



## **Trip Report: PA and VA, US**

**Dates: 15-26 May 2016**

**Traveler(s): Ms. Zaruhi Davtyan**

**Institution(s): the Center for Agribusiness and Rural Development foundation**

### **Purpose:**

**Participate in a tour at Pennsylvania State University (PSU) and Virginia Tech (VT), US to study the Food Science curriculum and short courses offered at both universities, as well as to learn various teaching methods, with a purpose to develop a Food Safety System Management (FSSM) curriculum for further teaching at Agribusiness Teaching Center (ATC) of the Armenian National Agrarian University (ANAU) in Armenia.**

### **Site(s) Visited:**

**15 – 21 May 2016**

Department of Food Science, PSU, College Station, PA

**22 – 26 May 2016**

Food Science and Technology Department, Virginia Tech, Blacksburg, VA.

The visit included a trip with FST faculty to the following sites on 24-25 May:

- Cherrystone Aqua Farms
- Pacific Tomatoes
- VA East Shore Agricultural and Research Extension Centers (ESAREC)
- VA Seafood AREC
- Graham and Rollins Crab processing
- Brewery

## Description of Activities:

### Department of Food Science, PSU, College Station, PA

16 May, Monday

- Assistant Director of Food Safety & Quality Programs Dr. Catherine Cutter organized an **orientation tour** through the Department of Food Science. The tour included Food Microbiology shortcourse training sites, laboratories, introductions to faculty members, and the PSU Creamery.
- In-brief with Dr. Cutter regarding current status and future plans for development of **FSSM curriculum for ATC**. In addition, the content of the current PSU short courses, such as Food Science Certificate Program were discuss as topics for possible inclusion in the FSSM curriculum. The topics include Introduction to Food Science, Sanitation, Food Microbiology, HACCP, and Food Defense.

17-19 May, Tuesday-Thursday

- Attended **Food Microbiology Shortcourse**. This 3-day training was designed for individuals involved in food microbiology testing, quality control, quality assurance, sanitation, and food production who need to increase their knowledge and skills in basic and applied food microbiology and food safety. The workshop effectively combined classroom and laboratory sessions, included a mixture of theory, demonstrations, and practical sessions on the fundamentals of food microbiology and food safety. It featured lectures from faculty of PSU and other US universities, as well as foreign professionals. In addition, Diagnostic companies were invited to demonstrate modern microbiological testing methods.
- Observed recording of the workshop (mostly classroom sessions), which was done with a purpose **to develop an online course** for ATC students.

20 May, Friday

- Meetings with **Mary Seaton from the College Relations Office** to discuss requirements for organization of PSU certificate courses. These courses are going to be adopted for further teaching at ATC, and PSU & VT certificates will be issued. Therefore, Ms. Seaton explained to what extent the modification of materials is acceptable for PSU. The process for issuing the certificates was discussed as well.
- Meeting with **Director of International Programs Deanna Behring** to discuss Innovate Project in Armenia and get acquainted with International Programs offered by the PSU College of Agricultural Sciences. The College has developed partnerships with agricultural, educational and research institutions around the world for joint research, faculty and student exchanges, and other collaborative projects. Their work via the Central and Eastern European Program, in the last few decades has been instrumental as countries in that region looked to agriculture and rural development as key to democracy building and the transition process to market economies.
- Meeting with **Dr. Robert Roberts, Professor and Head of the Department of Food Science**. This was an introductory meeting to present the purpose and the achievements

of the current visit, as well as to discuss the upcoming project activities to be implemented in Armenia.

- Skype call with **graduate student Dr. Robson Machado**. Discussed the current status and future plans for development of **FSSM curriculum for ATC**. In addition, negotiated possible involvement of Dr. Machado in the Innovate project in Armenia.

