives the SCAPMS student scholarship from Steve de Kozlowski, chairman of the SCAPMS Scholarship Committee.

During a tour facilitated by the U.S Fish and Game and the South Carolina Department of Natural Resources, college students attending the October SCAPMS meeting learned about efforts to restore natural wetlands invaded by invasive species on behalf of improving waterfowl habitat. (Photos courtesy Eryn Molloy, NC State



Florida Aquatic Plant Management Society holds annual Training Conference

The 41st Annual Training Conference of the Florida Aquatic Plant Management Society (FAPMS), took place in October in Lake Buena Vista, Florida. Attendees earned Continuing Education Credits during several days of educational and training sessions on a wide variety of topics and had the opportunity to socialize with colleagues from around the state.



Left Image: Outgoing FAPMS President Andy Fuhrman (left) presents the FAPMS Service Award to outgoing FAPMS Director Jeremy Slade, UPI Aquatics Account Manager.

Top Image: FAPMS board members participate in a strategic planning session during the Training Conference. (Photos courtesy FAPMS)

Recent endothall-labeling changes

A reminder of several important recent changes to endothall labeling, which we outlined in the previous issue of Reflections.

These EPA-approved changes allow for more application scenarios, ease restrictions and make products with endothall more user-friendly. The changes are reflected in our product labeling. They include:

- Wording clarification to restrict back-to-back treatments only to flowing waters used for irrigation or Aquathol® K, Aquathol® Super K, Hydrothol® Granular and Hydrothol® 191.
- Removal of livestock water restrictions on all endothall-based products, including Aquathol® K, Aquathol® Super K, Hydrothol® 191, Hydrothol® Granular, Aquastrike® and Chinook®.
- 10% water body treatments at rates more than 1 ppm limited only to slow moving or

- Addition of Ponds and Small Lakes directions for use of Aquathol® K, Aquathol® SuperK and Hydrothol® Granular.

For more information about using UPI Aquatics' products, please visit our website or speak to your rep.

APP for Small Lakes & Ponds UPDATED

The UPI Aquatics app for small lakes and ponds has been updated with new functionality, making it an even more useful tool for managing invasive weeds and algae.

You can now save your weed and algae-management projects to the app, with a name of your choosing. It only takes a few seconds to name and save a project, which means you don't have to recalculate the amount of herbicide or algicide you need when you return to a body of water.

Other features of the app include a calculator that lets you know how much of a specific herbicide or algicide you need based on the size of a lake or pond, the ability to submit weed and algae photos to UPI for expert identification and a reference guide detailing which UPI Aquatics' products are most effective against specific species.

The app is designed to work on iOS and Android devices.

[GO TO APP](#)

Build your Elite Awards points and earn outstanding rewards



UPI's Elite Awards is the industry's premier aquatic-applicator awards program. It offers valuable rewards to customers who build strong relationships with us.

The Elite Awards program, which is designed for both small and large applicators, offers a range of choices for redeeming points by selecting from an incredible variety of merchandise, outstanding travel opportunities, and exciting special items and events.

You receive Elite Awards points based on the volume of UPI products you purchase from our Aquatic Distributors. Points are awarded according to our Point Award Matrix based on purchases of Aquathol® K, Hydrothol® 191, Aquathol® Super K, Hydrothol® Granular, Symmetry® NXG and Current® products. In addition, you can earn "bonus" Elite Awards by growing your business with UPI and by taking advantage of special offers throughout the year.

Get with the program and start earning your way toward the rewards of your dreams!

Contact your UPI Aquatics representative today for further details regarding program participation.

We want to hear from you!

Please send your feedback to us at gerald.adrian@uniphos.com.