



## **Trip Report: InnovATE/Armenia**

### **Dates:**

June 26 to July 11 for Joe Marcy  
June 26 to July 19 for Angela Neilan

**Institution(s):** Virginia Tech, ICARE and ATC

### **Purpose:**

Assessment of Food Safety Systems and Processing Plant Implementation of Best Food Science Based Practices in order to develop new Specialty for ATC students in Food Safety Management.

### **Sites Visited:**

Yerevan- Ministry of Food Safety Systems and FAO Food Testing Laboratories, Armenian National Agrarian University Department of Food Stuffs and laboratory facilities

Visits to Food Production Facilities, farm and roadside food markets and CARD Farm and Vet Service Centers for Food Safety assessment:

North of Yerevan- Sevan, Vanadzor, Stepanavan, Tashir, Spitak (1 day)  
South of Yerevan-Ararat, Yeghegnadzor Sissian, Goris, Khndzoresk (2 days)

### **Description of Activities:**

Observed and assessed value chain for food products such as fruit, vegetables and dairy cheese from farm to fork.

Interviewed Food Processing industry owners and employees, government regulatory staff, Ministry of Food Safety Systems, CARD Farm and Vet center staff, CARD Food Safety staff,

### **Suggestions and Recommendations: (see trip log for further explanations)**

ATC should collate and distribute the content and results of the July 1 Symposium on “Linkages between Industry and Academia” and follow up on action items

Ensuring animal health is one of the most important phases in the food safety process. We recommend that the village and regional veterinarians be involved in the Food Safety Management curriculum development. A series of interviews with the CARD vets and the state vets would be beneficial. It became clear that the veterinarians are the professionals who are trained in food safety. University

programs focus on microbiology and scientific assessments, but the veterinarians deal directly with the farmers and the families in villages. They must be involved to improve sanitation behavior and to strengthen the linkage between animal health and human health. (Discuss with Dr. Valerie Ragan at VT Vet Med College and her work to prevent brucellosis in Armenia through the Ministry of Agriculture)

More international students would be an advantage to ATC program. Recommend that more out of country students be recruited to ATC at both Undergraduate (UAB) and masters (MAB) level. ATC could become the university agribusiness program of choice for the region. Increase in masters' tuition for out of country students is a part of the ICARE enterprise mix toward financial sustainability and long term sustainability. The relationship with the ANAU Rector must be formalized in relation to % of tuition returned to ICARE/ATC which is also the Agribusiness Department of the University.

We recommend that Vahe Ghazaryan, General Manager and Owner of Euroterm Company which produces "Noyan" brand fruits and juices become the example of successful food safety implementation. With his best practices, continued path to success and his personal investment and commitment to safety of his products, he has obtained international certifications required to market his well-known products in Europe and the USA. He was very clear about the need for management of the food safety process. The more technical training for his staff was provided by the equipment and packaging vendors such as Tetra Pak. Mr. Ghazaryan is convinced of the positive return on investment he continues to receive based on his own experience. USDA MAP program got this factory started in the mid 1990's and in contrast to other companies we visited, Euroterm/Noyan has not relied on outside funding but rather invested their own resources into their company.

Recommend that the FAO Food Science Labs be considered for agronomy and soil testing purposes. Equipment is new and staff could do many more tests than they currently handle. They currently do 80% government ordered food testing and 20% testing by private contract.

Recommend that the Food Safety Systems Management specialty at ATC be called a name such as Administration of Food Safety Systems or another title without "specialty" because this word has many meanings in Armenia and does not actually clarify the content of the course certification/s. Most of the stakeholders interviewed said they wanted more of a manager who could work with teams and people not necessarily another scientist. Communication, Responsibility, Vision and Dedication were qualities that many of the factory owners and directors said they were looking for when hiring new employees. Most said they could get the technical training on the job, but wanted managers who were trained to manage people and processes at a higher level to make a contribution to moving company forward, not remain at status quo. Leading and working toward a culture of food safety behavior and lifelong learning was the highest challenge.

