

**AGRICULTURE AND NATIONAL SECURITY: ON-
THE-GROUND EXPERIENCES OF FORMER
MILITARY LEADERS**

HEARING

BEFORE THE

**COMMITTEE ON AGRICULTURE
HOUSE OF REPRESENTATIVES**

ONE HUNDRED FOURTEENTH CONGRESS

SECOND SESSION

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JULY 7, 2016
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THURSDAY, JULY 7, 2016

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Washington, D.C.

The Committee met, pursuant to call, at 10:00 a.m., in Room 1300 of the Longworth House Office Building, Hon. K. Michael Conaway [Chairman of the Committee] presiding.

Members present: Representatives Conaway, Neugebauer, Lucas, Austin Scott of Georgia, Gibson, Hartzler, Benishek, LaMalfa, Davis, Yoho, Allen, Moolenaar, Newhouse, Kelly, Peterson, David Scott of Georgia, Costa, Walz, McGovern, DelBene, Vela, Lujan Grisham, Kuster, Nolan, Bustos, Kirkpatrick, Graham, and Ashford.

Staff present: Bart Fischer, Caleb Crosswhite, John Weber, Josh Maxwell, Matt Schertz, Mykel Wedig, Stephanie Addison, John Konya, Anne Simmons, Liz Friedlander, Mike Stranz, Nicole Scott, and Carly Reedholm.

**OPENING STATEMENT OF HON. K. MICHAEL CONAWAY, A
REPRESENTATIVE IN CONGRESS FROM TEXAS**

The CHAIRMAN. Good morning. This hearing of the Committee on Agriculture entitled, *Agriculture and National Security: On-the-Ground Experiences of Former Military Leaders*, will come to order. Rodney, will you open us with a prayer?

Mr. DAVIS. Please bow your heads. Lord, thank you for giving us this opportunity to gather once again in this great institution in this great country. Let us thank all of our witnesses, not only for their presence, but for their service, and let us all remember those who are still fighting for our freedoms, freedom to govern ourselves, in harm's way, who are serving our country. Thank them, thank all of us, and thank you, Lord, mostly. In your name we pray, amen.

The CHAIRMAN. Thank you, Rodney.

Good morning, and welcome to today's hearing. This week we celebrated America's 240th birthday. As we reflect on the freedoms we enjoy at home, it is important that we understand the role our military leaders, along with our farmers and ranchers, play in ensuring that we are safe and well fed.

Two of the pillars of our country's national security have long been a strong military and sound agricultural policy. For decades,

the United States has invested in transportation and infrastructure, agricultural research and innovation, and risk management tools for farmers, all of which have led to a vibrant and stable agricultural sector in the United States. When you combine that with the might of the U.S. military, the United States has long enjoyed relative peace and prosperity here at home.

In our latest hearing on this topic, one veteran-turned-farmer highlighted that roughly one percent of the nation defends the other 99 percent. Similarly, roughly one percent of the nation feeds the other 99 percent. In both cases, men and women are doing important work that few truly understand or fully appreciate. Sitting on the Armed Services Committee and now chairing the House Agriculture Committee, I find myself in a unique position to highlight their work and to draw attention to the fact that a nation's security is inextricably linked to its ability to both feed and defend its people.

While the United States has long invested in both agriculture and defense, that is not the case in many parts of the world. Today, we will hear from former military leaders who served in many places where agricultural development was not a priority, and they can speak to the tremendous instability that brings. They understand, perhaps better than any of us, how important it is for the United States to continue providing the tools that are necessary for our nation to be able to feed and clothe its people.

With that, I would like to welcome Major General James "Ron" Sholar, U.S. Army Retired, Stillwater, Oklahoma. Major General Sholar served continuously for 39 years as a commissioned officer in the United States Army and Army Reserve. Additionally he spent 3 decades as a Professor of Agronomy and Extension Agronomist at Oklahoma State University. Currently, he serves as Executive Director of the Great Plains Canola Association and Executive Director of the Oklahoma Oilseed Commission.

Next, I would like to welcome Major General Darren Owens, U.S. Texas Army National Guard, Retired, Bryan, Texas. As a member of the Texas Army National Guard, General Owens served in numerous leadership positions at every level, including working to establish Agribusiness Development Teams in Afghanistan, where he worked with the National Guard and land-grant universities in multiple states. He currently serves as Chief of the Common Management and Price Support Programs at the Texas State FSA Office.

Our third witness is Colonel Eric Ahlness, retired U.S. Army, White Bear Lake, Minnesota. Colonel Ahlness retired in February 2014 after having served 28 years. During his service he commanded the Minnesota Agribusiness Development Team, which was deployed to Afghanistan from October 2011 to September 2012. He now serves as the North American Lead for Diversity and Business Impact for Cargill.

I want to thank our distinguished witnesses for joining us today. [The prepared statement of Mr. Conaway follows:]

PREPARED STATEMENT OF HON. K. MICHAEL CONAWAY, A REPRESENTATIVE IN
CONGRESS FROM TEXAS

Good morning, and welcome to today's hearing.

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Two of the pillars of our country's national security have long been a strong military and sound agricultural policy. For decades, the United States has invested in transportation and infrastructure, agricultural research and innovation, and risk management tools for farmers, all of which have led to a vibrant and stable agricultural sector in the United States. When you combine that with the might of the U.S. military, the United States has long enjoyed relative peace and prosperity here at home.

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Next, I would like to welcome Major General Darren G. Owens, Texas Army National Guard, Retired, Bryan, TX. As a member of the Texas Army National Guard, General Owens served in numerous leadership positions at every level, including working to establish Agribusiness Development Teams for Afghanistan, where he worked with the National Guard and land-grant universities in multiple states. He currently serves as Chief of the Common Management and Price Support programs at the Texas State FSA Office.

Our third witness is Colonel Eric D. Ahlness, U.S. Army, Retired, White Bear Lake, MN. Colonel Ahlness retired in February 2014 after having served 28 years. During his service he commanded the Minnesota Agribusiness Development Team, which was deployed to Afghanistan from October 2011 to September 2012. He now serves as the North American Lead for Diversity and Business Impact for Cargill.

I want to thank our distinguished panel for joining us today. I now recognize the Ranking Member for his opening remarks.

The CHAIRMAN. I now like to turn to the Ranking Member for any comments he would like to make.

**OPENING STATEMENT OF HON. COLLIN C. PETERSON, A
REPRESENTATIVE IN CONGRESS FROM MINNESOTA**

Mr. PETERSON. Thank you, Mr. Chairman, and I would also welcome our witnesses, and especially Colonel Ahlness, who I have a relationship with. We go back many years when he was in the Minnesota National Guard, and we were over in Bosnia in 1½' of snow trying to get out to visit one of my guard units. Over the years, he has done an outstanding job with the guard and the other military aspects. He also works for one of our great companies, Cargill, in agriculture, and so it is very appropriate that he is here today.

Food insecurity around the world has an impact on national security, as we all understand, which is why this hearing today is important. I don't think a lot of people, though, understand this, and

they don't realize the important role that agriculture can play when it comes to our country's national security interest.

A strong ag sector and stable food supply are critical to national security. In my view, increasing our focus on economic development, particularly in agriculture, could provide some stability to some of the world's most volatile regions. Agriculture is a primary driver of economic activity in most rural areas, and the work and investments we make in food security will pay dividends both worldwide and here at home.

Our witnesses today have firsthand experience on these issues. They have served our country by helping to establish agriculture education programs, building infrastructure, and expanding ag services in places like Afghanistan, Iraq, and Kosovo.

So I thank all of you for your service. I look forward to your testimony, and Mr. Chairman, thank you for holding the hearing, and I yield back.

The CHAIRMAN. I thank the gentleman. The chair would request that other Members submit their opening statements for the record so our witnesses may begin their testimony and ensure there is ample time for questions.

With that, I would like to welcome our witnesses to the table, and Major General Sholar, if you will begin, 5 minutes.

STATEMENT OF MG JAMES R. SHOLAR, PH.D., (RET.), U.S. ARMY; PROFESSOR EMERITUS OF AGRONOMY, OKLAHOMA STATE UNIVERSITY, STILLWATER, OK

Dr. SHOLAR. Good morning, Chairman Conaway, Ranking Member Peterson, Members of the Committee, ladies and gentlemen. My name is Ron Sholar. I am a retired American soldier and a Professor Emeritus at Oklahoma State University. My testimony today is a reflection of my own thoughts and experiences. It is intended in no way to represent either the Army or the university.

Thank you for the opportunity to speak regarding the importance of American agriculture and its relationship to national security. I, like many others, believe they are inextricably linked.

Agriculture and the Army have taken me around this country and around the world. This has afforded me the opportunity to compare and contrast how we feed and defend our citizens here at home with how these two most basic requirements are met in other parts of the world.

The safe, abundant, and relatively inexpensive food supply that we enjoy in the U.S. is now produced by fewer than ever. When the Constitution was signed, 95 percent of our citizens were farmers. By 1920, that was 40 percent, and now it stands at a little less than two.

Everyone sees the reasons for the abundance of our food supply through their own prism: the natural productivity of our land, generally favorable weather, rapid adoption of improved technology, and a host of other reasons. One that sets us apart is the sophisticated distribution and transportation system that moves our agriculture products from one part of the country to the other, and around the world. Another, of course, is our national farm policy, which includes the farm safety net that sustains our farmers through particularly difficult times.

From my perspective, food security is, first of all, about ensuring that the plentiful supply of high quality food and agricultural products that we enjoy continues to be available, and that means a robust Agricultural Research and Extension Program. We can't secure what we don't have.

Public outlays for agricultural research conducted by USDA and our land-grant universities are not a cost, they are an investment. An economic analysis consistently shows that these expenditures produce a high rate of return. The U.S. cooperative extension service is the envy of the world. For a century, land-grant universities have, through extension, delivered practical information to the farmgate and the front door of America.

As we look globally, it is clear that we will see more food insecurity. An exploding world population that will soon be nine billion will place even more stress on an already stressed system. Food insecurity contributes dramatically to conflict and instability.

I have seen agriculture firsthand in around 20 countries, that is including the food-secure countries of Western Europe. I have also seen the other side of the world where food insecurity is a constant problem. I have seen agriculture in Iraq, Afghanistan, Kosovo, Guatemala, El Salvador, and China, which is, of course, a special case. I will make a few observations about Iraq and Afghanistan.

Iraq is at once a land of agricultural opportunity, and agricultural neglect. Agriculture is Iraq's third largest employer. It has about 8 million hectares of arable land, but only half of that is being cultivated. In the north and the northeast, which is the best land, they grow chiefly wheat and barley. These are low value, coarse grains. Even in the Fertile Crescent, the Tigris and Euphrates River valleys, agriculture under-performs because of the inability to access the water. In five trips to Iraq—

The CHAIRMAN. Excuse me. I want to interrupt you for just a second. I need the conversation in the back, Mr. Costa, Jim, I can hear you guys and you are talking louder than the witness.

Major General?

Dr. SHOLAR. In five trips to Iraq, I saw my Army units, along with others, hard at work. Active duty, reserve, National Guard units were working in concert with the Iraqis to secure the country. Civil Affairs teams and provincial reconstruction teams were setting up or reestablishing local governance, improving electrical and water services, and other programs. Many of the soldiers were using the civilian skill sets that they employed back home in their everyday jobs.

In Afghanistan, more than 50 percent of the population earn their living from agriculture. The tribal nature of their society, the lack of allegiance to a central government, and an entrenched and inflexible bureaucracy all stymied progress. Years of neglect have devastated Afghanistan's farmland and destroyed much of the country's infrastructure. The lacks in irrigation system and in such an area of the country, irrigation is the lifeblood of agriculture. This follows a simple axiom: no water, no agriculture.

In Afghanistan, I had a similar experience to Iraq. Military hard at work, all components of the Army training, working, making progress, but it is very slow progress.

In summary, I am confident that we in this country will meet every challenge for our own food security, and will assist our friends and allies around the world with theirs. I believe we owe a debt of gratitude to both the military and our agriculture, those who rise so early, to this country for what they bring.

Thank you for allowing me to share these thoughts. I will be glad to answer any questions.

[The prepared statement of MG Sholar follows:]

PREPARED STATEMENT OF MG JAMES R. SHOLAR, PH.D., (RET.), U.S. ARMY;
PROFESSOR EMERITUS OF AGRONOMY, OKLAHOMA STATE UNIVERSITY, STILLWATER,
OK

Good morning Chairman Conaway, Vice Chairman Neugebauer, Ranking Member Peterson, and Members of the House Committee on Agriculture.

My name is Ron Sholar. I am a retired Soldier and Professor Emeritus of Agronomy at Oklahoma State University. My testimony today is a reflection of my own thoughts and experiences and is intended in no way to represent either the Army or the university.

Thank you for the opportunity to speak to you regarding the importance of American agriculture or Food Security and its relationship to U.S. national security. I, like many others, believe they are inextricably linked.

Feeding Ourselves, Aiding the World

Agriculture and the military have taken me around this country and around the world. That has afforded me the opportunity to compare and contrast how we feed and defend our citizens here at home with how these two most basic requirements are met in other developed as well as underdeveloped countries.

America, unlike many other parts of the world, has met the test of both feeding and defending itself without interruption for almost 2½ centuries. Of course that isn't the result of chance. This success is the direct consequence of our nation's enduring commitment to meeting the two most important needs of mankind—subsistence and protection.

As Americans, we have daunting challenges today for which solutions are elusive. Much of the world is similarly plagued by profound, seemingly intractable problems including how to feed their burgeoning populations. When it comes to the ability to feed ourselves and a good deal of the rest of the world as well, the U.S. simply has no rival.

Here at home, most citizens have the opportunity to decide what and when they will eat. In too much of the world, people are not trying to figure out what or when they will eat but if they will eat at all.

The safe, abundant, and relatively inexpensive food supply that we enjoy is now produced by fewer people than ever before. When the Constitution was signed, 95% of the people were farmers, producing food primarily for their own families. By 1920, 40% of the population was farmers and today it is less than 2%. In 1950, one American farmer fed fewer than 30 others but that number now stands at more than 150.

U.S. agriculture is a big industry . . . a trillion-dollar industry with agriculture-related products comprising nearly 10% of all exports bringing more than \$140 billion (2012) into our economy. The U.S. Department of Agriculture reports that the agricultural industry supports one in 11 American jobs while providing American consumers with more than 80% of the food that they consume.

We lament the fact that most consumers see no connection between the meat and vegetables on their plates and those who produced them. American farmers are so efficient and so productive that consumers find little need to think about such. None the less, they benefit enormously from American farmer skill, commitment, and labor resulting in the fact U.S. citizens devote far less of their take-home pay to food than almost any other place in the world. Americans spend less than 7% of their income on food compared with a global expenditure of 20 to 30%.

And American farmers do this for a very small share of the total cost to the consumer for these goods. For each dollar spent on food, the farmer's cut is less than 25¢. The rest goes to costs beyond this control which include production inputs, processing, marketing, transportation and distribution.

Everyone sees the reasons for the abundance of our food supply through their own prism—the natural productivity of our land, generally favorable weather for production agriculture, rapid adoption of improved technology as it becomes available, and

a host of other reasons. One of those reasons that set us apart from much of the rest of the world is the complex transportation and distribution system that moves agricultural products from the field to consumer's homes and tables. A sophisticated network of trucks, trains, and barges efficiently transports grain and other agricultural products across the U.S. and around the world. Another is the farm safety net that sustains the farmer through difficult times and makes it possible to continue their chosen profession.

These days, the idea of Food Security is very much on the minds of many. I submit that there are several ways to define this term one of which would include biosecurity. I know that this committee has looked at biosecurity and the need for that focus will only increase over time. The vulnerability of our food supply to bioterroristic attack is well documented but may not be well defended.

How will we protect our food supply against unprecedented and growing threats? Well, something must be produced before there is a need for it be secured. From my perspective, *food security* is first of all about ensuring that the plentiful supply of high quality food and agricultural products that we enjoy continues to be available.

Rather than address all or even several of the reasons for this abundance and how we will protect it, I'll focus on the area with which I am most familiar and then draw comparisons with other areas of the world.

Research and Extension

Since 1950, U.S. agricultural productivity has shown amazing growth. There are a number of reasons for this but none more important than the contributions of the three component agricultural research system that supports this nation. Those components are: the national agricultural research system—USDA–ARS, the land-grant university system, and private-sector research.

The economies of many states and our nation as a whole are highly dependent on agriculture and associated industries. It's been the role of USDA–ARS and the land-grant university system, working in concert with private industry, to find solutions to complex problems of agriculture.

State universities are deeply rooted in the national land-grant tradition which is dedicated to solving problems for agriculture and society as a whole. Their agricultural research programs are spread along the continuum from fundamental or basic to those that are more applied in nature and have the potential for immediate impact.

Public outlays for agricultural research conducted by USDA and land-grant universities are not a cost—they are an investment and economic analysis consistently shows that these expenditures produce a high rate of return. Producers gain by implementing practices that increase production or lower costs and consumers benefit from having an ample supply of high quality food at reasonable prices. Gains in productivity generated through research contribute to both agricultural and overall economic growth.

