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 (OIRED).** 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 OIRED 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.
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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
Laboratory
Dr. Douglas Marshall, Chief Scientific Officer, U.S Microbiology Division, Eurofins

Break

How to Help Your Company Survive a Food-Borne Illness Outbreak
Dr. Arthur Miller, Exponent, Inc. - Health & Environmental

Use of microbiome information in your plant
Dr. Greg Siragusa, Eurofins

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 Cell: 714-450-0629 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