### **Food Science and Technology Department, Virginia Tech, Blacksburg, VA.**

23 May, Monday

- Department Head Dr. Joseph Marcy organized **an orientation tour** through the Department. Particularly, a visit was paid to the in the newly constructed Human and Agriculture Biosciences Building 1 (HABB1). HABB1 has 93,500 square-feet of pilot plants, research laboratory and support facilities focused on a wide range of microbiological and biochemical research including food safety, food packaging and processing, flavor chemistry, and sensory analysis. New research laboratories occupy HABB1's top floor, with shared equipment and laboratory support spaces consolidated in the core of the building. The second floor also contains a Sensory/Flavor Testing suite incorporating individualized taste panels booths, a preparation kitchen, and a focus group room. During the tour contacts were established with wide range of FST faculty and staff.
- Meeting with **Dr. Joseph Marcy to discuss the topics to be taught by VT, as part of the FSSM curriculum for ATC**. Particularly, it was discussed to include the mandatory chapters of Better Process Control School (BPSC) that is based on Canned Foods: Principles of the Thermal Process Control, Acidification and Container closure Evaluation textbook. It was agreed not to include voluntary chapters regarding the types of retorts and container closures not commonly used in Armenia.
- Meetings with **Dr. Van Crowder, Executive Director** and **Dr. Larry Vaughan, Director for Program Development, Office of International Research, Education and Development (OIRE)**. The purpose and the achievements of the current visit were presented, as well as the upcoming project activities in Armenia were discussed. In addition, Innovate Project in Armenia and other with International Programs offered by VT were discussed.
- **In-brief meeting with OIRE faculty and staff**. During this 2-hour brief Ms. Zaruhi Davtyan presented her background, the Company she is representing, her involvement in the Innovate project, and answered to the questions from the audience.

24-25 May, Tuesday-Wednesday

A field trip with FST faculty to the following sites:

- **East Shore Agricultural and Research Extension Centers (ESAREC)**. The Center includes an office complex, laboratories, equipment buildings, garages, a greenhouse, graduate student housing, a large freshwater pond, and woodland areas. It conducts state-of-the-art applied research that is relevant to local large and small-scale farming operations.

- **Visited Cherrystone Aqua Farms.** Observed production of Eastern Oysters and Hard Clams that were carefully handled, immediately refrigerated after packing, and shipped fresh nationwide.
- **Pacific Tomatoes:** learned about the company, observed tomato growing, Q&A with the site manager regarding tomato growing and harvesting methods.
- **VA Seafood AREC:** Core research and extension programs at the Virginia Seafood AREC focus on seafood safety, seafood quality of wild caught and cultured animals and products, business and marketing support for the commercial and aquaculture industries, engineering, thermal processing, intensive saltwater recirculating aquaculture, and education/ outreach for industry and consumers. The Virginia Seafood AREC also has a strong international program in food safety, food quality, Good Aquaculture Practices (GAqPs), intensive recirculating aquaculture (RAS) larval production of marine species, RAS design, implementation, and development.
- **Graham and Rollins Crab processing** is a blue crabmeat processing plant, in family operation since 1942. Product sold to several large grocery chains as well as several Sysco Foods locations. Started producing value-added products 5 years ago gradually increasing. Importers of blue crab from Mexico and Colombia, South America. Full line of fresh, frozen and pasteurized products.
- **Participated in a tour through a newly built brewery.**

#### **Suggestions and Recommendations:**

- Continue working with PSU and VT faculty and staff involved in the project to develop FSSM curriculum for ATC.
- As it has been agreed with PSU and VT, it is suggested to include the following topics to be taught by: Introduction to Food Science, Sanitation, Food Microbiology, HACCP, Food Defense, as well as mandatory chapters of BPCS applicable for Armenia. In addition, it is recommended to include the following topics to be taught by local specialists: food safety standards, certification and accreditation, introduction to ISO22000 standards, as well as local and international food safety laws and regulations.
- While developing the FSSM curriculum, pay special attention for effective combination of classroom, online, and practical sessions (lab exercises, field trips to food processing sites).
- Initiate organization of the logistic support for the first training session in January 2017.
- If necessary, CARD can assist PSU and VT to procure lab equipment and supplies to be used during the laboratory practical sessions.
- One of the major outcomes of the visit are the links established with university faculty and staff that will facilitate implementation of this and other educational and research projects.