For plant agriculture, recent advances in both basic and applied sciences are significantly and positively impacting agricultural productivity. These advances include: the utilization of marker assisted breeding techniques to generate more productive, disease resistant crop varieties; the development of more efficient irrigation practices; and innovations in precision agriculture and drone technology. New research discoveries are fundamental to: improving agricultural productivity and farm sector profitability, increasing competitiveness in international trade; and improving human nutrition and health.

Advances in research have made critical contributions to the huge agricultural productivity gains seen in the U.S. following World War II. But it is not just research that is responsible for these gains. An indispensable partner in that success story has been the Cooperative Extension Service.

The U.S. Cooperative Extension System is the envy of the world. For a century now, land-grant colleges and universities have through extension, delivered practical information to farmers, small business owners and others. The Extension service has carried the university to the farm gate and the front door of America . . . sharing agricultural advances through non-formal education and learning activities so that all can partake and all can benefit. The connecting of people to information and assistance has enriched family lives and communities and created positive changes. The Extension model is being used today for programs designed to help our returning veterans whether they are entering agriculture or some other endeavor.

The mission of and need for the Cooperative Extension Service is still relevant today, even after 100 years. However, that long and successful history cannot relieve the need to adapt to changes in society. Evolving technology affords the opportunity to transfer information and knowledge in new and exciting ways but the basic prin-

principle of the Extension Service is the same as it has always been: to help solve problems and create opportunities.

Despite the phenomenal record of achievement of American agriculture, there is never a time to take a knee for ourselves and certainly not as we meet our responsibilities as citizens of the world. We know that we have to be concerned about more than our own food security—we must be concerned about global food security.

An exploding world population with an estimated nine billion mouths to feed by 2050 will place even greater demands on an already over strained and under producing international agricultural system. It's estimated that now there are more than 800 million people who are undernourished. With the world's population currently standing at almost 7.5 billion, most of the expected 1.6 billion in anticipated growth will occur in developing countries. Experts estimate that this will require world food production to be increased by 70 to 100%. The challenge of producing food for that many people is enormous. How will the food requirements for that many people be met when there are already shortages and the problems that go with that?

More than 50 years ago, Dr. Norman Borlaug led the "Green Revolution". With the expected significant rise in world population and food requirements that will accompany the increase, some are asking if a similar revolution will be required. That will be an expensive but perhaps necessary eventuality.

The U.S. has long been engaged in assisting the less fortunate in the world in their struggle for Food Security. We know that food insecurity contributes dramatically to conflict and instability. Peace is very much at risk where there are perpetual food shortages or where people spend most of their earnings on food. Unrest follows with open conflict looming if the shortages continue unabated.

The U.S. and other G8 countries have called for increased investment in agriculture and rural development to combat food insecurity, to promote economic growth, and reduce instability in some of the most troubled spots of the world. Those are huge needs that will be met only with commitment and resources, both of which may be in short supply from world partners.

The Other Side of the World

I've had the opportunity to see agriculture first hand in around 20 countries. That has included the highly productive agricultural systems of Western Europe where there is a commitment not unlike that of the U.S. to produce sufficient food for their people. This commitment was made decades ago and has endured to ensure that food insecurity will never be an issue.

I've also seen the other side of that situation where food insecurity dominates and even here in the 21st century, too much of the world's population is still barely eking out a living. I've seen agriculture in Iraq, Afghanistan, Kosovo, Guatemala, and El Salvador. I've also seen agriculture in China which shares characteristics with both developed and underdeveloped nations. Massive production is achieved but in some cases, this is done only through primitive production techniques including intense labor.

Iraq—On several military trips to Iraq, I also had the opportunity to see Iraqi agriculture. Iraq is at once a land of agricultural opportunity and agricultural neglect. Agriculture is Iraq's third largest employer and contributor to the economy, following only government and the oil sector. Only intermittent government efforts to develop agriculture contributes to the fact that the industry makes a small contribution to Iraq's economy and the country remains dependent on importing a significant portion of its food.

USAID reports that "Iraq's agriculture sector declined considerably during the last few decades due to the lack of investment, isolation from the global economy and counterproductive agricultural policies."

Iraq has around 8 million hectares (17.6 million acres) of arable land which comprises less than 15% of the country's total land area. However, only around half of the arable land is being cultivated. Most of the arable land is concentrated in the north and northeast, where winter crops—chiefly wheat and barley—are grown, and in the Tigris and Euphrates river valleys. It would be very difficult to build an agricultural economy on these traditionally low value coarse grains.

The ongoing reliance on subsistence farming causes Iraqi agriculture to look remarkably similar to that of a century ago. The lack of significant agricultural equipment is an impediment to improving food production and that contributes to keeping around 30 percent of the population actually involved in agriculture.

The lack of modern irrigation systems limit the opportunity to take advantage of abundant water supplies in some regions. Even in the Fertile Crescent, agriculture under-performs because of the inability to maximize the benefits of water. U.S. and

international assistance have improved the situation but the problem is enormous and won't be solved anytime soon and perhaps never will be.

Iraq's failure to address agricultural production began decades ago. Before the Iran-Iraq War, it was common for Iraq to send some of its best students to the U.S. to obtain advanced degrees in agriculture but the war stopped that. Having U.S. trained scientists in their universities and research facilities was a tremendous benefit to the country. A fractured relationship with the U.S. and the redirection of finite resources to other areas, including the almost decade long war, ended the program. The closing of this program has no doubt contributed to the overall decline in the ability of the country to feed itself.

I saw our U.S. military at work in Iraq. Active duty, Reserve and National Guard units were working in concert with the Iraqis to secure the country. They were also working to reestablish some fundamental services that had been lost and some that had never existed. Civil Affairs teams and Provincial Reconstruction Teams were working to help set up or reestablish local governance, or to improve electrical services, or to improve water availability and many other programs. Legal and medical teams were working to help establish a judicial system and reliable medical services. Each of these teams brought with them the considerable civilian skill sets that they employed on their everyday jobs back home and the value of this was on display in many ways. These were daunting challenges but our men and women in uniform were doing what they always do. They were attacking the problems head on and without complaint and while progress was slow, they were improving conditions for the people.

Afghanistan—There are similarities between Iraq and Afghanistan but there are also striking differences. Agriculture is of utmost importance in Afghanistan and is essential to the country's food security. More than 50% of Afghanistan's population earns their livelihood from agriculture and agriculture accounts for about 40% of Afghanistan's GDP. The tribal nature of the population and commitment to maintaining age old disputes combined with a lack of allegiance to a central government make it very difficult if not impossible to unify the population.

Prior to decades of conflict, Afghanistan actually enjoyed a favorable international reputation for the production of several fruit and nut types. Years of neglect have devastated Afghanistan's farmland, displacing millions of people, and destroying the country's infrastructure. Particularly damaging to Afghanistan is that the country lacks agricultural infrastructure such as an adequate irrigation system and in such an arid country, irrigation is the lifeblood of agriculture. This follows a simple axiom—no water, no agriculture.

During a 2006 trip to Afghanistan, we convoyed across the countryside from Kabul to Bagram. As we did, we witnessed far too much subsistence farming and essentially no production agriculture. We saw mothers cooking over open fires with small children nearby. Children who should be in school but for whom that was not an option. This was the very essence of poverty with no obvious means for improvement.

I also saw our U.S. military at work. Active duty and National Guard combat units were doing the heavy lifting of securing the country and protecting the populace. Reserve units were working to train the fledgling Afghan army. Agricultural teams were working there to teach and train and improve the ability of the people to self-sustain. These were daunting challenges but our men and women were doing what they always do and that was to conduct the mission that they had been assigned.

Agriculturally, Afghanistan still lacks the capability to deliver the kind of help that farmers need to make enduring changes to what they have been doing for generations. Parts of Afghanistan are likely ready for such a system while others are not. Agricultural assistance provided by the U.S. to Afghanistan has made a difference but it would be naïve to believe that short-term support, even in millions of dollars, can overcome many generations of neglect. Food insecurity is a real concern in Afghanistan.

I believe that several things can be done to improve the situation in Afghanistan. Underdeveloped countries lack the equivalent of an Extension Service and without that, there is little chance that people will find appropriate solutions to the problems on their own. USAID now has such a program—the Afghanistan Agriculture Extension Project II (AAEP II). This program follows the traditional extension model where representative farms are set up and where local farmers can get hands-on, on-the-ground training.

USAID, USDA, international partners and the Afghan Government are working together to increase the sales of licit farm products, create thousands of new jobs and bring fragile land areas under improved management. This work must be continued.

In the 1960s and 1970s, Afghanistan sent outstanding graduate students to U.S. land-grant universities to study and train. That stopped with the rise in conflicts in the 1980s. Reestablishing this program would provide the U.S. trained scientists so desperately needed.

An entrenched and inflexible bureaucracy plagues many underdeveloped countries and likely more so in Afghanistan than other places. Success will require endurance and diplomacy.

Kosovo—In 2003, during a short visit to Kosovo, I saw firsthand what civil war can do to a country. From the vantage point of a Black Hawk helicopter, the land below looked like much of Western Europe except that fields which should be green with crops weren't producing crops at all. Individuals could be seen guarding one to three sheep and others guarding a single cow.

The reasons were simple—this was to ensure the safety of the animals, keeping them away from unexploded ordinance that infested the area; and second, to keep the animals from being stolen.

Rampant unemployment was also an issue. In our own country, we recognize just how fundamental it is to have people working and contributing to their own success. Cultural differences and long standing disputes frequently trump any possibility of that happening in other parts of the world.

Central America—Guatemala and El Salvador—I've had the opportunity to be in Guatemala and El Salvador where the U.S. Army annually sends Reserve Component units to build modular schools, drill water wells, and conduct medical and veterinary missions in a program called "New Horizons". The program serves the dual purpose of providing essential training for the military units and individual soldiers while providing critically needed assistance to the local population.

As valuable as these efforts are, they cannot overcome the effects of Guatemala's many problems. Almost 80% of the population lives in poverty and the country is in the midst of a food crisis. The weak domestic economy, ongoing political instability and social inequality make for an uncertain future. El Salvador suffers from many similar problems including high poverty, low GDP, and poor agricultural sector performance.

Summary

In summary, despite formidable challenges, we will respond as we always have, aggressively and appropriately, to all concerns about our own food security. With regard to the rest of the world, we will continue to embrace our traditional role of assisting the less fortunate in dealing with their own food security.

I would also say that as a nation and as individual citizens, we owe a debt of gratitude to those who rise early in the morning, laboring throughout the day and frequently into the dark, to produce the food and fiber that we rely on for sustenance every single day.

Similarly, we owe that same debt to those who rise early in the day, put on a uniform and the gear of their profession and move out smartly to provide the protection and ensure the freedom that we all hold so dear and that we need to go about our daily lives.

I trust that we will forget neither group. Thank you for allowing me to share some thoughts on the contributions of both.

I'll be pleased to respond to your questions.

The CHAIRMAN. Thank you.

Major General Owens, 5 minutes.

STATEMENT OF MG DARREN G. OWENS, (RET.), TEXAS ARMY NATIONAL GUARD; CHIEF OF THE COMMON MANAGEMENT AND PRICE SUPPORT, TEXAS STATE FSA OFFICE, BRYAN, TX

Mr. OWENS. Chairman Conaway, Ranking Member Peterson, Members of the Committee, staff, and guests, it is a pleasure and honor to be invited here today to talk with you about the inter-relationship of comprehensive farm policy to national food security and national security.

I firmly believe that America's first line of defense is our ability to feed and clothe our people. Without American agriculture providing adequate supplies of food and fiber at a reasonable cost, we would be dependent on other nations, and that could place the food security and ultimately the security of the nation at risk.

Food insecurity is caused by either a lack of adequate supplies of food or a lack of affordability of food. Regardless of the cause, food insecurity can have devastating effects.

We saw the lack of an available, affordable, sustainable food supply result in discontent, which then led to increased criminal and anti-government activities in order to supplement family income just to afford food. These activities, including assisting with smuggling of food and clothing products to avoid tariffs, smuggling of weapons and drugs, deforestation of hillsides, facilitating attacks on coalition forces, facilitating human trafficking, an individual or group of individuals would do whatever was required to provide enough food for their families, even if those actions were against their cultural and personal beliefs. All of the criminal and anti-government activities done to improve their own food security had adverse effects on the overall stability of the regions.

I believe the comprehensive farm policy and integrated farm programs established in the United States that ensure adequate supplies of food and fiber, available here at a reasonable cost, has allowed us to maintain a healthy people and economy. The agricultural development work carried out by the National Guard taught us a lot of lessons. What we found was that there was an important relationship between a comprehensive farm policy and the food security, and ultimately the national security of a nation.

I had the privilege to serve in positions that gave me a unique perspective of how policy directly affects both food security and national security. An important lesson learned was that agriculture development was critical to counter insurgency in areas where food security was an issue. We learned that in order for agriculture development to be successful, it had to be carried out in a comprehensive manner, and that every program needed local participation and engagement in order to be successful. Utilizing the agriculture expertise within the National Guard and taking advantage of their unique reach-back capability to the land-grant universities in a comprehensive approach that was based on key aspects of U.S. farm policy demonstrated that food security had a direct positive impact on national security. We learned that the success of agriculture in other nations' economies was also critical to U.S. security. The ability of partners to commit military resources is partially dependent on their economic well-being.

Today, many of the potential hotspot countries are very dependent on agriculture as a core element of their economies.

I discuss in my written statement how Agribusiness Development Teams contributed in Afghanistan, but that part doesn't get as much notoriety as how the ADTs helped get women into the agriculture workforce. That not only contributed economically, but added a broad moral contribution to the stability of Afghanistan through the further education and involvement of Afghan women at a critical time.

Our work showed us that a comprehensive farm policy that emphasized education, research, extension, market stabilization, conservation, watershed management, and improved land productivity all carried out in conjunction with rural development to improve infrastructure, combined with standards and regulations to protect

consumers really works. It showed us that farm policy can positively impact security, as well as the overall security of an area.

Another valuable lesson we learned is that we cannot duplicate the tremendous capability and value that our rural communities add to the nation. The strength of our communities is what makes us special. You can build a national government. You can build a national military. You can even write a constitution. But without communities of educated and experienced leaders, it never comes together as a nation. A nation without food security has only one problem, and it will destabilize the entire nation, and that impact can be felt on a global scale.

As you think about the future of farm policy, never forget that one of the primary purposes should be to ensure the food security of the nation and the sustainability of food and fiber production for our grandchildren's grandchildren.

Thank you for letting me speak today, and I look forward to answering your questions.

[The prepared statement of MG Owens follows:]

PREPARED STATEMENT OF MG DARREN G. OWENS, (RET.), TEXAS ARMY NATIONAL GUARD; CHIEF OF THE COMMON MANAGEMENT AND PRICE SUPPORT, TEXAS STATE FSA OFFICE, BRYAN, TX

The Interrelationship of a Comprehensive Farm Policy to National Food Security and National Security

Chairman Conaway, Ranking Member Peterson, Members of the Committee, staff and guests, it is a pleasure and an honor to be invited here today to testify about the interrelationship of a comprehensive Farm Policy to National Food Security and National Security.

My name is Darren G. Owens. I was raised in Pecos, Texas and graduated from Texas A&M University with a degree in agriculture economics. At the same time, I received my commission in the United States Army. I served on active duty then returned to Texas where I worked for an agribusiness and joined the Texas Army National Guard. I then went to work for the Agriculture Stabilization and Conservation Service which is now the Farm Service Agency. In the Farm Service Agency I was a county Executive Director, a District Director, a Program Specialist, and the Chief Program Specialist. I retired from the Army National Guard as a Major General after serving in several key leadership positions.

First, I would like to thank the Members of the Committee for what you do, not only on behalf of America's farmers and ranchers but for each and every American consumer. I firmly believe that America's first line of defense is our ability to feed and clothe the people. Without American agriculture providing adequate supplies of food and fiber at a reasonable cost we would all be dependent on other nations and that could place the food security and ultimately the security of the nation at risk.

Food insecurity is caused by either a lack of adequate supplies of food or a lack of affordability of food, and can have devastating effects. From my experience, I know a man will sell his soul to do whatever it takes to feed his family. We do not want to experience that in the United States. I believe the comprehensive farm policy and integrated farm programs established in the United States have helped to ensure adequate supplies of food and fiber at a reasonable cost. This has allowed us to maintain a healthy people and economy.

I want to visit with you today about lessons we learned while doing agriculture development in Kosovo and implementing the Army National Guard Agribusiness Development Teams in Afghanistan. What we found was a profound importance and relationship between a comprehensive farm policy and the food security—and ultimately, the national security of the United States.

Before my retirement from the Army National Guard in August of 2011 I had the privilege to serve in positions that gave me a unique perspective of the need for comprehensive farm policy and how it directly affected both National Food Security and National Security. In 2005, I was serving as the Assistant Division Commander for Maneuver of the 36th Infantry Division when the Division Headquarters was mobilized for service in Kosovo to conduct peace enforcement operations. I was selected to command the Multi-National Task Force East composed of U.S. National

Guard, U.S. Army Reserve, and active component units from 13 states and Puerto Rico as well as multi-national units from Poland, the Ukraine, Armenia, Romania, Greece, and Lithuania. Our area of responsibility was predominantly rural and agricultural areas of eastern Kosovo that contained a few mid-sized cities.

