Journal of Agricultural Education, 58(3), 72-83.
https://doi.org/10.5032/jae.2017.03072

Towards Developing an Industry-Validated Food Technology Curriculum in Afghanistan

Paul Ebner[1], Kevin McNamara[2], Amanda Deering[3], Haley Oliver[4], Mirwais Rahimi[5], & Hamid Faisal[6]

Abstract

Afghanistan remains an agrarian country with most analyses holding food production and processing as key to recovery. To date, however, there are no public or private higher education departments focused on food technology. To bridge this gap, Herat University initiated a new academic department conferring BS degrees in food technology. Models for developing agriculture curricula consider industry input integral to preparing graduates for the job market. Here, we assessed perspectives of Afghan food processors on challenges faced and skills/knowledge valued most in new employees as a first step in developing an industry validated food technology curriculum for Afghanistan. Businesses identified numerous challenges (e.g., having to source technical assistance from outside the country) and specific skills gaps (e.g., ability to conduct quality analysis/assurance) they feel should be addressed by the university. Afghan higher education is largely teacher centered, however, with little to no integration of industry stakeholders and responses indicated that establishing beneficial relationships between stakeholders and university programs will take considerable effort. As Afghanistan continues higher education reform throughout the country with the addition of more "workforce" oriented degree programs, these results have implications extending to other areas of agriculture and beyond.

Keywords: Afghanistan, Food Technology, Higher Education

Author's note: This publication was prepared under a grant funded by Family Health International under Cooperative Agreement/Grant No. AID-306-A-13-00009-00 funded by USAID. The content of this publication does not necessarily reflect the views, analysis, or policies of FHI 360 or USAID, nor does any mention of trade names, commercial products, or organizations imply endorsement by FHI 360 or USAID.

Introduction

Afghanistan's economy is largely agrarian with agriculture responsible for an estimated 50% of annual GDP growth. Close to half of all Afghan household incomes are tied, at least in part, to agriculture and of all economic sectors, agriculture holds the most potential for new job growth. Additionally, agricultural processing accounts for an estimated 90% of all manufacturing

[1] Paul Ebner, Department of Animal Sciences at Purdue University, 915 W. State St., West Lafayette, IN 47907 USA, pebner@purdue.edu
[2] Kevin McNamara, Department of Agricultural Economics at Purdue University, 615 W. State St., West Lafayette, IN 47907 USA, mcnamara@purdue.edu
[3] Amanda Deering, Department of Food Science at Purdue University, 745 Agricultural Mall Drive, West Lafayette, IN 47907 USA, adeering@purdue.edu
[4] Haley Oliver, Department of Food Science at Purdue University, 745 Agricultural Mall Drive, West Lafayette, IN 47907 USA, hfoliver@purdue.edu
[5] Mirwais Rahimi, International Programs in Agriculture at Purdue University, Herat City, Afghanistan, mirwaisrah@gmail.com
[6] Hamid Faisal, USAID-USWDP, Kabul, Afghanistan, hfaisal@uswdp.org

in Afghanistan (World Bank, 2014). Still, Afghanistan remains among the most food-insecure nations in the world (D'Souza & Jolliffe 2012).

Herat Province is the westernmost of the 34 provinces of Afghanistan. It has a population of approximately 1.8 million and 750,000 hectares of land in production (crops and pasture land; NAIS, 2008; CSO, 2014) across 15 districts. By area, the majority of cultivated land is devoted to cereal production, and Herat ranks 2nd and 4th among Afghanistan provinces in rice and wheat production, respectively (CSO, 2014). Grapes and wheat are the largest agriculture commodities by cash receipts. Herat Province is also the leading province in saffron production, accounting for 732 of the 812 hectares in saffron production across Afghanistan (NAIS, 2008).

