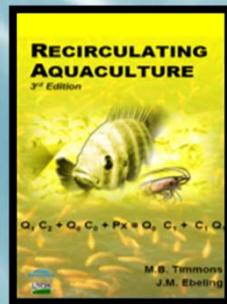




## 2<sup>nd</sup> Annual Short Course Engineering Design of Commercial RAS & Aquaponic Systems October 31 – November 2, 2013



### COURSE DESCRIPTION:

A **three** day course that provides in-depth training on design, operation, and management of Recirculating Aquaculture Systems (**RAS**) for culturing fish species and practical training in the design and development of sustainable **Aquaponic** systems - which is a combination of aquaculture (fish) and hydroponics (plants). Topics cover design criteria and system construction, water reconditioning and management of water quality, solids removal, disinfection, biofiltration, hydraulics, pump selection and aeration. Provides practical engineering based design criteria for successful commercial Aquaculture and Aquaponic systems. At the conclusion of the workshop, individuals will have the essential information necessary to design, construct and manage their own RAS systems and have a fundamental knowledge of the principles influencing the numerous design options.

In addition, a tour of an Aquaponics Facility (educational venue) in Livonia, MI that is in full operation will be for further educational value.

**LOCATION:** Cabela's in Dundee, Michigan  
110 Cabelas Boulevard East, Dundee, MI 48131  
**Phone:** (734) 529-4700

To register, please contact Michele Wallace  
[michele@aquagrowers.com](mailto:michele@aquagrowers.com) 248-756-8584

### INSTRUCTORS:

Cornell University, Ithaca, NY  
Dr. Michael B. Timmons: Aquaculture/Business Management  
Aquaculture Systems Technologies, New Orleans, LA  
Dr. James M. Ebeling: Aquaculture/Aquaponics

### REGISTRATION:

Limited Enrollment Tuition \$700 plus lodging  
**Early Bird Registration \$600 if by September 30<sup>th</sup>, 2013**  
Register by October 20, 2013  
Course: All registrants will receive the book "Recirculating Aquaculture (RAS)" by Timmons and Ebeling, a course packet, a 40 hour educational video set, and a USB Thumb Drive with all presentation materials and videos as a bonus.

**FOR MORE INFORMATION** <http://www.bee.cornell.edu/aqua>  
Dr. Michael B. Timmons: [mbt3@cornell.edu](mailto:mbt3@cornell.edu) 607-255-1630  
Michele Wallace: [michele@aquagrowers.com](mailto:michele@aquagrowers.com) 248-756-8584

### ACCOMODATIONS:

**HOLIDAY INN - 100 WHITETAIL DR. DUNDEE, MI 48131**  
Tel: 734-529-5100 Full Service Hotel and Restaurant  
\$89.00 for single or double per night (discount voucher for meals)  
**Mention Group Code: AQUA GROWERS**

**Country Inn Suites – 665 Tecumseh, Dundee, MI 48131**  
734-529-8822 \$90 for single or double per night  
**Free Continental Breakfast! GROUP CODE: AQUA GROWERS**

# Engineering Design of Recirculating Aquaculture Systems (RAS)

Featuring Dr. Michael Timmons and Dr. James Ebeling



Cornell University  
Biological and Environmental Engineering



12089 Merriman Road  
Livonia, MI 48150

Contact: Michele Wallace  
[michele@aquagrowers.com](mailto:michele@aquagrowers.com)  
248-756-8584

## SEMINAR REGISTRATION

Oct 31- Nov 2, 2013— Space is limited—Please register early  
To take advantage of the early bird discounts!!!