We learned a few very valuable lessons about rural areas and communities in foreign countries that enabled us to take advantage of unity of effort and to accomplish our mission. What we observed was that rural areas and communities in Kosovo functioned basically the same as rural communities in the United States. The cultures were different, the religions were different, but the communities functioned basically the same. Agriculture was the dominant industry and source of income in these areas, giving us the opportunity to use our civilian skills to implement agriculture and rural development projects. We found that the same principles of agriculture extension, education, and development applied in Kosovo.

The United Nations (UN) and the NATO-member countries working in Kosovo had established a government for Kosovo very similar to those in many European nations, with separate ministries responsible for agriculture development, rural development, roads, and electricity. All ministries had competing goals and objectives with no overarching strategy or policy. We also found that multiple aid agencies from the U.S., European Union (EU), UN, and numerous NGOs were working in the area, most with competing goals and objectives, and once again with no overall cooperation or policy.

Because most of the units assigned to our Task Force were U.S. Army National Guard units and based on previous work we had done with other nations and our experience in conducting U.S. domestic operations in support of civil authorities, we knew the importance and power the civilian skills of National Guard Soldiers brought to the mission. So we immediately built a database of all the civilian skills we had in our units. Once on the ground in Kosovo we began to use the civilian skills of our Soldiers in conjunction with military operations.

We identified several challenges that in the end impacted what we could do with Agriculture. Unemployment in our area was above 50% with more than 50% of the population living in poverty and more than 10% living in extreme poverty. Most households spent 40% to 50% of their annual income on food. More than 50% of the population in our area experienced food insecurity part of the year. There were many small agriculture producers and a very high dispersion of land tenure. Most farms had low productivity and produced poor-quality products. Most sustainable food supplies came from imports that appeared to be supported by a combination of dumping policies and foreign-based competition. Almost all crops produced in our area were immediately sold or consumed at harvest due to a combination of a lack of storage or a lack of regulation of warehouses with no means to enforce contracts between buyers and sellers. The Kosovo Ministry of Agriculture lacked a sufficient local extension service program. Many of the agriculture production practices used technology from the 1930s with some mechanization using old Soviet equipment. There was a general lack of knowledge in production, conservation, and marketing practices.

The effects of the civil war in Kosovo appeared to primarily impact rural areas and their populations. The conflict had adverse effects on food production and quality, and appeared to be the major driver of food insecurity and malnutrition in the rural populations of Eastern Kosovo. The lasting result of the conflict was a disruption of food production and food systems. The livestock that remained was of relative low quality and the combination of high food prices and low family income directly limited the access to food for parts of the year. The direct food assistance helped those in situational poverty to improve their overall situation. However, we found that direct food assistance had little impact on improving long-term food security. Populations such as the Roma minorities who had experienced generational poverty were not able to overcome the cultural pressures to redistribute or trade the food aid for the benefit of others, thus never allowing an individual or family to improve their situation.

The lack of an available, sustainable food supply resulted in discontent, which then led to increased criminal and anti-government activities to supplement family income in order to afford food. These activities included assisting with the smuggling of food and clothing products to avoid tariffs, smuggling of weapons and drugs, deforestation of hillsides, and facilitating human trafficking through Kosovo to Europe. An individual or groups of individuals would do whatever was required to provide enough food for their families, even if these actions were against their cultural and personal beliefs. All of the criminal activities done to improve their own food security had adverse effects on the whole community and the overall stability of the region.

We found we could build resilience and improve the stability of our area by conducting comprehensive rural development activities that directly contributed to our peace enforcement efforts. By working with each group interested in providing assistance to rural Kosovo we began to achieve some unity of effort resulting in unified action that began to make a difference in food security. As food security improved we began to see improved overall security and peace within the region.

For example, one area in our sector contained many small dairies attempting to sell milk locally. Due to the lack of roads, electricity, and milk storage facilities, the dairies had no points of distribution that encouraged additional production. Their existing production per cow was very low and bacteria counts were uncontrollably high. Every community in Kosovo wanted improved roads, access to reliable electricity, and a market for their products. With no national food policy or rural development plan in place for Kosovo at the time, all development efforts went to the loudest voice or to projects that looked good in the news regardless of the overall impact. By working with the Netherlands Mission to Kosovo we were able to identify a company interested in building a processing plant for yogurt. This would require a location with good road access, reliable electrical service, and a steady supply of milk that met the minimum EU safety standards. None of these existed in our region.

With the aid of National Guard Civil Engineers within our units we were able to work with multiple Aid Organizations, NGOs, and the Kosovo Government to target road access to a central location and a plan for construction and installation of critical infrastructure including reliable electrical service. The company began construction while National Guard Soldiers with agriculture skills began work with the local Kosovo version of an extension service and focused on two specific areas that would ensure a dependable supply of milk meeting sanitary requirements. First, the teams applied the basic concepts of extension education and identified key centers of influence and early adapters of technology within communities. Through demonstration and education they taught ways to improve feed, reduce parasites, improve sanitation in order to reduce bacteria levels, and overall increase the volume of milk available that would meet the plant's standards. Some of this was done without direct aid; instead, using innovative cost-share programs that required individual dedication and community participation. Second, the teams worked with local groups USAID, Dutch NGOs, and the Kosovo Government to build and develop a livestock market in which individuals could work together to improve the quality of livestock herds through sale, trade, and the use of artificial insemination.

In less than a year, the security and sustainability of food for the area was significantly improved by comprehensive agriculture and rural development which resulted in the improved security of the region. From this lesson we learned that improving food security of individuals through agriculture development at the local level reduced the willingness of the citizens to participate in criminal or anti-government activities, and in turn, gradually improved overall security of Kosovo. We were able to expand this model across our area of responsibility and improve access to food and fiber through coordinated agriculture development activities.

We learned that food insecurity contributed greatly to the continued conflict in rural areas where there was no sustained or coordinated commitment to agricultural policy, education, research, or development by the nations involved in conflict resolution in the Balkans and other areas of conflict. We were not thinking of resolving food security for the world, but for specific rural areas in conflict where U.S. forces were currently deployed. We learned that these areas did not need new or innovative science and technology to improve their food security. They only lacked a basic, comprehensive farm policy that would provide methods and principles that would help ensure a sustainable food supply, a stable agriculture market, soil protection measures, improved farm income, and adequate supplies of quality foods and fibers. It was quickly evident that much of the farm policy that the United States has in place since the establishment of the Department of Agriculture would also benefit Kosovo and the Balkans. Programs with objectives integrated with the national welfare and security of Kosovo were needed.

We realized that the same principles from Kosovo could be applied in Afghanistan. Our efforts in Kosovo and the potential they held for Afghanistan were recognized by LTG Clyde Vaughn, Director of the Army National Guard. In 2007, Secretary of the Army Pete Geren, LTG Vaughn, and Mr. Charles Kruse, President of the Missouri Farm Bureau were able to engage Senator Kit Bond of Missouri, Member of the Senate Armed Services Committee about the Agribusiness Development Team (ADT) concept. With the help of these individuals and support from Congress, the American Farm Bureau Federation, the University of Missouri, Texas A&M University, the Missouri National Guard, and the Texas National Guard, the Army National Guard began developing what became the Agribusiness Development

Teams deployed to Afghanistan. The Governor of Missouri volunteered his state to take the lead with the first team and Texas followed with the second team.

According to the DOD and the CIA, Agriculture had been the mainstay of Afghanistan's largely subsistence economy for decades. In periods of political stability and economic investment prior to the conflict with Russia, Afghan agriculture had flourished as a source of valuable agricultural products. The agricultural sector employed more than 80% of the Afghan workforce but only generated about 35% of the Afghan GDP. It was projected at the time that for the next 20 or more years, agriculture would remain the most important part of the Afghan economy and that agriculture had tremendous potential for growth. The U.S. Embassy in Afghanistan told us that Afghanistan was a chronic food-insecure nation and that significant food imports were required to provide adequate supplies of food and fiber. Factors contributing to food insecurity included the lack of warehouses for storing commodities, regulations for maintaining quality of a commodity, rules of arbitration to settle disputes between buyers and sellers, and the lack of sanctity of contracts in general. Food that was produced suffered much field loss and was sold immediately. The same food that was being produced was purchased later in the year as imports at extremely high prices.

These facts and the knowledge we had gained in Kosovo led to the concept of utilizing both the civilian skills of Army National Guard Soldiers and the unique reach-back capability of local National Guard units to state land-grant universities and state level agriculture organizations and commodity groups to provide extensive and unified agriculture development through the Agribusiness Development Team concept.

Based on the efforts of LTG Vaughn, the National Guard Bureau approved deployment of Agribusiness Development Teams (ADTs) in Afghanistan. The ADTs consisted of a core group of agricultural advisors that actively supported the furtherance of the U.S. Agricultural Strategy goals and objectives. The ADTs focused on providing extension services to Afghan farmers, building provincial level agriculture government capacities to provide comprehensive agriculture programs and to effectively utilize funds for agricultural projects.

The Agribusiness Development Teams were designed to conduct counterinsurgency and stability operations by building Government of the Islamic Republic of Afghanistan (GIROA) capacity in agriculture and sustained agriculture development. This was done in order to facilitate the establishment of a safe and secure environment, enhance the rule of law, establish sustained economic development, develop sustained governance, and foster social well-being.

Mohammad Asif Rahimi, Afghan Minister of Agriculture, Irrigation, and Livestock probably described best why we believed the ADT concept would be successful when he said, "Agriculture is the dominant factor in the Afghan economy, in food security, in livelihoods, sustainable resources, and national security. Agriculture will determine whether Afghanistan will succeed or fail." Our previous experiences taught us that a profitable and sustainable Agribusiness Sector was an operational Center of Gravity (a source of power that provides moral or physical strength, freedom of action or will to act) at the provincial level. National Guard Soldiers' civilian skills delivered through ADTs could provide critical capabilities that were considered crucial enablers for the Center of Gravity to function and that were essential to the accomplishment of the objective in areas considered non-permissive for normal development activities. These capabilities were agriculture research, agriculture extension, agriculture credit, business and marketing development, and agricultural education.

ADT effectiveness was based on the development of relationships, mentoring, continuity, and predictability. The ADTs were unique in their ability to deliver agriculture expertise with autonomy and freedom of movement on the battlefield in a non-permissive environment. The ADTs partnered with the U.S. Department of Agriculture, the U.S. Agency for International Development, the Islamic Republic of Afghanistan, the Afghan provincial government of each province where teams were deployed, with various Afghan colleges and universities, and other government and NGOs in the areas to maximize the use of resources and ensure unity of effort with all agriculture development work to improve food security.

The ADT mission supported the core goal of the U.S. mission in Afghanistan to "disrupt, dismantle, and eventually defeat al-Qa'ida in the region and to prevent its return". In addition, the ADT mission pursued the U.S. strategy of reversing the Taliban's momentum and denying it the ability to overthrow the government. The mission would strengthen the capacity of the Afghanistan Security Forces and government so they could take the lead responsibility for Afghanistan's future. I will say that neither the U.S. Agricultural Strategy for Afghanistan nor any subsequent document provided any discussion on how to execute the strategy.

The ADTs focused on meeting the goals of a combination of U.S. Agriculture Strategy in Afghanistan, Ministry of Agriculture, Irrigation and Livestock (MAIL) priorities, and in building the Afghan Agriculture Sector. The technical assistance and institutional capacity building done by ADTs was focused on GIRoA capacity building and sustainable agricultural development at the provincial and district level. Transition and institutional sustainability of all ADT activities was clearly emphasized. Each activity was nested into USFORA and U.S. mission Afghanistan strategy, the teams identified MAIL involvement in each ADT program from planning to completion into sustainment, and articulated an end state with transition to Afghan responsibility.

ADT commanders sought opportunities for improvement, including continually working to clarify the mission: ADTs served both in the conduct of stability operations (which included both counter insurgency and counter narcotics) and the carrying out of agriculture development focused on improving food security in order to improve overall security in their area of responsibility. An understanding of the expected outcomes needed to be assessed and reaffirmed on a regular basis in order to better direct the ADT efforts. The teams focused on functional coordination: there were multiple actors and activities with significant opportunity for functional coordination which when working together multiplied the effects of our ADT efforts; ADT Commanders were encouraged to maximize these opportunities.

The ADTs had two major goals and six objectives to achieve those goals, all nested within U.S. Agriculture Strategy for Afghanistan. These goals and objectives include the following:

Goal 1: Increase agriculture sector jobs and income:

- Obj. 1.1: Establish food security by ensuring adequate supplies of food and fiber.
- Obj. 1.2: Increase agriculture productivity.
- Obj. 1.3: Regenerate agribusiness.
- Obj. 1.4: Rehabilitate watersheds and improve irrigation infrastructure.

Goal 2: Increase confidence of Afghan's in their government through the MAIL:

- Obj. 2.1: Increase MAIL capacity to deliver services to rural farmers and herders.
- Obj. 2.2: Promote the private-sector and farmer associations through the MAIL.

We accomplished this by establishing specific ADT Lines of Operation. These lines of operation came from a review of U.S. farm policy that had been implemented over many years. We looked at what enabled the U.S. to have a stable and affordable supply of food and fiber that maintained a healthy people and economy.

The following lines of operation were developed and implemented by the ADTs:

1. Agriculture Extension: Develop and empower provincial and district level GIRoA Director Agriculture Irrigation Livestock (DAILs) and Agriculture Extension Agents (AEA) in order to build capacity of government, connect the people with government, and enhance the MAILs ability to deliver basic agriculture extension services while using projects to reduce corruption and further legitimize the GIRoA.
2. Agriculture Economics: Establish food security by ensuring adequate supplies of food and fiber, achieve sustained agriculture economic development, regenerate agribusiness, rehabilitate watersheds, and improve agricultural infrastructure.
3. Agriculture Education: Ensure effective and sustainable transfer of technology through the DAIL, AEAs and regional universities as well as ensure continuous long-term improvement in the agriculture sector.
4. Agriculture Administration: Increase capacity of Director Agriculture Irrigation Livestock (DAIL) and Agriculture Extension Agents (AEA) to deliver basic agricultural services to increase trust of the people in GIRoA by improved MAIL administrative functions and reduced corruption.
5. Information Operations: Integrate Agriculture messaging and programming into Provisional Reconstruction Teams (PRTs) and battle space owner's information operations in order to connect government with the people.

Each ADT was required to work and conduct actions with Battle Space Owners. This focused on carrying out unified actions and assisting all groups in the area to coordinate agriculture activities. In addition to delivering agriculture expertise, the

ADTs assisted the battle space owners in preparing the battle space for sustained agriculture development by:

1. Assisting battle space owners in identifying key districts and prioritizing the need for agriculture assessments.
2. Identifying agriculture development requirements and priorities by doing provincial and district agriculture assessments.
3. Assessing the staffing of DAIL and AEA positions and prioritize the fill of vacancies.
4. Assessing the status of USAID, USDA, USACE, PRT, and NGO agriculture activities within each key district, including the current level of coordination and collaboration.
5. Assessing the willingness of and requesting the battle space owner to commit resources to agriculture development (*i.e.*, weather, contracting, legal, engineer, security force, and IT personnel).
6. Establishing priorities for and beginning engagement with regional universities and agriculture high schools.
7. Establishing priorities for watershed rehabilitation and engineering projects.
8. Coordinating agricultural public affairs activities and assess local media resources for delivery of agricultural themes and messages.

ADT Commanders were directed to use established criteria to set conditions in transitioning agriculture related activities to DAILs and other civilian personnel as deemed necessary. Scorecards were used to constantly measure and demonstrate progress toward meeting U.S. goals, objectives and the desired end state. Each ADT did this by measuring the following:

1. Improved agriculture productivity.
2. Increased commercial viability of small and medium farms and agribusinesses.
3. Improved stability in insecure areas.
4. Improved integrated water management.
5. Improved agriculture education.
6. Improved GIRoA agriculture research and agriculture extension services.
7. Improved MAIL/DAIL/AEA core administrative functions.

The ADT concept required a comprehensive approach to improving food security which resulted in overall improved security in each province. ADTs were doing good work; however, their full impact on Afghan agriculture and meeting the goals of U.S. Agriculture Strategy required the Whole of Government. Deployed and forming teams had to work tirelessly to bring essential elements to bear in reaching the desired End State. Integrating elements here in the U.S. helped the ADTs accomplish much more sustainable results than if they had been working individually.

Each ADTs work with the land-grant university of their state and the cooperation of each cooperative extension service was instrumental in the training of each team and in the execution of their mission. Each land-grant university helped us develop a training model that was used for each team and that enabled sustained follow up and support for the teams. For example, both the Texas AgriLife Extension and the Borlaug Institute of Texas A&M University worked with the Texas ADT teams to train for deployment and coordinate activities for development in the teams' areas of responsibility. This included adding an Afghanistan County to the AgriLife intranet giving the teams the same access to agriculture experts as any county extension agent had and working together with the Borlaug Institute on range land surveys in the ADTs area of operation where the security environment prohibited the movement of civilians. The Borlaug Institute worked with the Texas ADT to host training for a group of provincial and district extension agents here in the U.S. The land-grant universities were great partners who all worked together to deliver the best possible products. For example, we never fielded a team from New Mexico, yet New Mexico State University eagerly worked with the other land-grant universities and provided advice and help to the teams on solving irrigation problems with canal systems similar to those used in New Mexico. While North Dakota did not field a team North Dakota State University assisted in training the Minnesota ADT. UC Davis, Purdue University, Washington State University, University of Maryland, and Texas A&M carried out extension training programs for USAID and worked with the ADTs.