Recommend further exploration of food safety work being done by DTRA (US Defense Department) and potential linkages for education and research with ATC.

Recommend that a Curriculum Review Panel be established to include experts such as Deputy Minister of Agriculture for Food Safety Systems, Ms. Lusine Davtyan and Dr. Nune Darbinyan, Ecoglobe Director and USDA Organic certification authority both be included in panel of experts and possible guest lecturers to review and deliver curriculum for ATC Food Safety Systems Management.

Recommend that OSHA worker safety considerations be included in the curriculum for ATC. For example, personal hearing protection and potential injury areas need to be addressed at all levels.

Recommend that the economic considerations of Food Safety and comparison of vertically integrated industry such as Noyan and traditional industry with outside suppliers be included in curriculum. The economic advantage of food safety along the value chain must be covered in the courses developed by VT and PSU.

Recommend that students be surveyed for interest in and knowledge of food safety to guide the curriculum development process. Because ATC can only accept students from ANAU business and economics (NOT food science or science in general), we anticipate that some basic food science will be needed in the series of courses developed by VT and PSU.

Recommendation-Armenian government budget does not provide funds for Ministry staff and scientists to attend trainings and workshops. They must be specifically invited and funding provided. If they are not specifically invited to trainings by other NGO's and organizations, these government staff and scientists will continue to fall behind current regulatory and technical capabilities.

## **Trip Log**

June 26- 28, 2015 Travel to Yerevan via Dubai

June 29-Meeting at ATC with Center for Agricultural Research and Development (CARD)-Sergey Chakhmakhchyan, Training Coordinator, Food Safety Specialist and Veterinarian who provided a Review of Food Industry in Armenia and current situation with food safety training. Learned that their activities would end on June 30, 2015 due to termination of funding from USDA. Food Safety group would like to continue with Food Safety Training if funding is available through ATC. Reviewed proposed agenda for visits with food processing industries and key stakeholders

June 30-Preparing for keynote presentations for Formal Symposium on Best Practices for linking industry and academia through research and training by ATC on Linking Industry with Academics in Agribusiness.

Prepared background information for ATC on various Food Safety System Schemes such as Training, Implementation and Auditing of Food Production Companies including ISO22000 and HACCP (Hazard Analysis Critical Control Point which is the foundation for all other schemes). Began discussion on course text books to place in ATC Library for use by 7 students enrolled in future Food Safety System courses. Discussed appropriate International certification programs in addition to potential VT and Penn State InnovATE Consortium University certifications. Became aware of the importance of the actual certificate and the value to both students and employers.

July 1- Participated in Symposium at Congress Hotel on "Linking Agribusiness and Industry with Academia." Welcomed all stakeholders on behalf of VT, presented two keynote addresses on overall best practices in VT university linkages and particular successes from VT Food Science and Technology. Met and interacted with a variety of key stakeholders in agribusiness and explained the goals of ATC Food Safety Management Specialty. Followed by roundtable discussions where participants engaged in agribusiness and food safety needs assessment.

Dinner with Aida Sijercic and Clemen Gehlhar of USDA FAS, discussed the coordination of Food Safety Programs in Armenia as shift occurs from USDA funding to potential private and USAID funding. Learned

about the history of USDA programs in Armenia and rationale for past efforts and new initiatives in Caucasus Region. 7 Georgian students have arrived at ATC funded by USDA FAS. The regional representation will enrich the classroom discussion and the exposure of ATC Armenian students to a broader Caucasus regional perspective. More international students would be an advantage to ATC program.

July 2-Euroterm, Noyan, Vahe Ghazaryan General Manager and owner-Tour of factory while in production. Excellent condition. They had identified the critical control points in his factory and employees were dressed in protective clothing and doing personal sanitation well. He said this was the most difficult part for him-getting the behavior in place and changing the culture of manufacturing. Discussed his pathway to success. He has achieved what everyone else wants to achieve in Food Safety. Already certified in ISO22000 and ISO9001 and looking to get ISO certification at farm level to complete full ISO certification for his supply chain. HACCP in place. Lengthy discussion of criteria for specialty in food safety management. His motivation for implementation was export to the US/EU market. Strong recommendation that he should be one of the people we consult with frequently about his pathway to success and should be asked to use him as success story. He said he wanted employees who were responsible, took initiative, willing to be part of his team and change behavior for the better. Didn't need a "specialist." He needed more managerial skills in his employees and he could train them on the job.