Increasing food processing capacity throughout Afghanistan, has become a central focus of the central government of Afghanistan, development organizations, and private investors (MoCI, 2013). Yet, to date there are no public or private Afghanistan universities with food science or food technology departments (limited food technology courses are listed as offered through veterinary medicine departments, but the departments often do not have the staff or facilities to teach the classes (Peter and Hodgson 2011). Additionally, the Afghanistan Ministry of Higher Education, in partnership with the United States Agency for International Development (USAID), recently identified food processing as among the essential educational needs in Afghanistan (USAID, 2014). To meet these needs, Herat University recently initiated a new Department of Food Technology in its Faculty of Agriculture with the mission of producing "students with applicable, relevant, and applied skills and knowledge, prepared to immediately solve challenges in Afghanistan food processing as managers, educators, owner-operators, government officials, and other important decision makers."

Theoretical Framework and Objectives

This research was guided by a theoretical framework where effective agriculture degree programs are largely dependent on a curriculum that incorporates industry stakeholder input. This is especially true in determining the technical competencies that graduates will need in the the job market (Ramsey and Edwards 2011; Roberts and Ball 2009; Scanlon et al., 1996). In the Roberts and Ball (2009) model, the role of industry is critical not only in informing the curriculum, but in helping to ensure that teachers themselves are competent and well-versed in current technologies. These teachers can then effectively transfer the knowledge and skills valued by employers through an industry validated curriculum. Barrick et al., (2009) describe a more detailed model as it applies specifically to an international setting.

Currently, there is little to no input from allied industries or stakeholders in Afghanistan higher education, as verified by our study here. Courses are predominantly teacher-centered and, coupled with outdated or borrowed curricula, the result is often readily apparent skills gaps and students unprepared for even entry level positions in their field of study (Baharustani 2012). In turn, Afghan students graduating from public universities and pursuing employment largely report dissatisfaction with their higher education experience and their preparedness for gainful employment (Baharustani 2012).

Guided by available models for developing an agriculture curriculum that best prepares students for the job market (Ramsey and Edwards 2011; Roberts and Ball 2009; Scanlon et al., 1996), this research aimed to collect perspectives of Afghan food processors on the challenges they face and the food technology skills or knowledge they felt were most needed in the local economy. This was the very first step in developing an industry-validated, Afghanistan-centric, food technology curriculum that produces job-ready graduates.

A curriculum that transfers relevant food processing skills requires faculty who are familiar with current food processing practices and technologies (Baker and Trussell 1981; Cannon et al., 2012). A secondary objective was to afford more opportunities for the Afghan university faculty members who will be responsible for implementing the curriculum to become familiar with food processing technologies currently in use across commodities. This exposure would allow the faculty to better bridge the gap between theory and practices (Baker and Trussell 1981; Cannon et al., 2012). As Afghanistan continues to undergo substantial higher education reform with the regular addition of new "workforce" oriented degree programs at both the BS and MS level (USAID 2014; MoCI 2013; MoHE 2010), the results presented here have implications for numerous similar higher education initiatives throughout the country.

Methodology

All research involving human subjects was approved by the Purdue University Institutional Review Board. Participants were food processing and production owners and operators from businesses across Herat Province, Afghanistan. Thirty-three businesses were solicited to voluntarily participate in interviews regarding their operations with Herat University faculty members and USWDP staff. The businesses were selected to reflect the diversity of food processing industries in the Herat area and included confections, meat and dairy products, dried nuts and legumes, processed fruits and vegetables, beverages, and cereals (including flour). All solicited businesses agreed to participate.