The ability to meet the ADT goals and objectives would not have been possible without the help of our entire United States Agriculture community. It is difficult

to explain all the assistance provided to ADTs from every part of the American agriculture sector and how this support enabled the teams to begin the development of comprehensive farm policy at the provincial and district level. USDA's Commodity Office provided copies of warehouse storage agreements, warehouse inspector handbooks, Texas Department of Agriculture provided copies of warehouse regulations, Texas Grain and Feed Association provided rules of arbitration between buyers and warehouses, and the University of Nebraska had the documents translated into Pashto and Dari. Private agriculture business firms eagerly contributed advice and equipment to the teams. State producer and commodity groups helped the teams with recommendations for crops, practices, and solutions for storage and handling. For example, the Lamesa Cotton Growers and the AMS Classing offices assisted in establishing a system to have Afghan cotton classed and graded, the National Grain Sorghum Producers Association connected the teams with private seed companies who provided recommended varieties of grain sorghum for the altitude and climate of Afghanistan that could be used in demonstration plots. I do not know of any group that ever turned down a team's request for assistance. The ADTs were able to coordinate their activities on the ground with the USDA, USAID, Department of State (DOS) and many NGOs.

I believe the work of the ADTs was effective at denying recruits to the insurgency by increasing employment, improving effective public-sector services in agriculture that increased Afghans' food security by improving sustainable and affordable supplies of food, and increasing the confidence in and connectedness of the people with their government. I also believe that the experience of the ADTs reminds us that food security is critical to national security and that the best way to ensure food security is to have a comprehensive farm policy that ensures adequate, sustainable supplies of food and fiber are available at a reasonable cost, now and in the future.

The ADT mission was in place from March, 2008 to January, 2014. There were 52 separate teams totaling 3,025 Army and Air National Guard personnel. The teams came from 17 supporting states including: Missouri, Texas, Indiana, Kentucky, Nebraska, Kansas, South Carolina, Georgia, Oklahoma, Wisconsin, Arkansas, Nevada, Minnesota, Mississippi, Illinois, California, and Iowa. The teams deployed into 16 supported Provinces in Afghanistan including: Nangarhar, Kunar, Khowst, Paktika, Paktya, Laghman, Kapisa, Parwan, Bamyan, Ghazni, Zabul, Kandahar, Hilmand, Wardak, Logar, and Panjshir. The teams executed over 700 projects totaling more than \$45 million. It was a dangerous mission even though we knew of no ADT team that was attacked while conducting an actual ADT mission. However, movement to the field to conduct their ADT missions or in support of other missions was dangerous and the teams suffered several vehicles destroyed, Soldiers injured, and three Soldiers killed in action while providing support. In 2009, the Texas team lost two Soldiers: Sergeant Christopher Staats of Fredericksburg, a Texas A&M graduate and an environmental scientist, and Sergeant Anthony Green, a farmer and specialist in animal husbandry from Yorktown, Texas. In 2011, Missouri ADT4 lost one Soldier: Sgt. 1st Class Robert Wayne Pharris, of Seymour, Missouri.

A primary lesson learned from the agriculture development work we did in Kosovo and Afghanistan was that agriculture development was critical to counter the insurgency in areas where food security was an issue. We also learned that in order for agriculture development to be successful it had to be carried out in a comprehensive manner. We learned that piecemeal large-scale agriculture development resulted in failure. For example, the first wheat projects conducted by USAID produced the wrong variety of wheat. The teams also learned that large projects and unbridled spending contributed to increased corruption and cost of materials and labor. The teams also demonstrated that even small-scale projects given to individuals or groups can create dependence rather than self-reliance. Every project needed local participation in order to be sustainable.

Utilizing ADT expertise with their unique reach-back capability in a comprehensive approach based on key aspects of U.S. farm policy demonstrated that food security has a directly positive impact on national security. The projects emphasized education, research, extension, market stabilization, resources conservation, watershed management, and improved land productivity. The coordination of rural development to improve infrastructure for storage and processing of commodities, road networks to facilities, and marketing of commodities, combined with standards and regulations to protect consumers showed us that farm policy can positively impact food security as well as the overall security of an area.

At the onset of the ADT collaborative process we learned that a comprehensive framework for collaboration was needed between the ADTs, USAID and other USAID programs, USDA, DOS, International Community (IC) agriculture programs, and GIROA ministries before we started the mission. This framework needed to be integrated with agriculture programs linked to our national security interest with

a top/down/bottom-up focus. From the beginning, the continuity of effort (or the lack of it) was a real struggle. The ADTs followed agriculture development programs that appeared to have been a series of 1 year development programs rather than one long-term program focused on continuity, sustainability, and unity of effort.

As the ADT mission progressed, the comprehensive framework, continuity, sustainability, and unity of effort continued to improve.

The true success of the ADTs was due to the hard work of the National Guard Agribusiness Development Team Coordination Office. This team, first lead by Colonel (U.S. Army, Retired) Marty Leppert, a Wisconsin National Guard Soldier, and then by Colonel Howard Schauer, a Nebraska National Guard Soldier, who transferred to the Texas Army National Guard after the end of the ADT mission, who is now serving with the 36th Infantry Division Headquarters in Afghanistan. They were both supported by Chief Warrant Officer (U.S. Army, Retired) Anthony Romano. This team was responsible for coordinating with the individual state National Guards, the land-grant universities to ensure each team was trained, equipped, mobilized, deployed, returned home safely, and ensure the continuity and unity ADT efforts. This team and the members of each of the ADT missions are true heroes and we are blessed to have great Americans like these willing to make a difference.

The ADT mission showed us it takes a lot of coordination with many groups and agencies to improve the food security, and ultimately the entire security of a region. The ADT mission provided renewed evidence that comprehensive farm policy ensuring adequate supplies of food and fiber at a reasonable cost carried out by the Federal Government, the individual states, and the land-grant universities working together for a common goal can ensure food security and significantly add to the national security of the United States. A nation without food security has only one problem. That one problem has proven that it will escalate into many other problems destabilizing every aspect of an entire nation, and that impact can be felt on a global scale.

Chairman Conaway, Members of the Committee, thank you again for the opportunity to share with you today, my experiences and lessons learned from my many years of service. There are a few things I would like each of you to think about for the future. First, never forget the importance of agriculture. The Operations Officer of the first Texas ADT said it best, he said "Agriculture crosses all social, ethnic, and religious divides, it truly is an international language." This reminds us that food security is important to all people. As you think about the future of farm policy never forget that one of the primary purposes of all programs should be to ensure the food security of the nation and the sustainability of food and fiber for our grandchildren's grandchildren. Then one last thing, there are times when I watch the news and I worry about the future of the United States, but when I spend just a few minutes around the individuals serving in our Armed Forces or those engaged in American agriculture I am reminded we have a solid foundation and that our future is in good hands.

The CHAIRMAN. I thank the gentleman.
Colonel Ahlness, 5 minutes.

**STATEMENT OF COL ERIC D. AHLNESS, (RET), U.S. ARMY;
NORTH AMERICAN LEAD FOR DIVERSITY AND BUSINESS
IMPACT, CARGILL, INCORPORATED, WHITE BEAR LAKE, MN**

Mr. AHLNESS. Chairman Conaway, Congressman Peterson, distinguished Members of the House Agriculture Committee, thank you for the privilege and honor of sharing my story and answering questions today. I especially thank Congressmen Peterson, Walz, and Nolan for their stalwart support of the Minnesota National Guard over the years.

In 2008, the National Guard implemented the Agribusiness Development Team strategy to engage the largely rural population of Afghanistan to increase farmer prosperity and ultimately greater security, as villages connected to valued government extension services, making a lasting and sustainable difference.

Five years ago, I led an ADT for a year-long deployment to Zabul, Afghanistan. Zabul is northeast of Kandahar, and is a high desert plateau bisected by the Tarnak River. Zabul is very rural,

very poor, illiterate, and very traditional. Local villages lack access to government agricultural services and knowledge of good agricultural practices.

Our ADT had three main missions. First, was to increase farm production and farmer livelihoods. Second, was to build government agricultural extension capacity at the provincial level; and third, was to improve market access for farmers and spur further value chain development.

To accomplish these missions, we developed an interagency approach, worked with U.S. Embassy platform in Kandahar, and held regular meetings with the USDA in Kabul.

The ADT gained the trust and access where others faced stoic or armed resistance. Arghandab is a remote rural district in Zabul province. The villagers are conservative members of the Pashto Tribe. Our military had tried to extend governance to this remote area, but locals resisted, not seeing the benefit against probable Taliban retribution. However, when offered veterinary services and farmer training, the elders of the community rapidly accepted the invitation and veterinarians and agronomists flew to Arghandab to provide livestock inoculations and training to the locals. This mission facilitated an opening of doors that were previously closed to us and our partners.

Another very successful program trained widows to operate an egg business by providing them five hens, feed, and training to run a business which provided them food and income for their families. One of our graduates returned to tell us that she had 62 hens and made \$6.75 per day, which is almost \$3 more than an average day-worker makes in Zabul. This is a prime example that a small investment in hens, feed and training creates a sustainable, value-based, growth business that is scalable and repeatable.

We also increased farm crop production by using bees to pollinate crops more effectively. Numerous efforts to introduce European bees failed, as the bees fell prey to wasps, were vulnerable to mites, and had a difficult time foraging on the local fauna. The hives collapsed as a result. We re-introduced Asian bees to the province for non-commercial pollination which increased local crop yields. The positive results prompted broader use of Asian bees and our partners in the USDA spread the technique to other provinces.

Of special note is the work that was Afghan inspired and led, was the development of a provincial chapter of the Afghan Chamber of Commerce. This cooperative brought together 270 traders and business leaders to set business priorities and goals for the province. This signaled a successful transition from U.S.-led to Afghan-inspired leadership and strengthening of the agricultural value chains of the province. This initiative supported efforts to reduce post-harvest loss by converting excess shipping containers for grain storage in remote areas and efforts to create a greater Kandahar trade zone where high value goods, such as pomegranates, were exported to the Mideast.

The ADT strategy was a success because it took the approach that we can prevent the seeds of conflict, by planting seeds of hope and prosperity. It took the ADT at the point of the spear, and virtually all my soldiers qualified for combat badges. It took inter-agency partners to array the many aspects of power, knowledge

and influence, and Afghans willing to risk their lives to implement the programs. This collaboration led to an outcome where farmers were empowered with knowledge, local agricultural extension capabilities were enhanced, and infrastructure developed so locals could own a sustainable approach to rural development. Our deployment was captured in a documentary produced by Minnesota Public Television and the link to the video has been submitted as part of my written testimony. This documentary of our deployment was aptly named, *Bridging War and Hope*. This is what we did. Thank you.
[The prepared statement of COL Ahlness follows:]

PREPARED STATEMENT OF COL ERIC D. AHLNESS, (RET), U.S. ARMY; NORTH AMERICAN LEAD FOR DIVERSITY AND BUSINESS IMPACT, CARGILL, INCORPORATED, WHITE BEAR LAKE, MN

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Extended Remarks

Introduction

Chairman Conaway, Congressman Peterson, and distinguished Members of the House Agriculture Committee—Thank you for privilege and honor of sharing my story and answering questions today. I especially thank Congressm[e]n Peterson and Walz for their stalwart support of the Minnesota National Guard over the years. I had the pleasure of working with the Minnesota Delegation for more than 5 years as the Government Relations Officer for the Minnesota National Guard and was continually impressed how the delegation balanced the needs of the country alongside the priorities of the state.

Background

The Reserve Component of the U.S. Military has a unique capability that the Active Component is unable to replicate. That is the set of civilian skills that reservists develop as a part of their civilian career. For example, I had soldiers who were also value chain experts, beekeepers, and agronomy experts. The National Guard Bureau recognized the critical role that agribusiness skills could contribute to increased security in Afghanistan and in 2008 implemented the Agribusiness Development Team concept. This is strategic as 80% of the Afghan economy is dependent on agriculture and more prosperous farmers and villages tend to be less extreme. This is especially true if the village has positive connections with the government. The ADT concept includes fielding 58 person teams with a core of a dozen agricultural experts to serve in sequential year-long deployments over a 5 year period within a specific province. The agricultural experts could be selected from the Army or Air National Guard or through an intra-component support process to include members from the U.S. Army Reserve. The positions were rank—immaterial as our focus was on securing uniformed members that would use their civilian acquired expertise to impact the mission.

The teams initially established relationship with the DAIL, the Ministry of Agriculture, Livestock and Irrigation provincial leader, to build government capability, and started providing training to local villages to increase the prosperity of the farmers. One of the provinces selected for this training was Zabul.

Zabul is northeast of Kandahar and is a high desert plateau with a range of mountain to the south on the border with Pakistan and to the north with the Hindu Kush range which dominates central Afghanistan. The Afghan ring road, the main communications artery of the country runs along the Tarnak River which is fed from the snow run-off of the Hindu Kush and serves as the irrigation source for the peoples of Zabul. Zabul is very rural, very poor, illiterate, and very traditional. The population is between 250,000 and 750,000. The high school graduating class in 2011 was 255 for the province. My team was the third ADT team in the province. The first teams established the relationships, provided training to the DAIL and villages; whereas, our role was to start transitioning lead to the DAIL and strengthen relationships with USDA, DOS, and NGOs as the military mission was reduced. The mission was successful and the fourth ADT team closed the mission in 2013 recognizing that the provincial capability, civilian agency oversight, and NGO partnerships were adequate to maintain momentum and success.



Source: <http://www.explorettheworldmaps.com/zabul.html>.

Mission Goals

Our ADT had three main missions—First, was to increase crop production increasing prosperity of the farmers, Second was to build government training capabilities at the provincial level and we assumed a third mission to improve the value chain to help increased crop production made it to markets. Our reasoning was that if you increase production without a corresponding improvement in the value chain and markets the benefit to the producers would be minimal.

[Agribusiness Development Teams in Afghanistan]

[Center for Army Lessons Learned]

[Chapter 2]

[Unity of Effort]

U.S. Agriculture Assistance Strategy for Afghanistan

According to the U.S. Department of Agriculture (USDA), the U.S. agriculture strategy for Afghanistan mobilizes support for the Afghan Government, MAIL, and the private-sector to revitalize Afghanistan's agriculture economy and increase income and jobs. Shared objectives of MAIL and the U.S. Government (USDA, U.S. Agency for International Development [USAID], ADTs, and the U.S. Army Corps of Engineers) within the context of national agriculture development framework include the following:

- Goal 1: Increase agriculture sector jobs and income.
 - Increase agriculture productivity by increasing farmers' access to inputs and effective extension services.
 - Invigorate agribusiness by increasing linkages between farmers, markets, credit, and trade corridors.
 - Rehabilitate watersheds and improve irrigation infrastructure.
- Goal 2: Increase Afghans' confidence in their government.
 - Increase MAIL's capacity to deliver services and promote the private-sector and farmer associations through direct budget and technical assistance.
 - Promote Afghan agricultural commodities via intranational and international commerce.
- Guiding principles:
 - The Afghan Government leads.

- Agriculture assistance will have a strong focus on counterinsurgency objectives and investment in sustainable agriculture growth throughout Afghanistan.
- Government involvement in markets should focus on regulation and enabling the private-sector.
- Projects should be linked to key value chains where possible and to communities, with technical guidance from provincial agriculture working groups.

Source: Center of Army Lessons Learned, Handbook No. 10–10, dated November 2009, Agribusiness Development Teams in Afghanistan: Tactics, Techniques, and Procedures. <http://usacac.army.mil/sites/default/files/publications/10-10.pdf>.

Agribusiness Development Team (ADT) Engagements

To accomplish these missions we developed an inter-agency approach where we worked closely with the military Provincial Reconstruction Team, The Department of State, USAID, and the Department of Agriculture. We conducted weekly working group sessions and daily coordination to insure our efforts were synchronized, sustainable, and as time progressed increasingly Afghan inspired and led. We also worked with the Embassy platform in Kandahar and had regular engagements with the USDA in Kabul. We moderated our expectations based on what was sustainable in a province where the literacy rate was less than 10%, life expectancy was 47 years, and the only publicly generated power was funded by the U.S. Government for part of the provincial capital of Qalāt.

The ADT gained the trust and access where others faced stoic or armed resistance. Arghandab is a remote, rural district in Zabul province. The villagers are conservative members of the Pashto Tribe. Our military had tried to extend governance in this remote area but locals resisted, not seeing the benefit against probable Taliban retributions. However, when offered veterinary services and farmer training, the elders of the community rapidly accepted the invitation and veterinarians and agronomists flew to Arghandab to provide livestock inoculations and training to the locals. This mission facilitated an opening of doors that were previously closed to us and our partners.