**List of Contacts Made:**

<b>Last Name</b>	<b>First Name</b>	<b>Title/Organization</b>	<b>Contact Info (address, phone, email)</b>
Cutter	Catherine	Assistant Director of Food Safety & Quality Programs, Food Safety Extension Specialist - Muscle Foods, Chair of the Food Safety Impact Group, PSU	433 Rodney A. Erickson Food Science Building University Park, PA 16802 Email: <a href="mailto:cnc3@psu.edu">cnc3@psu.edu</a> Work Phone: 814-865-8862 Fax: 814-863-6132
Doores	Stephanie	Associate Professor of Food Science, PSU	432 Rodney A. Erickson Food Science Building University Park, PA 16802 Email: <a href="mailto:sxd11@psu.edu">sxd11@psu.edu</a> Work Phone: 814-863-2956
Dudley	Edward	Associate Professor of Food Science, PSU	427 Rodney A. Erickson Food Science Building University Park, PA 16802 Email: <a href="mailto:egd100@psu.edu">egd100@psu.edu</a> Work Phone: 814-867-0439
Gourama	Hassan	Associate Professor of Food Science, Division of Science, Berks College, Department of Food Science, University Park, PSU, Berks College, Division of Science	201E Luerssen Building Tulpehocken Road, P.O. Box 7009 Reading, PA 19610-6009 Email: <a href="mailto:hxg7@psu.edu">hxg7@psu.edu</a> Work Phone: 610-396-6121
Lomonaco	Sara	Adjunct Professor of Food Science, Assistant Professor of Food Safety Department of Veterinary Sciences University of Torino, Italy	Via Leonardo da Vinci 44, Grugliasco, TO 10095, Italy  Work Phone:+390116709213  Email: <a href="mailto:sara.lomonaco@unito.it">sara.lomonaco@unito.it</a>
Roberts	Robert	Professor and Head of Food Science, PSU	206 Rodney A. Erickson Food Science Building University Park, PA 16802 Email: <a href="mailto:Bob.Roberts@psu.edu">Bob.Roberts@psu.edu</a> Work Phone: 814-863-2959
Bucknavage	Martin	Senior Food Safety Extension Associate, PSU	438 Rodney A. Erickson Food Science Building University Park, PA 16802 Email: <a href="mailto:mwb124@psu.edu">mwb124@psu.edu</a> Work Phone: 814-867-1839
Machado	Robson	Graduate student, PSU	Email: <a href="mailto:ram471@psu.edu">ram471@psu.edu</a>
Rivera	Minerva	Graduate student, PSU	Email: <a href="mailto:mxr444@psu.edu">mxr444@psu.edu</a>
Marshall	Douglas	Chief Scientific Officer, Eurofins Microbiological laboratories, Inc.	2000 Mackenzie Ct, Fort Collins, CO 80528 Phone: 1-970-217-6854 Email: <a href="mailto:DouglasMarshall@eurofinsUS.com">DouglasMarshall@eurofinsUS.com</a>
Miller	Arthur	Principle Scientist,	320 Gobbard, Suite 200, Irvince,

		Center for Chemical Regulation and Food Safety Exponent, Inc. Engineering and Scientific Consulting	CA 92618 Phone: 949-242-6009 Email: amiller@exponent.com
Siragusa	Gregory	Senior Principal Scientist, Eurofins Microbiological laboratories, Inc.	2345 South 170 <sup>th</sup> Street, New Berlin, WI 53151 Phone: 1-262-389-4098 Email: gregorysiragusa@eurofinsus.com
Behring	Deanna	Director of International Programs, College of Ag Sciences, PSU	106 Agricultural Administration Building, University Park, PA 16802 Tel: 814-863-0249 Fax: 814-865-3055 Email: dmb37@psu.edu
Seaton	Mary	Assistant Director, College Relations Office, PSU	Email: <a href="mailto:mbs13@psu.edu">mbs13@psu.edu</a> Work Phone: 814-863-5846
Marcy	Joseph	Department Head, Food Science and Technology Department, Virginia Polytechnic Institute and State University	22A Food Science and Technology Building (0418) Blacksburg, VA 24061 (540) 231-7850 (540) 231-9293 (Fax) <a href="mailto:jmarcy@vt.edu">jmarcy@vt.edu</a>
Hudson	Denise	Financial & Program Coordinator, innovATE; International Res Edu & Dev, VT	540-231-8409 540-231-6338 Email: <a href="mailto:dchudson@vt.edu">dchudson@vt.edu</a>
Vaughan	Larry	Director of Program Development, OIRED, VT	526 Prices Fork Rd Blacksburg, VA 24061 540-231-2762 Email: <a href="mailto:larryjv@vt.edu">larryjv@vt.edu</a>
Williams	Robert	Associate Professor, Extension Food Microbiology, Food Science and Technology, HABB1, VT	1230 Washington Street SW, Blacksburg, VA 24061 540-231-4106 Email: <a href="mailto:rowilli3@vt.edu">rowilli3@vt.edu</a>
Jahncke	Michael	Professor/ AEREC Director, Virginia Seafood AREC, VT	102 S. King Street, Hampton, VA 23669 757-727-4867 Email: <a href="mailto:mjahncke@vt.edu">mjahncke@vt.edu</a>
Eifert	Joell	Director, Virginia Tech Food Innovation Program, Food Science and Technology (0924), Department of Food Science and Technology, VT	Blacksburg, VA 24061 540-231-2483 Email: <a href="mailto:joell.eifert@vt.edu">joell.eifert@vt.edu</a>