Went to CARD headquarters and met with Sergey Chakhmakhchyan, Vardan Danghya, Arman Badalyan and other Food Safety Technical staff. They provided comprehensive review of the individual course offerings that had been provided so far through USDA and how they had been implemented during the past 15 years. Types of trainings, who taught them and who the learner group consisted of were included in a slide presentation. Funding has terminated and the staff are looking for opportunities to continue food safety trainings. They are now working with DTRA defense department food safety.

July 3-Visited BACON Linda LLC. We were hosted by the plant manager and toured along with students and faculty of microbiology at Yerevan State University. Observed sausage production from start to finish from raw to smoked and processed meats and packaging. Saw labs and meat smoking areas. They are not yet HACCP certified and hope to be so soon. CARD was training their staff. Modern well-kept building. If they apply for ISO or HACCP they will most likely be successful. The physical plant was in very good condition. Training of staff would be the recommendation for BACON.

Met with Deputy Minister of Agriculture-Department of Food Safety Systems, Lusine Davtyan. She gave an overview of regulatory situation and importance of Food Safety Laws and Regulations. We learned that inspectors are separate from laboratory testing and they can only work within their authority. Testing is only done when authorized by government order. The labs do 80% government testing and 20% lab samples analyzed when contracted by commercial entities-but only if they pay. She discussed her thoughts about training needs and focused on the ability to read and understand regulations and laws. She has agreed to review the curriculum and provide suggestions.

July 4-Rode marshutka van to Bangladesh wholesale fruit, vegetables, herbs and spices market. Observed marketing techniques and available products. In spite of over 100 degree F heat, people were buying at the market, both inside the former factory building and outside under sun umbrellas in sweltering heat. These wholesale sales to consumers and to smaller vendors highlight an important link in the Yerevan food chain. We proceeded to a city super market where we observed the display, variety and price of food items. Shoppers had many choices of fruits, veggies, juices, milk and meat products as

well as imported packaged goods from many countries. We discussed the importance of food inspection at the international borders and purchased several Armenian items including cognac and chocolates as gifts.

July 6-Took Intern, Kevin from Hunter College in NYC Food Science Program to meet Nune Darbinyan, PhD of Ecoglobe Organic Certification Body. She is facilitator and trainer to ensure that Armenian food companies can obtain international certifications. Her concerns about training included the importance of international language skills such as English for employability. Dr. Darbinyan can certify growers as USDA Organic which will be important as the consumer makes more demands for organic foods. She would also be a good member of curriculum review expert panel.

Met with Dr. Astghine Pasoyan, Executive Director, Foundation to Save Energy, [www.esfarmeria.org](http://www.esfarmeria.org) who focused on environmental impacts on food supply. She was an ATC lecturer and explained that green food supply and organic foods were becoming more important but that many people do not trust the foods in the market. Labeling is often inaccurate and foods labeled as organic are not always organic. There is no oversight and the application of pesticides and herbicides and use of antibiotics and growth hormones are concerning to her. Also foods grown near dusty roadways with exposure to exhaust fumes need to be avoided. She explained that she trusted the food grown and canned or pickled from her mother's village and brought it back to Yerevan for her children rather than buy at the market.

July 7-Drove to Lori Marz and stopped at Lake Sevan to observe the food stands and visit local bakery. Met with CARD Farm and Vet Service Center at Stepanovan. Staff explained what they did to help keep local dairy herds healthy with vaccinations. We discussed veterinarians training in Food Science and realized that these village vets are the front line in protecting Armenia's food supply.