This mission was conducted early in our deployment so we served as the lead element for the mission with the veterinarian and agricultural staff for the Department of Agriculture Irrigation and livestock (DAIL) working in support. As became increasing common throughout our deployment we partnered with the local military forces to provide the majority of the security during the mission. The ADT had the capability to conduct independent missions with our organic security platoon (34 soldiers). However, we found we could conduct more missions and build stronger relationships with the locals if we deployed small teams of agricultural generalists with a small personal security team in forward areas. We then flew our agricultural experts (*i.e.*, vet, beekeeper) to the areas when we wanted to provide the capability. This also reduced our vulnerability to the most dangerous threat during the first half of our deployment—the Improvised Explosive Device (IED).

The DAIL staff served as the lead team for delivery of training to the local villages. The ADT staff observed and used interpreters to monitor the sessions and peak with elders and local farmers about the issues that they faced in their area so we could better plan future engagements and work with the district governor to develop policies and deliver services to the locals. The veterinarian team inoculated animals that local farmers and nomads brought to the area. We also enlisted the aid of the local paravet (a trained individual who provided animal care in remote areas) to administer the inoculations. The DAIL charged a nominal fee for each shot so to insure the locals were personally invested in the effort and gave the proceeds to the local paravet to compensate him for his efforts and to avoid an unintended consequence that our efforts cause ‘unemployment’ or loss of work for the paravet.

Over time, the DAIL increasingly took the lead in delivery of training and providing resources to the farmers for these events. By the end of our deployment the DAIL had conducted 17 independent agricultural seminars supported by Afghan military and police.

A very successful program conducted by ADTs and partners involved training widows to care for egg laying hens, provide them five hens and feed, and encourage them to run a business to provide them food and income for their families. One of our graduates returned to a follow on training to inform us that she now had 62 hens and made about \$6.75 per day which is more than average day-worker in Zabul. This is a prime example that a small investment in hens, feed and training creates a sustainable, value based, growth business that is scalable and repeatable.

We were also very interested in increasing production by using bees to pollinate crops more effectively. Numerous efforts to introduce European bees failed when implemented on a small scale as the bees were prey to wasps, were vulnerable to disease and mites, and had a difficult time foraging on the local fauna. The hives often collapsed as a result. We re-introduced Asian bees to the province for non-commercial pollination which increased yield and resisted the other threats to the hive. The initial positive results prompted broader use of Asian bees. Our partners in the USDA were key in spreading lessons learned to other provinces.

Of special note is the work that was Afghan inspired and led, was the development of a provincial chapter of the Afghan Chamber of Commerce. This cooperative brought together 270 traders and business leaders to serve as a lead in business priorities and goals for the province. This Afghan initiative signaled the successful transition from U.S. lead to Afghan inspired leadership and strengthening of the value chain in the province. It also created a new and positive connection between a poor, remote province to the national capital and its business community.

Finally we worked daily with the USDA to increase the capability of the Afghan agricultural staff. Training spanned the spectrum of agriculture and extended onto cooperative design, budget planning, and office productivity. During the year we were in Zabul, we shifted from leading agricultural training, to facilitating and enabling training, to promoting the efforts of the Afghan staff. We partnered especially closely with the Department of State in ensuring that funds funneled through the central government would be available to the provincial staff to insure their ongoing viability and vitality after conclusion of the ADT mission. During Ramadan, in recognition of the shortened work days, we conducted office productivity training ranging from e-mail protocols to work group dynamics.

Unclassified

ZADT Mission 010 Veterinarian & Marketing Seminar—Arghandab

Who: Zabul ADT, DAIL Staff, and Zabul Civil Affairs (CA)

What: Zabul ADT members in conjunction with DAIL Staff, and Zabul CA conduct Vet Sem., Animal Vaccinations, and Marketing Sem. in the Arghandab District from 28 Nov to 02 Dec. 11.

Where: Arghandab District

When: 28 November to 02 December 2011

Result/BLUF:

- DAIL staff trained local villagers on animal disease, vaccination, marketing, and identified a Collection Center site in conjunction with Zabul ADT.

Summary:

- One day each of vet and marketing seminars and 3 days of vaccinations.
- **DAIL Para Vet** trained 71 villagers about animal disease and vaccination benefits.
- **DAIL Para Vet** and **Assistant** vaccinated approximately 392 sheep, goats, and cattle for enterotoxaemia, anthrax, FMD, & de-worming.
- **DAIL staff** conducted marketing and collection center training. Worked with local Key Leaders to identify a potential site for the center.

Going forward:

- Coordinate another trip with DAIL and CA for additional veterinary seminars.
- Work with DAIL to station an Extension Agent in Arghandab district.
- Coordinate trip with DAIL to further develop collection center and co-op concept.
- Coordinate trip with DAIL for agriculture seminar to plant disease and pest control.
- Trip scheduled to assess water issues in **January 2012**.



DAIL Para Vet delivers animal disease information to local livestock owners and explains the benefit of vaccination.



DAIL staff and local farmer vaccinating sheep.



DAIL Agriculture Specialist providing marketing training to local farmers and merchants.



Local farm and orchard.

Unclassified

Zabul ADT; DAIL Women's Poultry Training Qalāt; Zabul Province

DTG for Event 180900JUN12 to 191200JUN12 Zabul ADT MISSION 198

Who: Akram Nayab (Provincial Management Specialist); Dr. Abraham (DAIL Livestock Manager), and 25 Afghan poor women

What: Women's poultry training

When: 180900JUN12 to 191200JUN12

Where: DAIL nursery

Why: Provide poultry training and supplies to widows and women

Summary:

- On the first day of training, Dr. Abraham instructed participants on poultry diseases and vaccinations. On the second day, he discussed poultry hen rations. Hens and feed were distributed to class participants following the completion of training. Akram Nayab served as the monitor and evaluator for both days.
- Twenty-five (25) women participated. Widows and other poor women were selected to be participants. At the end of the training, each trainee received five laying hens and 25 kg of feed. This is the equivalent of 5,300 Afghanis (approximately \$110) in value. The women were pleased to receive the hens and feed.
- Participants said there are many women in need in Zabul, and that the poultry training provides them a sustainable means to generate food and income for their families. One woman attendee who had participated in a training

last year, stated she had received twelve hens and 50 kg of feed. She now has 62 hens and gets 50 to 57 eggs every day. This provides income for her family. By Akram's calculation, the income generated is 321 Afghanis per day (approximately \$6.68), which is more than the average wage of a day-worker in Zabul.

Context:

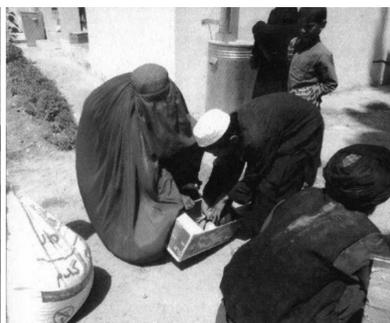
- This is the second poultry training conducted by the DAIL in Qalāt this spring/summer. The DAIL is particularly dedicated to providing programming and resources to women of the province. In 2010, the DAIL, with ISAF partners, implemented a garden project at the Qalāt Girls High School. The DAIL has also been active in the garden project at the Directorate of Women's Affairs compound.
- Program is currently supported by CERP but as the DAIL budget improves the program will shift to on-budget funding.

Commander's Assessment:

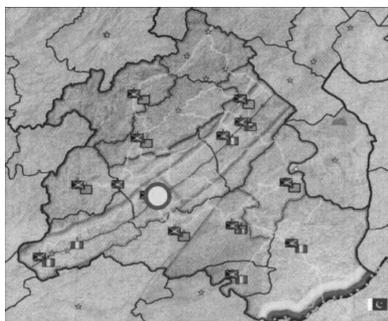
- This was a completely DAIL-planned, led and implemented event. The DAIL staff recognize the need to be proactive in planning seminars to reach their intended target audiences. They have successfully planned a number of seminars and have often been using the Qalāt DAIL nursery as a seminar location. This allows for seminars for farmers and other constituents from areas without a current extension agent.
- Anecdotal evidence suggests providing training and the initial resources of laying hens and feed can provide a sustainable source of food and income for women.
- The importance of classes such as is reported here to the residents of Zabul is further evidence of the importance of filling DAIL tashkil positions throughout the province, budgeting, and accessing funds for trainings.



Dr. Abraham teaches the poultry class.



A boy helps his mother with her chickens.



42S UA 03497 54959.



A woman prepares to leave [w]ith her chickens and feed.

Unclassified**Zabul ADT; Beekeeping Training; Foladgay, TWJ; Zabul Province**

DTG for Event 290900JUN2012 Zabul ADT MISSION 201

Who: Zabul ADT**What:** Beekeeping training for Asian honeybee demonstration project**When:** 291000JUN12**Where:** Foladgay, Tarnak wa Jaldak District, Zabul Province, Afghanistan**Why:** To enhance agricultural production**Summary:**

- Conducted mounted movement to Foladgay.
- Provided follow-on beekeeping training on hive inspections, swarm management, pests and diseases, how to move hives, and honey collection.
- The villagers stated that the **bees were killing the wasps** that tried to enter the hives. This pest has destroyed previous bee keeping efforts using the European bee.
- Hive inspection found healthy hives actively storing new pollen and honey. **No sign of Varroa mite infestation noted.**
- Queens either spotted or their presence indicated through new larva.
- One hive was full of dead bees. The hive was apparently delivered with a dead colony. The cause of the deaths appears to be stress from moving. It will be replaced by a colony from the demonstration farm.

Context:

- Foladgay is the first village to receive colonies of the native Asian honeybee (*Apis Cerana*). Previous beekeeping projects used the imported European bee (*Apis Mellifera*).
- DAIL extension agent identified the demonstration location but lacked expertise to conduct the training, he is not interested in further development of these skills.
- The goal of this project is to demonstrate the sustainability of the native Asian honeybee and restore traditional Afghan beekeeping practices. Previous village-level **European bee projects in Afghanistan usually fail due to Varroa mites and wasps**. The native Asian honeybee has evolved active defenses against local pests.

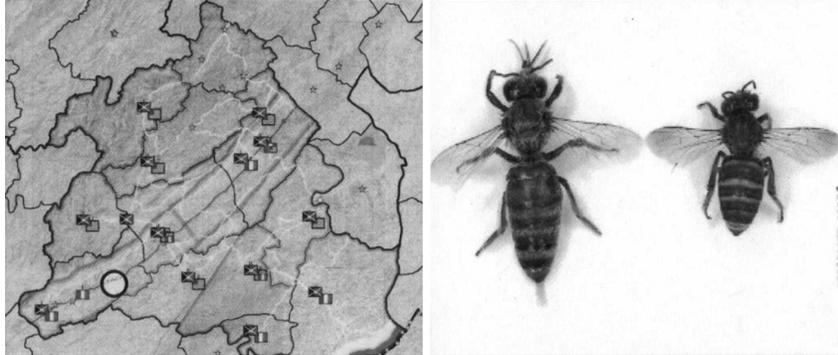
Commander's Assessment:

- The Asian honeybees are better suited for village level projects than their European counterpart. The European honeybee is better suited for large-scale, commercial, mobile beekeeping operations.
- The Asian honeybee is tolerant of local environmental conditions that destroy European colonies without active intervention.
- The Asian bee project will increase production and improve quality of key agricultural products in the village such as almonds, pomegranates, and apricots. It will improve food security by increasing garden and forage yields.



ZADT apiculturalist explaining brood cell types.

Learning to use smoker to enter hive.



42R TA 64807 31525.

European bee (left) Asian bee (right).

Unclassified**Zabul ADT; Zabul Trader's Association; Qalāt District; Zabul Province***DTG for Event 291500AUG12 Zabul ADT MISSION 242*

Who: ZADT, USDA (Robert Eaton), Zabul Provincial Advisor (Aziz Jamilzai), Director of the Zabul Trader's Association (Abdul Akbary) and his Deputy Director (Abdul Ali)

What: KLE with Zabul Trader's Association Leadership

When: 29 August 2012

Where: Governor's Compound, Qalāt, Zabul Province, Afghanistan

Why: Determine current status of Zabul Trader's Association application package, and discuss trader's plans

Summary:

- The team met with Abdul Hay Akbary, the Director of the Zabul Trader's Association, who owns a market in Qalāt. Also present for the meeting was his deputy director Abdul Ali, who also manages a cooperative in Qalāt. Abdul Ali stated that the cooperative has 1,300 members, but that they are uneducated and the cooperative does not receive GIROA support. Membership investment funds have thus far only been used to trade almonds. Farmers and traders are open to mentoring. Abdul Ali stated, "we will push the direction if we are shown the way."
- Currently the men, acting as individual traders, work with farmers throughout Zabul province who sometimes transport their farm products to Qalāt cooperatively (e.g., farmers from one village jointly hire a transport). There is no plan to begin a farmer's organization in Dey Chopan as has been reported.
- Both men expressed an interest in credit access. Abdul Ali said he had creditors interested in investing with him until they discovered that his property (collateral) was owned jointly by multiple brothers.
- Both men expressed a very strong desire for cold storage and initiated a discussion on this topic. They stated there are significant price gains within a month of harvest. Roots of Peace was introduced as a potential facilitator to link Zabul traders and owners of existing cold storage facilities in Kandahar. The traders agreed to meet with Roots of Peace and try and set up a visit to cold storage facilities in Kandahar.

Context:

- Sayed Aziz Jamalzal and Mohammad Daoud Popal (Zabul Agricultural Advisor) originated the concept of introducing a trader's association in Zabul province. They worked with GIROA officials, ZADT, ZPRT, USDA and traders to gauge interest and develop a plan. Association leadership was selected, application materials have been submitted and signed by the Zabul Director of the Economy and currently await a letter of support from the provincial governor. The documents will be submitted by applicants to ACCI (Afghan Chamber of Commerce and Industries). See the storyboards for ZADT missions 102, 107, 115, and 133.

Commander's Assessment:

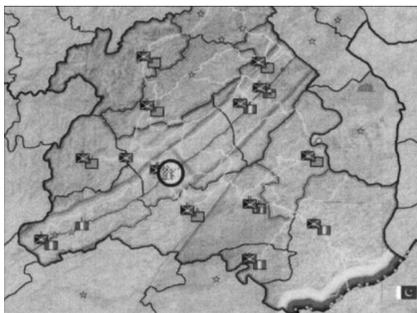
- The Zabol Trader's Association has a strong team of leaders although they report that individual members do not have a history of working collaboratively. Support and mentorship from the provincial government and ACCI will help them learn the value of working cooperatively and how to do so to gain value in the marketing channel.
- Farmers and traders maintain a strong interest in cold storage. Roots of Peace has helped grow cold storage facilities within RC-5. NGO experience and potential support, nearby facilities to visit, and the ability for lessons learned from existing cold storage managers in Kandahar have potential to help direct those in Zabol.



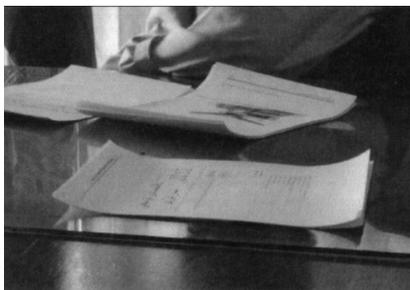
Robert Eaton and Aziz Jamilzai listen to the director and deputy director.



Abdul Ali makes a point while Abdul Hay Akbary listens.



42SUA0311454151.



Documents about marketing channel success in Kandahar brought for further review.

Unclassified**Zabol ADT; Professional E-Mail Writing Workshop; Qalāt; Zabol Province**

DTG for Event 020900AUG12 Zabol ADT MISSION 230

Who: ZADT, TF-21 CIMIC, 9 DAIL staff members

What: Professional E-mail Writing Workshop

When: 02 August 2012

Where: DAIL compound, Qalāt, Zabol Province, Afghanistan

Why: To instruct the DAIL staff on effective and professional E-mail procedures, format, and functions

Summary:

- A workshop on Professional E-mail writing was conducted with nine DAIL staff members on 02 Aug. 2012 (0900-1100). Major Jonathan Pike was the instructor along with the assistance of an interpreter.

- A PowerPoint presentation as well as student handouts, greatly enhanced the learning process. ZADT provided notebooks to organize the training materials, and also supplied pencils and paper for note taking.
- Various topics were covered in the workshop, to include: Etiquette, E-mail format, subject, address, greetings, opening sentences, body, closing, and signatures. A discussion on why E-mail is important and how it relates to them as DAIL staff employees were also objectives of the lesson. Practical exercises were given to reinforce the lesson by using blank e-mail worksheets reviewing their new skills.
- At the conclusion of the workshop, ADT issued certificates of training to each of the participants. These documents were very much appreciated by the staff
- The students were attentive and participated in many of the discussions. Out of the nine students, three had limited E-mail knowledge prior to the class.

Context:

- The Professional E-mail workshop continues to build and scaffold the series of business related topics offered by Zabul ADT.
- The intent of the Ramazan courses is to continue positive mentorship of the DAIL staff and provide examples of effective management tools for the future. The classe[s] were requested by DAIL to increase the professionalism of his staff.

Commander's Assessment:

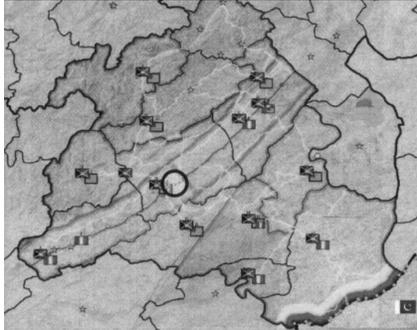
- Professional E-mail writing is essential in any organization. This skill will continue to promote good practices and professionalism among the DAIL staff, developing a sense of pride and job validation.
- The end result is the development of a more effective government network and an increased opportunity to provide services to the people of Zabul Province.