The four part survey rubric was developed and administered to each participant . The first part contained seven questions regarding basic information on the individual businesses including number of employees, years in production, general processes involved (e.g., milling, pasteurization, etc.), markets accessed (e.g., local, wholesale, international, etc.), and current production levels. The second section contained six questions focused on challenges to production and delineating where and from whom processors currently receive assistance or information regarding current or new technologies. The third section contained 10 questions and concentrated on current food quality and safety practices in place and tests or procedures currently in use (if any). Finally, the fourth section asked respondents to quantify the value of 11 different food technology competencies to their businesses. The 11 competencies were separated into subgroupings of food safety, food quality, and food technology and were based on the "Core Competencies in Food Science" developed by the Institute of Food Technologists (IFT 2011). The survey contained a mix of quantitative questions with scaled responses (e.g., How often do you use the university as a resource for technical assistance or employee recruitment? 1. never; 2. rarely; 3. from time to time; 4. regularly) and open-ended questions (e.g., What are your biggest challenges to operating at capacity?), which allowed businesses to provide their own, unprompted insights.

Herat University faculty members met individually with the participating food processors and administrated the survey orally. Participants' responses were recorded by hand by the university faculty prior to being transcribed for analysis. All surveys were conducted at the respective business locations and participants were not required to answer each question. Qualitative answers were preliminarily organized using descriptive coding to identify dominant themes (Saldaña, 2009).

Findings

Participant Backgrounds

A total of 33 food processors participated in the survey (see Table 1). The businesses represented a wide variety of commodities including seven confectionaries (e.g., cakes, cookies, biscuits, etc.), seven businesses producing meat (raw and processed) or dairy products (fluid milk, yogurt, ice cream, buttermilk), five businesses processing dried nuts and legumes, four businesses processing fruits or vegetables, four businesses processing cereals, four businesses producing spices (e.g., saffron), and five businesses producing other products (e.g., chocolates, bread, etc.). Several businesses produced multiple products across these categories. Together, the 33 participating businesses have been in operation for an average 11 years and reported employing an average 51 employees. The range in the number of employees, however, was significant (3 – 700 employees; SD ± 81.7; see Table 1). Thus, the median (30 employees) is likely to more accurately reflect the aggregated size of the participating companies. Currently, the largest number of products (64%) are sold through wholesalers or to distributors, followed by local markets (55%), and direct marketing to consumers (29%; see Table 2). Food processors reported that 19% of their products (by type, not volume) are exported. Exported products, however, are confined almost exclusively to spices (e.g., saffron) with India, UAE, and the EU most often cited as accessed markets.

Table 1

Characteristics of Afghanistan Food Processors (n = 33) Participating in Survey

	Mean	SD	n *
Years in Operation	10.9 ±	6.29	33
Number of Employees	51.0∫	81.7	32
% of Businesses Operating at Capacity	0.0	0.0	5

** = number of respondents out of 33; ± = range: 1.0 – 25.0 (years); SD ± 6.3; ∫ = Range: 3 – 700 employees; SD ± 82; median: 30 employees.*

Table 2

Percentage of Afghanistan Food Processors Accessing/Utilizing Different Markets

Market	% Food Processors *,±	Rank
Wholesale/Distributors	64.5	1
Local Markets	54.8	2
Direct Distribution to Customers	29.0	3
Export ∫	19.4	4

** = 93.9% response rate (31/33); ± = several processors sell to different markets; ∫ = India, UAE, and EU most often cited.*

Availability and Sources of Technical Assistance

The majority of food processors indicated that technical assistance is either unavailable (6%) or sought from outside of Afghanistan (60.6%) for at least some of their major products (see Table 3). A smaller, but still substantial percentage (48.5%) of food processors reported that technical assistance is available locally for at least some of their products. Participants were asked where they sought information or training on new production practices and 47% of food processors self-reported that employees receive training outside of Afghanistan. Of those businesses seeking technical expertise or training outside of Afghanistan, 67% obtained it from neighboring Iran (see Table 4). Likewise, 31% of food processors indicated that they also rely on foreign consultants or information sources for technical assistance. A much smaller percentage of food processors self-reported using NGOs (13%), or government sources (3%). Importantly, 82% of participating food processors indicated that they "never" use the university as a source of technical assistance or employee recruitment. Likewise, none of the participants indicated that they "regularly" use the university as a resource (see Table 5).