**\*\*\*PLEASE FAX REGISTRATION FORM TO 734-207-2092\*\*\***

### ATTENDEE INFORMATION Please Print

Name: \_\_\_\_\_  
Name (2): \_\_\_\_\_ Name (3) \_\_\_\_\_  
Company: \_\_\_\_\_ City: \_\_\_\_\_  
Address: \_\_\_\_\_ State/Province: \_\_\_\_\_  
Main Email: \_\_\_\_\_  
Phone No's: \_\_\_\_\_  
Work Home Mobile (Circle one)    Work Home Mobile (Circle one)    Work Home Mobile (Circle one)

### REGISTRATION FEE(S)

Early Registration: **\$600**  
Late fee after October 20<sup>th</sup>, 2013 \$ 700

# of Attendees \_\_\_\_\_

2 or more Attendees from the same company **\$600**

**TOTAL DUE** \_\_\_\_\_

### Payment

Check Payable to Aqua Growers, LLC  
 MasterCard  Visa  Discover  Amer Express

Cardholders Name \_\_\_\_\_

Card Number: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Security Code: \_\_\_\_\_

### CANCELLATION POLICY

Should you find it necessary to cancel your seat 30 or more days before the Seminar registration fees will be refunded in full: Cancellations 5-29 days prior to the seminar will result in a 50% refund. Cancellations made less than 5 days before a seminar or non-attendance without cancellation will not be refunded. Aqua Growers, LLC reserves the right to cancel a seminar without liability to registrants except for full refund of tendered payment. Thank You.

**FAX FORM TO 734-207-2092**

For security reasons, please print this form for your records. Mail one copy to Aqua Growers if not faxing. Faxing or phone for credit card payments is recommended. To phone in credit card information, please call Michele Wallace at 248-756-8584

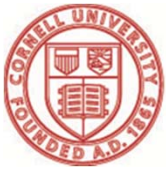
\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**PLEASE FAX ALL REGISTRATION FORMS TO: 734-207-2092**

**Or Mail to:** Aqua Growers, LLC – Michele Wallace  
12089 Merriman Road  
Livonia, MI 48150

**For further information regarding registration, please call Michele Wallace 248-756-8584**



## Schedule of Course Events

	Thursday October 31 <sup>th</sup>	Friday November 1 <sup>st</sup>	Saturday November 2 <sup>nd</sup>
	Day 1	Day 2	Day 3
<b>AM</b>		Housekeeping	Housekeeping
Classes start promptly at 8:30AM on Day 2 & 3	Registration at 9:00 am (Class starts sharp at 10:00 am)	Questions/Review	Questions/Review
	Introductions Review of Handouts & Text	Water Quality	Fish Health Management & Biosecurity
	Introduction to Recirculating Aquaculture Systems Engineering (RAS)	Culture Tank Design	System Monitoring & Control
		Circulation: Pipe Flow & Pumps	Aquaculture Management & Economic Realities
		Experiences from the Tank (Aqua Growers, LLC)	Intro to Design Spreadsheets
<b>Noon</b>	LUNCH (ends at 1:00 pm)	LUNCH (Dutch treat)	LUNCH (Dutch treat)
<b>PM</b>	Engineering Design– Mass Balance, Loading and Growth	Solids Capture Design Example	Growout System Design – Boutique Aquaponics Systems
*Vendor Presentations	Omega Fish Design	Waste Management and Effluent Utilization	Questions/Discussion – Wrap up
	Questions/Discussion – Adjourn	Biofiltration/MBBR Design	ADJOURN
	Field Trip to Aquaponics Facility in Livonia, MI	Aeration/Oxygenation	On the road 4:00 pm
		Questions/Discussion - Adjourn	
<b>Evening</b>	7:00 pm Dinner in Livonia	Dinner to be arranged Dutch Treat	Emails: Wallace ( <a href="mailto:michele@aquagrowers.com">michele@aquagrowers.com</a> ) Timmons ( <a href="mailto:mbt3@cornell.edu">mbt3@cornell.edu</a> ) Ebeling ( <a href="mailto:JamesEbeling@aol.com">JamesEbeling@aol.com</a> )

To register for the RAS Seminar go to [www.aquagrowers.com](http://www.aquagrowers.com) (Online Store) or contact Michele Wallace ([michele@aquagrowers.com](mailto:michele@aquagrowers.com)) or 248-756-8584