DAIL staff listening intently and taking notes.



ZADT instructor listening to questions.



Zabul DAIL compound.



Students in discussion about a plant disease.

The five examples above highlight the 249 agricultural mission reports that the Zabul ADT files during the year-long deployment. The Zabul ADT completed more than 800 distinct missions outside the gate throughout the province, in the Kandahar region and to Kabul. By projecting a forward presence, building strong relationships with local government, elders, farmers, and business leaders, and implementing pragmatic force protection measures, the Zabul ADT was able to excel at its mission while setting the conditions to return to the U.S. without casualties.

The Zabul ADT comprised of a command, staff and agricultural experts from the Minnesota Army National Guard, a security platoon from the Mississippi Army National Guard, and veterinarians from the Army Reserve in Missouri and Washington states. We also received a mid-tour replacement from the California Army National Guard. The maturity, competency and integrity of the individuals allowed us to successfully deploy small teams to accomplish the mission. Several examples of excellence are:

- Sergeant First Class Hunter from the Minnesota National Guard (Value Chain development expert at Cargill, Inc.) lead the effort to turn over control of our southern demonstration farm to Afghan officials while insuring its continued sustainability and viability with local resources. He also supervised the evaluation and mentoring of a new cooperative and served as the NCOIC (NCO In Charge) of our southern team.
- Sergeant First Class Banta and Specialist Crutchfield from the Mississippi (Security Platoon Sergeant and designated marksman) lead an immediate response to a 'blue on green' (Afghan Army member attack on U.S. service members) which secured our base and eliminated the threat without further loss or injury to U.S. or coalition members.
- Master Sergeant Doten from the Minnesota National Guard (Geologist, Hydrologist, Beekeeper) studied and analyzed the soils of the province and determined that the textbooks were incorrect about the formation of the soils in the province. Rather than being composed by the rocks breaking down over millennia he found that the soils were actually blown up from the deserts of Kandahar over tens of thousands of years. This greatly influenced our advice on use of water and crop inputs for farmers. His introduction of Asian bees in Zabul was also a ADT best practice.
- Major Wachenheim from the Minnesota National Guard (Agricultural Economics Professor) served as the daily liaison with the Department of Agriculture Irrigation and Livestock, The inter-agency team, and lead our female engagement team effort in the provincial capital.
- First Lieutenant Robertson from the Minnesota National Guard (Laboratory Technician) emerged as one of our most effective leaders to engage local Afghan leaders, elders, and farmers. She pioneered the effort to provide agricultural (garden) training to a girls school and lead engagements in two of our most remote and dangerous areas.
- The Mississippi Army National Guard Security Force as a whole. The nature of the work demanded that the leadership and agricultural experts meet with and conduct training without their protective gear and focusing on the agricultural message. The security team provided or managed personal, inner security

and external security for more than 800 missions. Despite operating in a combat environment, we never had a casualty from enemy action.

Training for Mission. The following article was written to highlight the experiential learning conducted to prepare the ADT for its mission in Zabul, Afghanistan. (Source: Prepublication article for *NACTA Journal*)

Experiential Learning for a Combat Deployment

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Abstract

Traditional military pre-deployment training for the Zabul Agribusiness Development Team was supplemented with externally-led training specific to their assigned agriculture mission. A training plan was developed using Dewey's Experimental Learning Theory. The Team fostered partnerships within academia, with an Amish community and with both a small technology firm and the nation's largest agricultural cooperative to provide this training. Academic training at North Dakota State University included lessons on and hands-on experience with livestock, plants and the associated production considerations such as plant pathology, use of chemicals, soils, and beekeeping. Faculty offering training focused on the environment and agriculture common to Zabul, the province to which the team would deploy. This training was supplemented by regional partners. Viticulture and tree crops, both common in Zabul Province, were covered in training offered by the Agricultural Development for Afghanistan Pre-Deployment Training Program in California where the soil and climate are similar to those found in Southeastern Afghanistan. To help the team adapt to differences in technology, lessons were sourced from an Amish Community and Adaptive Technologies, Inc. Cooperatives training was offered by CHS, Inc.

Introduction

The Zabul Agribusiness Development Team (ZADT) of the Minnesota Army National Guard received orders for a 1 year deployment to southeastern Afghanistan. The team consisted of twelve agricultural experts as defined from their education and/or their civilian work experience. They were augmented by a support team of twelve including the commander and his staff, and by a security force from the Mississippi National Guard comprised of thirty-four soldiers. The assigned mission was to mentor the Director of Agriculture, Irrigation and Livestock (DAIL), his staff and extension personnel, cooperative leadership, farmers, and agribusiness entrepreneurs and to otherwise assist the province in growing their agricultural capacity. Irrespective of the combat environment, this mentoring would take place in a region without supporting infrastructure such as adequate roads, electricity, or credit and without technologies commonly used in countries with a developed agriculture to include machinery and equipment, irrigation, improved seed varieties, commercial pesticides, and artificial insemination. Adding to the challenge was that the presence of familial education where agricultural techniques are passed down from generation to generation was reduced by thirty years of war.

The team was to be deployed to a location with a different history, culture, and especially climate than their home region. While team-members were collectively familiar with a multitude of crops as well as commercial cow/calf, cattle, hog, sheep, and poultry operations, they were unfamiliar with many of the crops grown in Zabul, including pomegranates, almonds, and grapes for raisins. The team also had no experience with livestock breeds common to the region or with technologies currently employed including hand tillage, hand seeding, trench water holding combined with drip irrigation, and hand milking and slaughter. With the resources of the military and team-member networks, and under the noted challenges and constraints, the team was directed to leverage all available resources so as to ensure they were mission capable and mission ready. This paper describes the comprehensive education and training plan developed and implemented towards this end following the Dewey Model of Experiential Learning (Dewey, 1938) in which the social environment serves as the background within which learning occurs. The plan included training, net-

working, and building reach-back capability. Key partners included industry, nonprofits, 60 government agencies, and universities.

Objectives for Training

Two overarching decisions drove development of the training plan. The first was the scope and depth of training. The question was which of two approaches would be more mission-supporting: a broad training approach which would expose team members to the wide array of conditions, products grown, and technologies utilized in Afghan agriculture, or a more narrow training focus that would provide the team and perhaps individual team members in-depth training on specific products, markets and technologies with promise in the region.

The second decision was to what extent to involve external parties. Generally soldiers are trained for deployment by military personnel or those directly contracted by the military for that purpose. This includes military-designed training for those who will work with local-nationals on development-related projects either because of their Military Occupational Specialty (*e.g.*, combat engineer, civil affairs) or because of their specific mission (*e.g.*, Provincial Reconstruction Teams). There is, however, not a training designed for teams assigned agricultural development, which is an important reason the military sought agriculture expertise based on civilian experience among National Guard soldiers. Expertise has its limits, however, especially given the difference in agriculture between the Midwestern United States and Afghanistan. The leadership therefore concluded the team would need to resource outside expertise; expertise that could greatly leverage the military's training and team members' knowledge and experience. Concerns associated with external involvement in training included creating a dependence on others who may not be accessible when needed or who may not have the on-ground information necessary to make the right recommendation, and the time, expense and social capital involved with recruiting external consultants for one unique mission.

The leadership decided on a hybrid model that would empower the team with a broad brush of knowledge as well as provide them an understanding of the in-country environment prior to leaving the United States. Military training was supplemented by committed partners willing and able to share their time and expertise both prior to and during the deployment. The intended training outcome was a practical understanding of agriculture in Afghanistan and how additional knowledge, know-how, or technologies could be actively employed and sustained within Zabul Province.

The plan was comprised of multiple individual training missions conducted outside of and in addition to the required warrior training associated with moving and working in a combat environment.

Regimented pre-deployment training was provided by the Minnesota National Guard and the U.S. Army, including, but not limited to, individual and group warrior tasks, language and cultural training, and maintenance and operations training for a range of vehicles, weapons and equipment. This paper focuses on the external training designed and implemented by the ZADT leadership specifically for this mission. In planning the training, the key objectives were to obtain:

- Exposure to the agriculture and supporting infrastructure in Zabul province;
- A developed understanding of the evolutionary path of and constraints facing the same;
- Knowledge of tools, machinery and equipment, and physical and operational technologies appropriate for the existing infrastructure;
- Experience in developing plans for sustainable agricultural production systems employing these assets in conditions found in Zabul Province; and in educating and training farmers, agribusiness entrepreneurs, and supporting government and non-government organization participants to implement them; and
- Access to outside expert assistance throughout the deployment.

Theoretical Background

Experiential learning can be broadly defined as a pedagogical process that includes an action by a learner that has consequences (Dellaportas and Hassall, 2013). The ZADT training was designed to focus on experiential learning and, in planning the training, leaders adopted the framework proposed by Dewey (1938). Experiential learning guidance has been refined and expanded since formally being introduced by Dewey in the 1920s and outlined in his book entitled

“Experience and Education” (Dewey, 1938). Specific contributions by Kolb (1984) and Lave and Wenger (1991) were incorporated into the plan.

Dewey’s work identifies four key learning environment attributes: (1) learning takes place within a social environment; (2) knowledge and content of organization should put students in an environment that allows them to develop social relationships, learn, and solve problems; (3) learning should include a relevant experience that reflects the intended pedagogical objective and should occur in an environment including a well-defined teacher’s role and a framework of student learning; and (4) learning outcomes should include reflection and represent that the student is better able to acquire knowledge because of the learning process.

Kolb’s model defines the pedagogical process to include the following four key elements: (1) concrete, personal experiences; (2) reflective observation; (3) abstract conceptualization, wherein students are expected to think logically and make decisions or draw conclusions from the learning process itself; and (4) active experimentation, wherein students are able to apply the concepts learned from one experience to a different experience. Kolb’s contribution of explicitly defining the role of active experimentation is important because soldiers would be applying concepts learned during training to a variety of situations in Afghanistan. Situated Learning more explicitly includes the social interaction and collaboration components of Dewey’s initial model. In Situated Learning, the social process is a key element of the process of acquiring knowledge in one situation and transferring it to other situations (Dellaportas and Hassall, 2013).

Situated Learning shares the definitional component and philosophy of other experiential learning models that learning is best when the student is actively engaged in the process, and, although less thoroughly stressed, when students thereafter reflect on the process.

Added to the framework provided by the aforementioned models of experiential learning was consideration of the unique culture of the military learning environment. Characteristics of military education result from the nature of the military structure and culture and the mission-focus of most military exercises. The special nature of the soldier-student has implications for the relative effectiveness of training (Moon and Schma, 2011). Smucny and Stover (2013) identify the unique characteristics of military learners to be their focus on the mission and an assumption of duty inherently associated with this mission (“mission first”); their comfort with a well-defined hierarchy; adherence to discipline; an expectation of hard-work and team-work by all members; and an advanced level of comfort with a high-stress, uncertain environment. We argue that this makes less important the need to make students interested in the learning process as presented by Efstratia (2014) and others. If it is being taught; military members are trained to assume it is important and what they need to know about why or how it is important will be shared if and when dictated by their higher commands.

The Training

With the theory of experiential learning at its core, and keeping in mind the unique culture of the military, the supplemental training program for the ZADT was defined. The plan consisted of academic, university-led training; low-technology agriculture hands-on learning; cooperatives training; and additional cultural training to augment that provided by the military. Each of the components is discussed in turn including resource needs and how the training contributed to individual training objectives and the overall goal of access to the knowledge, experience and resources necessary to train and mentor the team’s Afghan partners.

University Training and Reach-Back Support

A week-long training session focused on agriculture of importance in Afghanistan was held at North Dakota State University (NDSU). [A detailed training schedule for this and other training can be obtained from the corresponding author.] The training was led by NDSU professors and extension specialists and included 1 to 4 hour blocks of instruction on alfalfa production, wheat production, vegetable production, soils, water, plant pathology, beef production, animal health, entomology, beekeeping, chemicals and fertilizers, and machinery and equipment. As none of the faculty and staff leading the instruction was an expert in Afghan agriculture, providing this selfless contribution required considerable learning on their part in preparation to teach us.

Examples of the resulting training included livestock specialists in beef and sheep covering the animal husbandry techniques appropriate for important

breeds in Southeast Afghanistan. An alfalfa specialist covered the historical varieties used in the target region of Afghanistan and discussed how thirty years of war had changed this crop (and others, especially perennials). A 4 hour block of instruction on evaluating and working with different soil types, including a 2 hour laboratory, helped put in context the soil-dependent instructions from the plant science experts instructing the team.

The added advantage from the university training was that the subject matter experts agreed to serve as reach-back resources for the team, and did so. For example, the instructor on beekeeping was able to evaluate and come up with a solution to problems in beehive establishment and in controlling pests (wasps) once the team faced these challenges while in-country. A plant-sciences instructor was able to identify a fungal infection in a vineyard using close-up pictures and a detailed explanation of the environment and the infestation and its evolution.

Dewey's model and the predicates of the Situated Learning Model stressed the importance of building this social environment. Doing so was a unique challenge for this military unit. While there are a number of extensive operations that involve collaboration with outside entities in planning and mission implementation, and these increasingly and more formally include civilian partners, including external civilian expertise as a pivotal resource for a specialized mission is still unique for military units at the level of the company-sized element. In this case, part of the training plan was for the unit to become somewhat dependent on a group of voluntary civilian experts. The experts became part of the soldiers' social environment and remained as such during the deployment period.

Because North Dakota has little poultry production and no known working camels, NDSU did not have experts in these species. To supplement the NDSU training, the team therefore reached out to others in the region. The Red River Valley Zoo (also in Fargo) provided instruction on camels. And, a large local egg layer provided instruction on poultry care. The added advantage of the latter is that the family also owned a winery and grew a wide variety of grapes, another key crop in Afghanistan.

As there is also a notable lack of orchard crops such as almonds, walnuts and pomegranates, and of vineyards in the Midwest, the team also participated in an revised version of the Agriculture Development for Afghanistan Pre-deployment Training (ADAPT) offered by a consortium of universities led by the California State University system, and offered on a regular basis on or near two CSU campuses. ADAPT includes both classroom and field training and demonstration. Details regarding the history, objectives and offerings of the program are presented in Groninger, *et al.* (2013).

Briefly, ADAPT is led by field-experienced researchers, extension specialists and those with in-country time, many of whom are available during deployment for technical assistance and advice. The training considers the wide diversity of environments in Afghanistan including heterogeneity created by vast differences in altitude, water availability and kinetic activity. The program goes beyond teaching and demonstrating appropriate agricultural practices to include lessons about interacting with and assisting Afghan farmers and officials such as extension specialists. While the program is designed for 40 hours over 5 days, the team's training requests were specifically designed towards those crops common in the deployment province and for which technical specialists were not available at NDSU. The team asked that the training focus on tree crops and grape production. They spent 3 full days in with subject matter experts. Training included classroom lessons as well as hands-on tours of and experience at regional farms and vineyards and discussions with farmers about the nuances of production, storage, and logistics of specialty crops. Details are shown in *Table 1*.

Amish Farms Visit and Support from Compatible Technologies, Inc.

A second training focus was on agriculture without modern technology; without tractors, combines, sprayers, and the like; something for which team members had no frame of reference. They found such an environment in a local Amish community near Utica, Minnesota. The team spent 3 days with the Amish learning about animal and crop production without modern diesel-powered machinery and equipment, and about generator powered technologies necessary as a means to operate tools and machines without electricity. This training proved invaluable, and it was not just the know-how the team took away. Working with the Amish reminded team members that there remains an incredible innovative spirit among farmers and that there are solutions to nearly

every challenge if one is willing to flex their mind a bit. For example, a visit to an Amish harness shop demonstrated that electricity is not required to power an industrial strength sewing machine; a generator will do. This later proved to be an important lesson when the team was faced with a lack of and inconsistent electricity once in-country. Another example was the demonstrated lesson that automatic sprinklers are unnecessary in a greenhouse when elaborate drip irrigation systems with water moving by gravity can be developed using simple plastic piping.

Some other tricks of the trade were introduced prior to the deployment by another training partner, Compatible Technology International. This nonprofit organization develops technologies for use in developing countries; and other situations without supporting infrastructure. They provided the team with a durable, manually operated hand-grinder and other simple yet very effective technologies. They also reminded the team that technology is not always required. Afghans learn how to sow seed so accurately that the resulting planting populations mimic seeds planted using air seeders.

Following the experiential learning models, this component of the training program was comprised of “real-world” learning exercises where student-soldiers not only would learn by doing, but would be expected to apply the learning to decision-making in other situations. The training specifically included a step that required learners to identify known situations in the Afghanistan agricultural and agribusiness environment, and to apply what was learned during the training to their forthcoming environment. Specifically, learners developed plans on how to improve production efficiency in an environment with a low level of technology adoption and little infrastructure. Finally, including the Amish and Compatible Technology International further expanded the community of partners (*i.e.*, the social environment).