Table 3

Availability of Technical Assistance for Afghanistan Food Processors.

Source Q: When technical assistance is needed, it is:	% Agreeing with Statement *,±	Rank
Sought from outside of Afghanistan	60.6	1
Available Locally	48.5	2
Unavailable	6.1	3
Not Needed	0.0	4

* = 100% response rate (33/33); ± = respondents could choose multiple answers.

Table 4

Sources of Information/Training for Current and New Production Practices (Self-reported)

Source Q: How do you receive information/training on current and new production practices?	**% Food Processors Reporting** *
Employees Trained outside of Afghanistan	47
Countries Identified:	
Iran (67%)	
India (13%)	
Turkey (3%)	
Pakistan (3%)	
Italy (3%)	
Private Consultants or other Information from outside of Afghanistan	31
NGOs	13
Experience from within Company	9
Equipment or Machinery Salespeople	6
Self-research	6
Government	3

* = 97.0% (32/33) response rate.

Table 5

Current Level of Interaction Between Afghanistan Food Processors and the University

Frequency	**% Agreeing with Statement** *	**Rank**
Never	81.8	1
From Time to Time	15.2	2
Rarely	3.0	3
Regularly	0.0	4

* = 97.0% (32/33) response rate.

Challenges to Food Processing

The lack of stable electricity needed for consistent production (60%) and a lack of locally available technology and/or skilled workers (57%) were the most frequently self-reported challenges by food processors (see Table 6). Participants also regularly mentioned the presence of foreign products in the market or unfair competition as barriers to improved production. These two indices were grouped together as respondents most often viewed lower prices of foreign products as a result of subsidies or other forms of support provided by importing governments for their producers. Only 1 in 5 food processors mentioned lack of security as a challenge. However, the security challenges currently in Afghanistan may be at a level where they are assumed and did not need to be directly articulated.

Table 6

Largest Challenges to Production (Self-reported)

Challenge	**% Food Processors Reporting** *	**Rank**
Stable Electricity/Power	60.0	1
Lack of Technology/Skilled Workers	56.7	2
Unfair Competition/Foreign Products	33.3	3
Corruption	30.0	4
Lack of Security	20.0	5/6
Lack of Governmental Policy	20.0	5/6
High Taxes	16.7	7
Lack of Quality Raw Materials	10.0	8

** = 90.9% response rate (30/33).*

Current Quality and Safety Assessments

Fifty-eight percent of respondents indicated that they currently test at least some of their products. Very few participants, however, were able to identify the specific tests or parameters of such tests. When prompted, participants most often identified health departments as sources of testing; health departments do not conduct such tests in Afghanistan (data not shown). Coupled with direct observation of food processing facilities and lack of testing capacity and activity, the percentage of companies currently conducting regular quality and safety tests is likely much lower.

Most Valued Food Technology Skills

Participants in this study, across commodities, recognized and placed high value on core food technology skills and competencies, indicating they would seek employees with these capacities Overall, participants placed the highest values on the attributes related to quality and assurance such as ability to test incoming materials for quality and ability to test for contamination. Knowledge of water or waste management (most processors reported using municipal waste treatment systems [data not shown]) and application of traditional food preservation techniques were valued least (see Table 8).

Table 8

Value of Food Production Related Skills in New Employees

Skills	Value *	SD	Rank
Food Quality			
Ability to Test Incoming Materials for Quality	4.91	0.30	1
Knowledge of Factors Affecting Shelf-life	4.81	0.62	2
Ability to Test Outgoing Products for Quality	4.75	0.47	3
Food Safety			
Ability to Test for Contamination	4.91	0.39	1
Knowledge of How Products Become Contaminated with Bacteria	4.88	0.34	2
Knowledge of How Products Become Contaminated with Chemicals	4.84	0.37	3
Knowledge of Water and Waste Management	4.56	0.84	4
Food Technology			
Application of Modern Food Preservation Techniques	4.84	0.45	1
Knowledge of Packing Materials and Impact on Quality	4.75	0.62	2
Knowledge of Local, National, and International Food Laws	4.71	0.64	3
Application of Traditional Food Preservation Techniques	3.19	1.26	4