## Appendix 1: Visit Agenda

**Sunday May 15**

Arrive in State College, PA

**Monday May 16**

Rest at hotel

**Tuesday May 17-Thursday May 19**

Food Microbiology Shortcourse (agenda below)

**Tuesday, May 17, 2016**

- 7:00 AM - 8:00 AM **Registration/Check-In**  
Keeney Commons, 2nd Floor, Erickson Food Science Building
- 8:00 AM - 8:15 AM **Welcome and Introductions**  
*Dr. Hassan Gourama, Program Coordinator, Associate Professor, Food Science, Penn State Outreach Room, 252 Erickson Food Science Building*
- 8:15 AM - 9:00 AM **Introduction to Microbiology**  
*Dr. Hassan Gourama*
- 9:00 AM - 9:45 AM **Spoilage and Indicator Microorganisms**  
*Mr. Martin Bucknavage, Food Safety Specialist, Penn State*
- 9:45 AM - 10:00 AM **Break**
- 10:00 AM - 11:00 AM **Methods for Sampling Food Products**  
*Dr. Stephanie Doores, Associate Professor, Food Science, Penn State*
- 11:00 AM - 12:00 PM **Methods for Bacterial Dilution and Enumeration**  
*Dr. Catherine Cutter, Professor, Food Science, Penn State*
- 12:00 PM - 12:45 PM **Lunch**  
*Provided in Keeney Commons*
- 12:45 PM - 1:30 PM **Introduction to Mold and Mycotoxins**  
*Dr. Hassan Gourama*
- 1:30 PM - 5:00 PM **Laboratory Sessions (See Lab Schedule)**  
Standard Plate Count/Pour Plates/Petrifilm/Spiral Plating  
Staining and Microscopy  
Aseptic Techniques/Sample Preparation and Enrichments  
Mold Identification
- 5:00 PM - 7:00 PM **Welcome Reception**

### **Wednesday, May 18, 2016**

- 8:00 AM - 8:45 AM **Parasites and Viruses**  
*Mr. Martin Bucknavage*
- 8:45 AM - 9:30 AM **Immunologically Based Methods for Pathogen Detection**  
*Dr. Sara Lomonaco, Adjunct Faculty Member, Food Science, Penn State*
- 9:30 AM - 10:15 AM **Listeria monocytogenes and Staphylococcus aureus**  
*Dr. Stephanie Doores*
- 10:15 AM - 10:30 AM **Break**
- 10:30 AM - 11:15 AM **Salmonella and Campylobacter spp.**  
*Dr. Catherine Cutter*
- 11:15 AM - 12:00 PM **Enterohemorrhagic Escherichia coli**  
*Dr. Catherine Cutter*
- 12:00 PM - 12:45 PM **Lunch**  
*Provided in Keeney Commons*
- 12:45 PM - 5:00 PM **Laboratory Sessions**

### **Thursday, May 19, 2016**

- 8:00 AM - 8:45 AM **DNA Based Methods for Pathogen Detection**  
*Dr. Edward Dudley, Associate Professor, Food Science, Penn State*
- 8:45 AM - 9:45 AM **Advanced Molecular Methods for Pathogen Detection**  
*Dr. Sara Lomonaco*
- 9:45 AM - 10:00 AM **Break**
- 10:00 AM - 12:00 PM **Laboratory Session – Molecular Techniques**  
*Dr. Edward Dudley & Dr. Sara Lomonaco*
- 12:00 PM - 12:45 PM **Lunch**  
*Provided in Keeney Commons*
- 12:45 PM - 1:15 PM **Review of Lab Session**  
*Dr. Edward Dudley & Dr. Sara Lomonaco*
- 1:15 PM - 2:00 PM **Setting Up a Microbiology Laboratory**  
*Mr. Martin Bucknavage*