Cooperative Training

The final component of the agriculture and agribusiness training was on the role of cooperatives. Cooperatives were present only in name in Zabul province, but they had considerable potential. CHS, Inc. graciously provided the ZADT with 3 days of education and practical exercises on the structure and operation of cooperatives, including lessons in strategy development and program implementation. This uniquely designed training was held at their corporate headquarters in Inver Grove Heights, Minnesota. CHS brought in a team including members who had worked on agricultural development in Afghanistan and those who had spent time in Afghanistan working with local entrepreneurs. The focus was on developing a plan for cooperative development, securing and utilizing resources, and implementing a plan for continual assessment. The training content followed closely training objectives, provided here. Training objectives were that the team:

- Learn the structure, function, services offered and history of agricultural cooperatives with a focus on application to Zabul Province and other Pashtun regions of Afghanistan.
- Become familiar with the unique governance of western cooperatives, and the roles and responsibilities of members and the Board of Directors and be able to compare and contrast such with the formation and operation of cooperatives in developing countries.
- Become familiar with community development in Afghanistan including the interface between civilian agencies and the military.
- Understand the legal environment in Afghanistan, cooperative law and corporate law and how one can influence legislative change.
- Learn from examples of cooperatives in the Developing World including those in Armenia, Niger, Afghanistan, Central and Eastern Europe, Russia, and Mongolia.
- Gain an understanding of Afghan cooperatives and cultural/environmental issues.
- Be able to advise Afghan entrepreneurs on starting cooperatives or revising their existing cooperative structures.
- Understand and be able to identify means to overcome challenges associated with starting agricultural cooperatives in Afghanistan.
- Embrace the role as a technical advisor including defining responsibilities in development and gaining producer buy-in.

- Know where to find information while on assignment including Cooperative Education Resources, E-Extension demonstration, and Cooperative Network.
- Develop relationships with the training experts to facilitate reach-back efforts during deployment.

Cultural Training Supplemental to U.S. Army Training

Finally, the team supplemented the army's language and cultural training with additional training focused on the Pashtun region taught by Afghan-nationals. These individuals shared a traditional Afghan meal with the team; using experiential learning to make sure student-soldiers had a solid grasp on the cultural nuances. The team spent this time with a former Afghan Minister of Agriculture and his family. He was able to evaluate the agricultural training and provide an assessment of the development plans created during the training. As with the other partners, he stayed in regular contact with the team during the deployment, providing a sounding board and adding advice and interpretation as the mission evolved. Again, the learning objectives well articulate the training content. The learning objectives were to:

- Improve the team's understanding of Afghanistan and its people including the various ethnic groups and the nomadic population.
- Develop an acute understanding of the Pashtun people including the role of the village, the extended family, tribal structure, and Code of Conduct (Pashtunwali), dispute reconciliation, and the role of women.
- Expand the team's knowledge of Afghanistan's geo-strategic importance as well as its history, culture and ethnic make-up.
- Increase understanding of the social, economic, political institutions, and laws in present-day Afghanistan.
- Assist to build awareness, knowledge and understanding of critical situations resulting from communicating and interacting with Pashtun Farmers.
- Enable team members to observe, understand, and participate in personal, cultural and situational behaviors including, cooking and eating, dress, holidays, religion, education, and health care.
- Upgrade knowledge about how to manage across cultures, how to observe and act in particular cross-cultural situations, and how to prevent cross-cultural conflicts while working in various rural Afghan communities.
- Understand cultural dilemma and barriers and identify steps to break down barriers including recognizing communication norms in a tribal society.
- Be familiar with the rural economy in Zabul including the agricultural processing industry.

Role of Partnerships

Much of the training developed was built or otherwise supported by partners from outside of the Department of Defense; partners not generally compensated financially for their contribution. As defined by Dewey (1938) and others, explicitly recognizing the role of partners and the social environment defining the relationship with them and others is an important component of a successful learning environment. The team asked a lot of their partners and they exceeded even the team's lofty expectations.

One of the important contributions of this paper is its presentation of a successful attempt to leverage limited resources. The team found the most successful strategy to compel partners to provide their time, knowledge, experience and resources and to maintain their support throughout the deployment to be appealing to the value of their contribution. Given that it was a military mission, it was natural to appeal to their patriotism; many individuals and firms want to help serve even if they cannot be directly involved on the ground and in-country. Team leadership and members spent considerable time and effort articulating to their partners the value they brought to the mission and to the lives, not just of the involved soldiers, but of the farmers of Afghanistan. Putting a face on the people that would benefit was effective. While they could and did put a face on the individual soldiers, it was more challenging to personify those Afghans with whom they would work closely. One common marketing strategy employed by charitable organizations operating throughout the world is to allow donors to adopt individual children, animals and even villages. A simple Internet search provides an overwhelming number of such opportunities. However, the team was not looking for individual sponsors or even monetary contributions; they were rather searching for partnerships in knowledge. Because of the specificity of need: training and reach-back technical assistance, it was natural

for the team to appeal to their partners by being transparent in the belief that few could match their ability to help the team help Afghans; to let them know that the team sought them out because they placed great value on their expertise. All the partners stepped forward as citizens of the world.

Discussion

The components of Dewey's Experiential Learning Model were adopted during planning and implementation of training for the Agribusiness Development Team mission. First, the roles of the unit leaders, soldiers, and civilian partners were carefully and precisely defined. Specifically, the hierarchically defined structure of the unit was challenged and revised so that the student-soldier accepted more responsibility for their own learning and the learning of their peers. The unit also worked to foster partnerships and other relationships.

Second, the knowledge and content organization of the learning was specifically designed to put students in a real-life environment where they could learn and to try out ideas generated during that learning process. For example, the plan designed for students to learn the process, use, and application of soil assessment included multiple steps. Students were first asked to identify soil-related challenges they would encounter in Afghanistan. They then worked to identify solutions to overcome these challenges. The design of these learning exercises also helped the team build relationships with one-another, their reach-back team and others comprising the social environment.

Third, was the actual application of experiential learning. This was an adaptation of the mission training and preparation style used by the military and informally termed "crawl, walk, run". In this model, the basic design of a mission is planned and described without much participation by the learners (crawl). It is akin to the lecture style of teaching, and generally includes a diagram or model elements involved in the mission to demonstrate the plan (*e.g.*, rocks used to represent vehicles). The second phase involves a trial run of the mission so actively engaged learners can practice and the leadership becomes aware of what works and what may not work (walk). Finally, the mission is implemented. One of the most notable learning-by-doing experiences focused on how to conduct a Shura (meeting) with village elders through an interpreter. The exercise resulted in students not just "practicing" applying the techniques they had previously learned, but itself resulted in a set of sequential practice exercises to help the learner define the situation (*e.g.*, importance of meeting participants in the village; dynamic between participants; need for an interpreter), identify the appropriate strategies to conduct the Shura according to the encountered situation; and complete a reflective exercise that was then used by follow-on teams and in subsequent hypothetical Shuras conducted by the student teams.

The final principal in Dewey's model is reflection. It is doctrinal in the military that, after a mission, whether it is an all-day movement across rough terrain to engage the enemy or a 2 hour class on risk analysis, learners, teachers, and any other participants or observers conduct an After Action Review (AAR). This group form of reflection consists of restating the mission; identifying what went right and what could use improvement; and specifying alternatives for any follow-on missions. These are later filed for consideration by others who will conduct a like mission or compiled with AARs from other missions and units so as to become "lessons learned". In the case of the ZADT training, the use of experiential learning theory moved an AAR from "how did it go and how might it be improved?" to "what did we learn from this activity and how can we apply this learning as we plan for and implement missions in Afghanistan?"

Summary and Conclusions

Traditional military pre-deployment training for the ZADT was supplemented through external to Department of Defense partnerships offering training specific to the team's agribusiness development mission. Training was offered through academic partnerships including broad training by staff and faculty at NDSU on agriculture common in Zabul and supplemented by regional partners to cover animal agriculture not specific to North Dakota. Viticulture and tree crops, common in Zabul, were covered in training offered by the ADAPT program. Training and experience adapting to low-technology agriculture was received through visits to Amish farms and the support of Adaptive Technologies International. Finally, training was offered by CHS and their partners on the cooperative structure, including intensive and hands-on application in developing countries where the cooperative concept is new and the benefits are not yet fully realized. CHS employees and partners shared their Afghan-specific ex-

periences within the context of how the ZADT might help Afghan farmers and officials grow cooperatives to overcome challenges with lack of infrastructure.

The training proved invaluable. The team went on to complete over 800 missions, many joint with the International Security Assistance Force and Afghan military partners as well as with leadership and staff of the Directorate of Agriculture, Irrigation and Livestock and other ministry entities and with cooperative leaders. There were successes including the development of a province-level trading organization and the building of a community slaughterhouse as a public-private partnership, introduction of bee hives as a means to increase yields, repair and redesign of irrigation systems, and introduction of value-added activities such as drying fruit crops and de-shelling nuts. The team worked with local entrepreneurs on projects such as yogurt production from goat milk and an egg hatching facility. And, they worked with farmers who adopted low-technology practices to improve their productive efficiency.

The ZADT agricultural experts were split among Kandahar Airfield, five forward operating bases, and a combat outpost. Three of the forward operating bases were adjacent to demonstration farms set up in partnership with the DAIL. The team met weekly by secure Internet connection to discuss progress, identify challenges, and share successes and ideas. Team members also had and used reach-back capability, consulting with stateside experts on everything from tree fungi to killing wasps that were depopulating bee hives. They efficiently exploited the social environment they had established during the training period.

Aside from the logistical and security needs due to the combat environment, one of the most pervasive challenges was reluctance among Afghan farmers to make changes in what they raise or how they raise it including livestock, crops, vines, or orchards. Myths had been passed down through hundreds of years that may have at one time in one environment been valid such as not to water trees or plants when they are flowering. Many of their ways of farming were solidly ingrained and used even when they were no longer well adapted to current conditions. For example, farmers continued to use trench irrigation even after irrigation system improvements provided a consistent water source for their gardens. The team also quickly learned that when farmers are raising a subsistence level of food, regardless of the potential of a new and simple to resource and use technology, the known system in place easily trumps the risk associated with change. The cost of failure is very high in a subsistence environment. Finally, most farmers had not been formally educated. So, while the team expected it to work reasonably well to explain in considerable detail how adopting certain production practices would increase yield, their inexperience at formal learning made this method less than effective. If the team could not convince them to try a practice while still in-country, there wasn't much promise for their ability to sustain it once we left.

Key lessons from planning, implementing and assessing the result of this training plan extended beyond what worked to increase the technical expertise of the team. Experiential learning served as an unmatched method to teach and observe the effectiveness of the lesson when there is a short window for learning. This was true as the team learned from their experts and as they taught their Afghan partners. From the training, the team also learned that there are plenty of ways to gain knowledge and experience if you think creatively. The process reinforced the belief that including partners provides multiple benefits including leveraging expertise and knowledge and gaining additional resources, including those not previously considered. That is, that the social environment that exists during the learning phase can be extraordinarily important when the knowledge and experience is later put to test. Obtaining buy-in to the project among the trainers and therefore their willingness to support the ZADT through the training and while deployed involved selling them on the idea that they can help the team, and its individual members, like no one else can and otherwise emphasizing the importance of their participation to the mission. The team quickly realized that the concept that success has to be a team effort extended beyond the unit, and found it not only important, but natural to regularly acknowledge their contributions, not only immediately following the training, but during and especially after they witnessed achievements brought about in part due to their direct involvement. That is, the social environment existing during the training needs to be fostered to be retained.

While this project was unique to training and support meant to augment that provided by the Department of Defense, the planning and implementation process reinforced the reality that external partners not only have an incredible level of expertise and experience to share, but that they generally want to do

so; all it takes is a simple request. And, this reinforcement has paid dividends in the college classroom. A member of the ZADT brought back her experiences in leveraging external partnerships to bring her existing partnerships with industry to a whole new level at NDSU. She redesigned her sales class so as to include repeated, direct, and meaningful interaction between students and professionals; professionals who will actively and with true compassion mentor students through the application of lecture- and book-learned tools and skills, and who are willing to serve as a life-long resource.

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Table 1. Zabul Agribusiness Development Team Training with ADAPT Program Personnel

Day	Location	Training
1	Rominger Farms, Arbuckle, California	Almond orchard development and maintenance, low-volume irrigation, and basics of supporting soil
2, a.m.	UC Davis campus	e-Afghanz; soil properties and grapes; structure and function of roots; and grapevine training and pruning
2, p.m.	UC Davis vineyard, El Dorado County, California	Training and pruning, head, vertical cordon, cane, application to Afghanistan
3, a.m.	CSU Fresno	Viticulture and Enology: the grapevine and cultivar, vineyard establishment, and cultural practices and harvest
3, p.m.	CSU vineyard	Field observation and pruning, raisin processing

The Use of Asian Honeybees for Sustainable Apiculture in Afghanistan
Zabul ADT, MSG James Doten, July 10, 2012



Editor's note: The submitted document by COL Ahlness did not contain the referenced graphics. The graphics *herein* are from the UC Davis article.*

*The article is available at: http://afghanag.ucdavis.edu/c_livestock/bees/Rep_Bees_Apis_Cerana_in_Afghanistan_James_Doten.pdf.

Background

The use of honeybees in agriculture (apiculture) is a well-known technique to improve crop production. In Zabul Province the main agricultural products are almonds, pomegranates, and grapes. Farmers also grow significant quantities of apricots and figs. Pollination is critical for crops such as almonds which require cross-pollination. Natural pollinators exist but successful apiculture can result in a 40% increase in almond yield. Apiculture also significantly increases yields for pomegranates, apricots, and figs. Grapes are self-pollinating and do not benefit from apiculture.

In addition to increased yield, the quality of the product will improve as a result of fully pollinating the flower. An apple requires up to five trips before becoming fully fertilized. Bees are efficient pollinators because of their behavior, known as foraging consistency, in only working one plant species per trip. A bee will visit hundreds of flowers each trip, each bee makes about ten trips a day. If placed near an orchard the bees will consistently pollinate the orchard during its specific bloom. Growers in the United States take advantage of this behavior by moving hives into an orchard near bloom season. As long as the food source is near the bees will pollinate only the desired plants in the orchard. The bees are then moved to another location to match different bloom times.

Apiculture in the United States uses the European honeybee (*Apis Mellifera*). This species is suited for moving across the country and is known for its prolific honey production. Hobby beekeepers maintain small stationary apiaries (where bees and hives are kept) containing the European honeybee. The equipment and practices have been standardized in both commercial and hobby beekeeping.

Problem Statement

Attempts to introduce small-scale beekeeping for rural development in Afghanistan have failed. Environmental threats destroyed previous projects using the imported European honeybee. Using the native Asian honeybee (*Apis Cerana*) shows promise in developing sustainable apiculture by restoring traditional Afghan beekeeping techniques.

Threats

Colony Collapse Disorder

Within the past 10 years beekeeping in the United States has been threatened by colony collapse disorder (CCD) and Varroa mite infestation (*Figure 1*). CCD has been associated with commercial beekeeping and resulting tendency to concentrate colonies from across the country in one location. It has not impacted isolated apiaries of the hobby beekeeper. One of the theories behind CCD affecting commercial operations is their use of high-fructose corn syrup and an associated pesticide found in the syrup. Hobby beekeepers do not use the corn syrup and thus did not experience CCD to a significant degree.

Varroa Mite

Varroa mites plague bee colonies and can devastate a colony within months. The mite attacks both adult bees and developing larvae. After feeding on the pupa during development, the emergent bee is infested with as many as six new mites, starting the cycle over. The Varroa mite problem is growing.

First encountered in Florida in the late 1980's the infestation soon spread. The Varroa mite is the greatest threat to apiculture using *Apis Mellifera* (European). It weakens the bee and also carries the deformed wing virus (DWV). With the mites present, the virus concentrations increase a million-fold. The Varroa mite is devastating to European honeybee colonies. The mite wiped out all feral European honeybee colonies in the United States. Since the emergence of the mite problem in the United States, beekeeping as a hobby has been reduced by 50%.

The mite infestation requires active intervention to prevent a colony from being destroyed within months. In the United States, efforts are being directed towards developing a strain of bees that exhibit hygienic behavior in removing infected pupae from the hive. These varieties are not well distributed and are unavailable in Afghanistan. Miticides can control infestation, but these are not a cure and are not available to small scale beekeepers in Afghanistan. Essential oils can also reduce infestation levels but are not available to farmers in Afghanistan. The Varroa mite is native to Afghanistan; its presence makes it hard to develop sustainable small-scale apiculture projects.

[Figure 1. Mite Infested Bee]



Previous attempts to develop apiculture in Afghanistan followed the U.S. model. Imported European honeybee colonies were used to start small-scale operations that emulate hobbyist beekeeping in the United States. If infected, the Varroa mite will destroy these hives within months of infestation.

The Varroa mite is native to Afghanistan. It is a pest to its natural host, the Asian honeybee, *Apis Cerana* (Figure 2). *Apis Cerana* is one of four honeybee species native to Afghanistan, but the only one capable of being kept in hives. The Asian honeybee coevolved with Varroa mite and developed a grooming behavior that reduces it from a threat to a nuisance. The Asian honeybee lifecycle, when compared to European honeybee, also does not allow as many mites to develop in the egg-laying stage during pupation.