* = 91% response rate (31/33). (1 = not valuable at all; 5 = highly valuable)

Discussion

At the very onset, Herat University aimed to begin its process of developing their food technology curriculum at "the marketplace" (McGarry Wolf and Schaffner 2000) with an assessment of the challenges faced by food processors and the skills food processors would most value in new employees. Herat University is among what is likely a very small number of Afghanistan universities utilizing this model in developing a new academic program, as Afghanistan higher education does not have the tradition of outreach towards stakeholders who are directly linked to the academic subject matter (Baharustani 2012). The disconnect was readily apparent in food processors' responses to most of the questions surrounding technologies used and sources used for training or new information. A majority of food processors indicated that they seek expertise from outside of Afghanistan, in some cases as far away as the EU. This is at considerable expense as it often requires bringing foreign teams or individuals on site or sending employees abroad for training. These costs are even more burdensome in the context of the security situation currently in Afghanistan.

Even more striking, however, is the fact that close to 90% of food processors participating in the study indicated that they never use the university as a resource for technical assistance or future employees. Thus, while this first step was designed to illicit stakeholder input in building a more relevant academic program based on their needs, it also highlighted the amount of effort needed to develop the types of university/stakeholder relationships that are integral to industry validated curriculum models. Participants overwhelmingly welcomed the idea of a skills-based curriculum and the opportunity to provide input in its development, with one food processor offering "if there were skilled employees in Herat, we would never hire engineers from [neighboring countries] again". Given the lack of precedence, however, it would be understandable if industry stakeholders adopt a "wait-and-see" approach to the university. Rather than relying on these relationships to develop organically, concrete steps should be taken to build capacity in the faculty in how to not only incorporate industry input effectively, but to demonstrate stakeholder and public value (Kalambokidis 2004).

Food processors in Herat Province currently employ a wide range of technology, from traditional to highly modern. Across different levels of technology, however, participants recognized and place high value on core food technology skills and competencies indicating they would seek employees with these capacities (the exceptions being "knowledge of traditional food preservation techniques"). Notably, however, there was little separation in many cases in the importance food processors placed on many of the individual competencies. In retrospect, a forced-rank format for these questions may have provided more specific information as to which competencies were most valued. Continuing dialogue with stakeholders will be required to give more resolution to the skills most immediately needed, while remaining responsive to developments and trends in the different food processing industries.

Herat Province food processors indicated numerous challenges that fall outside the scope of an academic food technology department. Namely, reliable electricity was self-reported by 60% interviewees as their biggest challenge (along with a lack of locally available skilled employees). The majority of companies participating in this survey were located either within Herat City or in the Herat Industrial Park (Guzara District). While electricity to the two locations is provided by different sources, currently there are regular, unscheduled outages in both locations that can last from minutes to hours. The inauguration of the Salma Dam in Herat Province, however, should be viewed as an opportunity as the project is expected to provide stability while significantly lowering the cost of electoral power. The dam will also increase irrigation capacity for agricultural purposes throughout the region.