Visited "Duster Melania" Cheese Factory in Tashir. Met with the two brothers who own the factory. One is the business man and one is the PhD scientist. Toured the plant while in operation. They had achieved ISO22000 and were held up as a very trustworthy company with consistently good cheese product and trusted label. Brought three dairy farmers to talk with us as they were the milk producers who supply the company. These brothers also invested much of their own money into their business and the next generation were involved in the process.

July 7-Drive to Vayots Dzor Marz to Yeghegnadzor to tour Getnatun Winery. Met with owner and family, Narine Baghdasaryan and her father Aghasi. Toured their Winery and distillery plant and discussed how their path to success over the past 15 years. They showed us how they bottled labeled their wines and cognac and explained their distribution channels. We observed the delivery of raw product and glass bottles from Italy. Aghasi designed a special crusher stemmer machine and other tailor made equipment to mechanize the process. This is a well-run winery with laboratory and bottling plant. They are now making fruit based cognac such as pomegranate, apricot, peach and cherry. Narine was working towards ISO9001 on their distribution chain. They showed us tasting room, retail store on site, the labeling by grandmother and young daughter. They explained that they were spending their energy on expanding their production and would go further into marketing in the future. Marketing is a major expense and they plan to develop a marketing plan once they are certain they have reached capacity to meet demand. They recognized that tourism was an opportunity but takes much time away from production.

Visited Bariskova Cheese plant in Syunik Marz, Tsghuk village and talked with Myasnik Grigoryan owner and Director of Cheese Factory. They had a very small cheese factory making mozzarella and ricotta cheese mostly exported to Russia. They had a young chemist employed for food safety quality assurance. They also made a small bit of camembert mold cheese. Typical Armenian cheese called Lori had been pressed and brined and wrapped and sold. Almost all their production went to Yerevan. Any export went to Russia. Export ambition was to sell to Russia. Felt no need to comply with European or American requirements. They were in the midst of a fairly significant plant expansion and hoped to complete by 2017 if cheese prices maintain value. He started out with original MAP loan which was very important for him getting started!

July 9- Overnight in Goris and then to Farm and Vet Service Center in Khndzoresk, near Swinging Bridge. Head Vet told us he had been the vet in that area for over 40 years and serviced thousands of animals on his own. His wife helped him and he didn't think farmers could pay for the services but the center was just new and he would wait to see if it could be profitable. He had not been paid for a long time. We realized how important the village vets are to food safety in Armenia. They are the most important link in the food safety of Armenia-providing for animal health. This is working very well and needs to be strengthened and continued for safety of animal based food supply. All of the vets we met were very committed and dedicated as evidenced by working for long periods with no regular pay. This is a good investment of US funds. All Vets were familiar with VT's Dr. Valerie Ragan and her work to prevent brucellosis (funded by USDA FAS through Ministry of Agriculture)

Drove onward to Sarnakunq Village and met with young staff at another CARD Farm and Vet Service Center. They shared their ideas about safe food and what they look for on labels and what they and their families feared. It was surprising that all three young college age youth ate at home with their mothers cooking the meals. The only part of a label they read is the date. One young man said he didn't cook very much when he went back to college in Yerevan. They were all concerned about the white spots inside tomatoes (which are caused by excess nitrogen application) and thought the spots were pesticide residue. They only trust the food from their village where they know who produced it and how it was grown or raised. When asked what their mothers worried about they said Botulism from canned foods, to our surprise. Apparently there were some local reports of deaths from eating home canned foods that should have been pressure canned or boiled before eating to kill the botulinum. The older girl actually knew that boiling would kill the harmful bacteria.

July 10-Visited Director of 2 FAO and Greek government supported food safety labs. Toured plant science lab and the toxicology lab. Discussed the requirement for the government order before any testing is done. We now understand their capabilities and the capacity for testing with their new modern equipment, updated in 2014. Their building was donated by FAO and equipment was donated by Greek Govt. University degree did not prepare these scientists to use the latest equipment and understand the test results. Equipment in university labs is outdated. Again we learned that training was provided by equipment manufacturers.

Neilan and Marcy debriefed before Marcy's departure after midnight on July 11. VT and PSU team will collaborate on initial course development with goal of implementation at ATC for fall semester, 2016.