### **Quality Systems in the Food Microbiology**



2:00 PM - 2:45 PM      **Laboratory**  
*Dr. Douglas Marshall, Chief Scientific Officer, U.S  
Microbiology Division, Eurofins*

2:45 PM - 3:00 PM      **Break**

3:00 PM - 3:45 PM      **How to Help Your Company Survive a Food-  
Borne Illness Outbreak**  
*Dr. Arthur Miller, Exponent, Inc. - Health &  
Environmental*

4:00 PM                      **Use of microbiome information in your plant**  
*Dr. Greg Siragusa, Eurofins*

5:00 PM

**Awarding of Certificates & Course Wrap-up**  
*Collection of Course Evaluations and Distribution of  
Certificates*

**Friday May 20**

2:00 pm                      Meet with Mary Seaton-Conferences and Shortcourse Office  
2:30 pm                      Meet with Deanna Behring-International Ag Office  
3:00 pm                      Meet with Dr. Bob Roberts-Food Science Dept Head  
4:00 pm                      Skype call with Dr. Robson Machado (post-doc)

**Saturday May 21**

Personal time (ex. meet with Walt McVey)

**Sunday May 22**

Leave for VaTech with Cathy Cutter  
Arrive Blacksburg VA. Hotel reservation The Inn at Virginia Tech 901  
Prices Fork Rd, Blacksburg, VA 24061 (540) 231-8000

**Monday May 23**

9:00-12:00                J. Marcy to transport to HAB1 and tour of facilities and meetings with  
FST faculty/staff.  
12:00-1:00                Lunch with selected FST faculty  
1:00-5:00                OIRED D. Hudson, J. Cricenti  
5:00                        Inn at Virginia Tech  
5:30                        Dinner J. Marcy, Denise Hudson, Johanna Cricenti  
Hotel Inn at Virginia Tech

**Tuesday, May 24**

6:45 am                    J Marcy. Pick up at Inn to FST building

7:00 am                    Depart FST for Van trip with FST faculty to Eastern Shore AREC  
Host: Laura K Strawn, Eastern Shore AREC, 33446 Research Drive,  
Painter, VA 23420      Office: [757-414-0724, ext. 12](tel:757-414-0724) Cell: [714-450-0629](tel:714-450-0629)  
[Lstrawn@vt.edu](mailto:Lstrawn@vt.edu)

2:00 pm                    Cherrystone Aqua Farms <http://www.littleneck.com/>

1588 Townfield Dr. Cheriton, VA 23316

- 3:30 pm Pacific Tomatoes (commercial tomato planting and tour)
- 5:00 pm Eastern Shore AREC Overview of AREC in classroom with Steve Rideout and AREC faculty, quick building/lab tour, and possible field tour on golf carts (weather dependent). Check out our AREC programs below: <http://www.arec.vaes.vt.edu/eastern-shore/programs/index.html>  
Also, our Eastern Shore AREC Facebook Page: <https://www.facebook.com/ESAREC>
- 6:30 Dinner at Clam Shack  
Hotel: Hampton Inn & Suites 4129 Lankford Highway P.O. Box 189, Exmore, Virginia, 23350, USA TEL: +1-757-442-7722  
Confirmation Number: 85958748

**Wednesday, May 25**

- 8:00 Leave ESAREC to travel to VA Seafood AREC to arrive 9:30 or 10 AM. Host Dr. Mike Jahncke, Director Virginia Seafood Center 102 South King Street, Hampton, VA 757-727-4861. (1) A tour of Graham and Rollins Crab processing just down the alley from us. (walking distance).  
  
(2) Arrive back at VA Seafood Center and a tour of our AREC. Meet with faculty and staff at the Seafood Center with an informal overview of our programs and people. Have our groups mingle and talk about potential collaborations with coffee and doughnuts. (3) Lunch at Papa Ciccio's, Hampton. (4) visit to a newly opened brewery (5) Leave for Blacksburg at 3PM.  
  
Arrive Blacksburg approximately 8:00 pm  
Hotel, Inn at Virginia Tech Confirmation #774680

**Thursday, May 26 Depart**

Annex 2. Photos

**Modern sensory evaluation rooms at VT**



**Pilot plant at Food Science and Technology Department, VT**



**Pilot plant and a research lab at Food Science and Technology Department, VT**



Visiting Cherrystone Aqua Farms



**Pacific Tomatoes**



**Graham and Rollins Crab processing**