Likewise, issues related to unfair competition and corruption were highlighted as challenges by numerous food processors. Food processors concerned with unfair competition most often felt that their potential (local) markets contained similar, but less expensive foreign products aided by subsidies, other types of assistance, or illegal entry into the country. In some cases, processors noted that locally sourced raw materials were often more expensive than processed foreign products. While the extent to which these factors inhibit growth or interfere with production, whether great or small, is not addressed by this study, the impact of illegal entry of foreign products has been documented by others (SIGAR, 2014). Additionally, Afghanistan still relies on imports to meet demand for most commodities, including major staples such as wheat (Halimi et al., 2015: Persaud, 2012; Chabot & Dorosh, 2007). Interestingly, only 20% of food processors directly noted "security" as a challenge. The current conflict, however, is in its 16th year and security issues permeate all facets of business and the economy, regularly causing volatility in different markets (D'Souza & Jolliffe 2012; Ciarli et al., 2010). Therefore, it is possible that security issues were assumed as challenges by the participants and answers provided to these questions may have been more biased towards food production due to the nature of the interviews.

Future Directions and Recommendations

The new Department of Food Technology will formally begin with an inaugural class in April of 2017. In the interim, Herat University has since taken several key steps in this process based on the results of this study. As described by Baker and Trussell (1981; Cannon et al., 2012), a curriculum that effectively bridges the gap between theory and practice, requires teachers with core competencies as well, including familiarity with the industries involved and the technologies they employ. Toward this end, faculty responsible for implementing the department are completing advanced degree programs that mirror the needs of the local food processing economy as outlined here. Together, the team developed a preliminary curriculum incorporating the results described here and the curriculum was shared with a newly developed industry advisory board comprised of several of the participants in this study. Input from the industry advisory board informed the final version of the food technology curriculum, which was approved by the Ministry of Higher Education. In another effort to build meaningful relationships with its industry stakeholders and demonstrate value, the department has also implemented different experiential learning platforms with the dual purpose of providing students with skills needed by employers, while addressing current food processing challenges through research.

While this study focused on food processors in relation to the development of a food technology program, the results have implications for higher education programs throughout Afghanistan. Currently, there is a considerable ongoing higher education reform in Afghanistan with the regular additions of new BS and MS programs; many such programs are aimed at bridging skills gaps in the economy (USAID 2014; MoCI 2013; MoHE 2010). Applying the model of industry validated curriculum development could help ensure that graduates of these additional programs are prepared with the skills and knowledge valued by potential employers.

References

Baker, R. & Trussell, S. T. (1981). Administrative Model for the Incorporation of Performance Instructional Modules into University Vocational Education Professional Development Programs. Final Report. *Center for Vocational and Adult Education, Auburn University*.

Baharustani, R. (2012). *Comprehensive Study of Higher Education in Afghanistan. Produced for the Afghanistan Investment Support Agency (AISA)*. Retrieved from:

http://www.aisa.org.af/Content/Media/Documents/ComprehensivestudyofHigherEducationinAfghanistan_271120141721107955332 5325.pdf

Barrick, R. K., Samy, M. M., Gunderson, M. A., & Thornton, A. C. (2009). A Model for Developing a Well-Prepared Agricultural Workforce in an International Setting. *Journal of International Agricultural Extension and Education*, *16*, 24-32.

Cannon, J. G., Kitchel, A., & Duncan, D. W. (2012). Perceived teaching and learning professional development needs of Idaho secondary career and technical education teachers. *The Researcher, 24*(1), 43-54.

Central Statistics Organization-Government of the Islamic Republic of Afghanistan [COS]. (2014). *Settled population of Herat Province by civil division, urban, rural, and sex-2012-13*. Retrieved from: http://cso.gov.af/Content/files/Herat(1).pdf

Chabot, P. & Dorosh, P. (2007). Wheat markets, food aid and food security in Afghanistan. *Food Policy, 32*(3),334-354. doi: 10.1016/j.foodpol.2006.07.002

Ciarli, T., Parto, S., & Savona, M. (2010). *Conflict and Entrepreneurial Activity in Afghanistan: Findings from the National Risk Vulnerability Assessment Data. World Institute for Development Economics Research Working Paper 2010/008.* Retrieved from: https://www.wider.unu.edu/sites/default/files/wp2010-08.pdf

D'Souza, A. & Jolliffe, D. (2012). Rising food prices and coping strategies: Household-level evidence from Afghanistan. *Journal of Development Studies, 48*, 282-299. doi: 10.1080/00220388.2011.635422

Halimi, G. H., Abbott, P., & McNamara, K. T. (2015). Price transmission in Afghanistan's wheat markets (IPIA)#1062015). *Purdue University International Programs in Agriculture*. Retrieved from: https://ag.purdue.edu/ipia/Pages/afghanistan.aspx.

Institute of Food Technologists. (2011). *2011 Resource Guide for Approval and Re-approval of Undergraduate Food Science Programs.* Retrieved from: http://www.ift.org/community/students/approved-undergrad-programs/education-standards.aspx

Kalambokidis, L. (2004). Identifying the public value in Extension programs. *Journal of Extension*, April, 2004

McGarry Wolf, M. & Schaffner, D. J. (2000). Curriculum development: Starting with the marketplace. *NACTA Journal*, September, 2000.

Ministry of Commerce and Industry-Government of the Islamic Republic of Afghanistan [MoCI]. (2013). *Implementing the SME Strategy: An Updated Action Plan for Developing Afghanistan's Agribusiness Sector.* Retrieved from: http://moci.gov.af/en/page/6039

Ministry of Higher Education-Government of the Islamic Republic of Afghanistan [MoHE]. (2014). *National Higher Education Strategic Plan: 2015-2019.* Retrieved from: http://www.mohe.gov.af/en.

National Agriculture Information Service-United States Agency for International Development [NAIS]. (2008). *Herat Province agriculture profile 2008.* Retrieved from: http://afghanag.ucdavis.edu/country-info/Province-agriculture-profiles/reports-usaid-nais/Ag_brief_2008_Herat_rev1.doc

Persaud, S. (2012). Long-term growth prospects for wheat production in Afghanistan. *United State Department of Agriculture-Economic Research Service.* Retrieved from: http://www.ers.usda.gov/media/193523/whs11l01_1_.pdf

Peter, A. & Hodgson, D. (2011). Summary Report for Herat University Faculty of Veterinary Sciences (IPIA#1012011*). Purdue University International Programs in Agriculture*. Retrieved from: https://ag.purdue.edu/ipia/Pages/afghanistan.aspx

Ramsey, J. W. & Edwards, M. C. (2011). Entry level technical skills that agricultural industry experts expected students to learn through their supervised agricultural axperiences: A modified Delphi study. *Journal of Agricultural Education, 52(2)*, 82–94.

Roberts, T. G. & Ball, A. L. (2009). Secondary agricultural sciences as content and context for teaching. *Journal of Agricultural Education, 50(1)*, 81–91.

Saldana, J. (2009). *The Coding Manual for Qualitative Researchers.* London: SAGE Publications.

Scanlon, D. C., Bruening, T. H., & Cordero, A. (1996). An industry perspective on changes needed in agricultural education curricula. *Journal of Agricultural Education, 37*(2), 17-23.

Special Inspector General for Afghanistan Reconstruction [SIGAR]. (2014). *Afghan customs: U.S. programs have had some successes, but challenges will limit customs revenue as a sustainable source of income for Afghanistan 2014 (SIGAR 14-47 Audit Report).* Retrieved from: https://www.sigar.mil/pdf/audits/SIGAR-14-47-AR.pdf

United States Agency for International Development [USAID]. (2014). *University Support and Workforce Development Program.* Retrieved from: https://www.usaid.gov/node/96081. Last accessed: December 2015.

World Bank (International Bank for Reconstruction and Development). (2014). *Islamic Republic of Afghanistan Agricultural Sector Review: Revitalizing Agriculture for Economic Growth, Job Creation and Food Security.* Retrieved from: http://documents.worldbank.org/curated/en/2015/04/24421351/afghanistan-agricultural-sector-review-revitalizing-agriculture-economic-growth-job-creation-food-security. Last accessed December 2015.