[Figure 2. *Apis Mellifera* (left) and *Apis Cerana* (right)]

Wasps

Another threat to European honeybee projects in Afghanistan is the presence of large wasps (hornets) native to the region. The wasps (Figure 3) overwhelm the bees' defenses, kill the bees defending the hive, and then steal the larvae and honey. When attacking, the wasps can destroy a European honeybee colony within 4 hours.

Previous U.S. Army European honeybee projects in Zabul were destroyed by wasps before the Varroa mite could have an effect. Interviews with local farmers show that the wasps are prevalent throughout the province. ZADT developed local wasp traps, but they are not 100% effective in preventing hive loss from wasp predation. The wasps are aggressive and make it difficult for farmers to work in their orchards.

[Figure 3. Wasp]



The wasp is a natural predator of the bees. The imported European honeybee does not have defense against the wasp. They attempt to sting the intruder; however, their stinger cannot penetrate the thick skin of the wasp. The Department of Agriculture, Irrigation, and Livestock (DAIL) employees reported the wasps destroyed their European honeybee colonies soon after starting the project. None of the DAIL apiculture projects using European honeybee lasted more than 3 months. The native Asian honeybee coevolved with the wasp and has developed an effective defense despite being $\frac{1}{3}$ smaller than European honeybee. The Asian honeybee surrounds the wasp in a ball with 100 to 150 bees. The bees beat their wings to increase the temperature inside the cluster in a defense known as thermal-balling (*Figure 4*). The temperature is raised above a lethal level for the wasp but below that of the Asian honeybee. The wasp will kill solitary foragers of the Asian honeybee without triggering the defense mechanism. However, when the wasp tries to enter the hive, the Asian honeybee actively defends the entrance. Villagers with colonies of the Asian honeybee reported the bees successfully defeated wasp attacks. ZADT members witnessed this defense at a demonstration project.

[Figure 4. Thermal-balling]



The Asian honeybee has coexisted with these wasps throughout its territory. The Japanese are actively restoring their traditional beekeeping traditions using *Apis Cerana* in Japan. Part of the reason for switching from the European honeybee is the large Japanese hornet. Japanese scientists studied the thermal-ball defense and were the ones to discover how it works. In Japan the Asian

honeybee honey commands a price four times as high as the European honeybee honey. Sustainable apiculture using the Asian honeybee is wide-spread throughout southern and southeastern Asia.

Comparison

Table 1 summarizes The International Centre for Integrated Mountain Development's (ICIMOD) comparative study for small-scale rural apiculture development projects.

Table 1. ICIMOD *Apis Cerana* versus *Apis Mellifera*

Parameter	<i>Apis Cerana</i> (Asian)	<i>Apis Mellifera</i> (European)
Initial investment	Very low	High
Colony management costs	Negligible	High
Risk involved	Low	High
Potential for stationary beekeeping	Suitable	Not suitable
Susceptible to mites and predators	Resistant	Susceptible
Eco-services	High	Low

The University of California—Davis (UC-Davis) developed an economic analysis of honeybee business in Afghanistan. The results of the UC-Davis study found that stationary beekeeping with the Asian honeybee is profitable even at small scales. They found it well-suited for small stationary beekeeping projects. They also concluded that the European honeybee requires at least 100 colonies before it is economical. In addition, the UC-Davis study found that the European honeybee was well suited for migratory beekeeping. It tolerates movement around the province to follow key crop blooms.

Once established, the Asian honeybee does not tolerate moving the hive. The Asian honeybee is only for stationary beekeeping. Studies show the Asian honeybee is a more efficient pollinator than the European honeybee. Crop yields are higher using the Asian honeybee. The Asian honeybee operates at lower temperatures, so they begin pollinating earlier than the European honeybee. This is critical in Zabul Province's almond production which begins to bloom in March. The Asian honeybee is more effective in pollinating key crops and can pollinate a higher variety of plants. With smaller hives and colonies, the Asian honeybee requires less forage for survival.

The European honeybee colonies are larger and produce a large quantity of surplus honey. Asian honeybee colonies are smaller, producing less honey. The foraging range of the Asian honeybee is $\frac{1}{2}$ that of the European honeybee. This means it covers only a quarter of the area. However, the range of the European honeybee exceeds the requirements of most villages. The Asian honeybee adequately covers a village and surrounding areas.

Strengths

Apis Mellifera

The European honeybee is well suited for large scale, commercial operations of at least 100 hives. At this scale equipment and maintenance costs are covered by honey production. The species works well for migratory beekeeping. It works best in monoculture environments such as an almond orchard. They have a larger foraging area than the Asian honeybee and produce more honey per hive. Migratory beekeeping on a large scale returns \$2 for every \$1 invested. The high initial investment and low returns make it unprofitable at smaller scales.

Apis Cerana

The Asian honeybee is well-suited for small scale stationary operation. It is economical at any scale because of the small initial investment, simple equipment requirements, and negligible operating costs. Asian honeybee projects return \$4.5 for every \$1 invested. The Asian honeybee is a more efficient pollinator resulting in greater increases in village income through pollination services more than the European honeybee. One estimate cited by UC-Davis claims \$14 benefit for every \$1 invested due to increased production. The Asian honeybee is native to the region and tolerant of pests and diseases such as mites and wasps that destroy imported the European honeybee.

The equipment is simpler, smaller, and less expensive than that for the European honeybee. By using simple designs such as the Japanese box pile hive, villagers can locally reproduce the hives easier than standard European bee equipment. The Asian honeybee can sustain itself even when orchard crops are not blooming by foraging in the surrounding area for desert flowering plants. The

Asian honeybee is known for its ability to survive and thrive in harsh, marginal conditions.

Weaknesses

European Honeybee

The European honeybee is an exotic, imported species that is vulnerable to environmental threats such as mites and wasps. It is more expensive than the Asian honeybee to set up and complicated to maintain. It requires a minimum of 100 hives before breaking even. The high initial investment and low returns make it unprofitable at smaller scales. The European honeybee requires migration, intensive management, standardized equipment, and a larger foraging area with a monoculture-based agriculture. European honeybee projects usually fail in Afghanistan despite extensive intervention.

Apis Cerana

The Asian honeybees have a smaller foraging range and are ill-suited for migratory beekeeping. They produce less honey per hive but the honey is considered more valuable in overseas markets. The Asian honeybees cannot be raised near areas where European honeybees are used as they will raid honey from the European hives.

Analysis

Army sponsored apiculture projects previously focused on the European honeybee for several reasons. Past projects concentrated on honey production rather than pollination as the primary desired result. European honeybees are superior honey producers with its larger hives. Also, practices in the U.S. solely use the European honeybee as our techniques were adopted from Europe. The European honeybee is well suited for the type of agricultural practices in the United States. Army practitioners from the United States are only familiar with the European honeybee and are unaware of the Asian honeybee as an alternative.

The Asian honeybee is the traditional honeybee used by Afghan beekeepers, particularly in the mountainous, border areas of Pakistan. Prior to the Soviet invasion, large-scale commercial beekeeping was practiced using the European honeybee similar to the United States. This capability was destroyed in the resulting occupation. Our attempts to rebuild apiculture mimic how we do it in the United States. The focus is on small-scale, income-building for vulnerable populations. Given the high initial costs, these were largely subsidized operations. Given the intensive management requirements of the European honeybee in this environment, the project success rate is likely very low, if not near zero.

Recommendation

Using the Asian honeybee as an alternative provides the Army a sustainable apiculture option that is economical. It restores traditional Afghan practices and is well suited for the environment. The Asian honeybee provides more efficient pollination. This will significantly improve rural income through better yields and improved quality of key agricultural products. It will require additional training of Army personnel to learn about the Asian honeybee and how it differs from the European beekeeping. The Asian honeybee is well suited for small-scale, village level rural development. The European honeybee is still relevant. However, its use should be concentrated on developing large-scale, migratory commercial or cooperative operations.

Conclusion

The ADT strategy was a success because it took the approach that we can prevent the seeds of conflict, by planting seeds of hope and prosperity. It took the ADT at the point of the spear, virtually all my soldiers qualified for combat badges, it took inter-agency partners to array the many aspects of power, knowledge and influence, and Afghans willing to risk their lives to implement the programs. This collaboration led to an outcome where farmers were empowered with knowledge, local agricultural extension capabilities were enhanced, and infrastructure developed so locals could own a sustainable approach to rural development. Our deployment was captured in a documentary produced by Minnesota Public Television and the link to the video has been submitted as part of my written testimony. This documentary of our deployment was aptly named, *Bridging War and Hope*. <http://>

*www.mnvideovault.org/mvuPlayer/customPlaylist2.php?id=23789&select_index=0&popup=yes**

That is what we did. Thank you.

The CHAIRMAN. I want to thank the gentlemen for your testimony this morning. The chair would remind Members that they will be recognized for questioning in the order of seniority for Members who were here at the start of the hearing. After that, Members will be recognized in order of arrival.

With that, I recognize myself for 5 minutes.

General Owens, in your testimony you connected farm policy directly to the consumer. Affordable food and fiber is often taken for granted. Each of you, highlighted some of the key elements that allow U.S. agriculture to thrive. Infrastructure, fertilizers, irrigation, GE seeds, research, extension, risk management tools created so that we will have a stable system. What happens if we stop supporting the very things that have allowed our country to have the safest, most affordable, and the most abundant food supply? And in your years of service, how quickly can a country correct course if they become food-insecure due to poor national policies?

Major General Sholar, we will start with you.

Dr. SHOLAR. Well, there is a direct link, sir, where we are the most food-secure nation in the world, but we really have a very limited supply when we start using it up. We have an oversupply of all of our grains right now, but that can go quickly. We have to stay focused on what got us to this point, and that is the working in concert of research extension, our farm communities, Congress, all of it tied together has gotten us to this point and we have to continue to invest. We cannot take a knee. We can't take a time out. That is our challenge, to find those dollars, because as everyone knows, there is fierce competition for resources, but our two most basic needs as people are defense and sustenance.

And so that is our challenge. That is everyone's challenge, to find how we are going to support all of that in the future.

The CHAIRMAN. Major General Owens?

Mr. OWENS. Mr. Chairman, the food security of the nation is very dependent upon our critical infrastructure and the way we have used our farm policies. What we have seen is that without infrastructure, you cannot sustain agriculture production, and the hardest part to rebuild is the infrastructure itself, the road networks, the electrical networks, the storage facilities, the warehouses, the processing plants. Those are all difficult and take a very long time to replace. We have been blessed in this nation with farm policy that has ensured we have maintained that infrastructure and our ability to produce food.

The other part of that is our ability to maintain the productivity of the land. Once the land is destroyed by poor farming practices—we see what happened in the United States in the 1930s with the Dust Bowl. It takes a long time to recover from that, and so it is important that we keep those policies and principles in place that maintain the productivity of the land for future generations. We believe that farm policy is a big key to making that happen. That has to be a comprehensive approach between the Federal Government,

* **Editor's note:** the video referred to is retained in Committee file.

the state governments, the land-grant universities, all put into one place. I think that would help us continue for the future.

The CHAIRMAN. Colonel Ahlness?

Mr. AHLNESS. Thank you, sir. What is incredibly powerful as I trained for my mission was seeing the diversity of agriculture in the U.S. and the strength it showed. When we started looking at the crops that grew in Zabul Province, pomegranates, almonds, grapes primarily as raisins, we found experts in the U.S. who were able to help us out locally on some of the crops, but we went to California for learning about crops such as almonds and so forth. So that really helped us move. And then looking at the strength of the extension service, which we tried to grow within Afghanistan was incredibly important, because we saw how that lent great support to making sure that our agricultural processes and skills were upheld.

And then finally, too, that there is a place for even non-traditional aspects as well. For example, we went to Utica, Minnesota, to an Amish community to find out how farmers produce modern agriculture without electricity, and we found how they produced a very rich strawberry crop by using traditional practices and drip irrigation, which we are able to transfer then overseas as part of the rural development program.

And then finally, most importantly, just a rich diversity of skills that my team brought, based on their different experiences within the agribusiness system allowed us really to leverage that overseas in an effective manner.

The CHAIRMAN. Well I thank each of you for your long years of service to our country. I watched in Afghanistan and Iraq the impact of the ag-centric work that went on. We squandered an opportunity in Iraq early on to not better reengage their agricultural industry to try to stabilize that country. I appreciate your testimony this morning, and with that, I will turn to the Ranking Member for 5 minutes. Collin?

Mr. PETERSON. Thank you, Mr. Chairman.

Colonel Ahlness, can you tell us more about the Chamber of Commerce group, currently your agribusiness development team? It must have been successful in that they decided to go ahead and do this, so can you tell us how that all developed?

And the other thing I would like to have you expound on is when I was over visiting our Guard folks when they were deployed in Iraq and Afghanistan, the commanders always commented about how the Guard people had these folks that understood agriculture, understood rural situations and actually did a better job than the regular Army because they brought people that had these skills to the table. How big of an impact do you think that had in our overall situation?

Mr. AHLNESS. Thank you, Congressman Peterson.

Regarding the Afghan Chamber of Commerce, before we deployed, we worked closely with Cenex Harvest States. As the largest cooperative in the U.S., we said, "Hey, can you train us how to develop cooperatives?" They provided us 3 days of training with bringing in experts to help us really understand how can we help formulate these cooperatives to help move Afghanistan ahead. When we got there, we started looking through, and in fact, one of

our partners who is an Afghan local who is contracted by the U.S. Government, he said there is a desire to form an association of traders, which really addressed one of our key missions, which was developing the value chain. We allowed him to move forward with this initiative and provided him guidance and support so he could be successful. By the end of our deployment, the organization was formed. There were 270 members, which gave greater access to farmers to choose who they sell to, so they are able to sell their increased production for a greater amount of money, decreasing the food insecurity for themselves, their family, and their villages.

Since that time, that has continued. I was in contact with people in Afghanistan, and now since that time, that has expanded to four other provinces nearby in Ghazni Province and an a couple of other areas, because of the successful nature of that, and the other provinces saying, "Hey, this is working well for Zabul and it is bringing greater prosperity, so we want to expand it." And that was done through our partnership with USDA.

Mr. PETERSON. How many co-ops were formed? Did you actually help form co-ops within the area that are still operating?

Mr. AHLNESS. Congressman Peterson, yes. That one, the Afghan Chamber of Commerce, the Zabul chapter, that is still continuing. We started several other ones. We did one in the southern region, which is by demonstration farm. We were trying to get local farmers together so they could produce more of a traditional co-op, and that was slow in starting because it is really hard to get people to understand how can you do it where you buy it in and you have to sell it at a profit to the members so you can re-buy and continue along and pay minimal overhead, but make sure it is done properly. In fact, Tony Hunter was my guy who was doing that down there, spending time with them, and it was a long growth process. I don't know if that is still continuing, but a lot of it is how can we plant the seeds and get them started, and it may not take at that place, but it may take at another location.

Mr. PETERSON. So they didn't have any concept of a co-op? Nothing like that had ever existed there before?

Mr. AHLNESS. There is a concept of co-ops and they have used it. Unfortunately, a lot of times people are looking at it as how could they use it as money infusion to what they are doing, and what we want to do is say we will invest money to get it started, but understanding that the military is short-term, ADTs were for 5 years. How are you going to sustain it after that? We really helped them develop their business plans and think about the long-term, rather than just the immediate money that maybe we could provide.

Mr. PETERSON. And so that was part of what you did to train their leadership, whatever leadership they had, to understand how to go about this? Is that part of what you were doing?

Mr. AHLNESS. Yes, Congressman. We would work with the village elders and then also with the business leaders to make sure it was something that they wanted. We would really find where is the intersection of the main crops that they are producing, what were the needs, as far as crop inputs, and then trying to make sure that if we pull together a cooperative, that they get quality materials. A lot of times in these undeveloped areas, the quality of crop

inputs is suspect, so we are always trying to help them figure out how do you get the right amounts, make sure the quality of the pesticides, for instance, are adequate, so that way they would apply them in the proper way. Otherwise, what happens sometimes is those things get cut by the distribution people and so they just think more is better, and that is not what we wanted to achieve.

Mr. PETERSON. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Gibson, 5 minutes.

Mr. GIBSON. Thanks, Mr. Chairman. I want to thank you and the Ranking Member. This is an outstanding hearing today, and I want to thank the panelists. I appreciate your strong leadership for our nation, and now continuing in such a noble, important calling for all of us.

And I noted at the outset of this hearing, both the Chairman and some of the panelists were making the point that at the founding of our country, we had about 95 percent of Americans involved in agricultural pursuits of one kind or another, and there was also a time that we had a small standing force, and really, most Americans were involved in protecting and securing our country. And now, as we note, less than one percent actually are farmers, are involved in agricultural pursuits, narrowly defined, and really less than one percent are involved in securing our nation. And so that makes for an important and interesting observation and analysis with regards to civil military relations, and civil farmer relations. And this Committee is indebted to you for taking time out of your schedules to be here today.

My questions really are based on those prefacing remarks, and that is this: As you go about your busy daily lives, how much interaction do you have with the next generation who we are hoping to inspire to become farmers? We know that, according to the USDA, we need about 100,000 new farmers in the next 10 to 15 years, given the fact that as proud as we are of farmers, the average age is just shy of 60 now. And given that, I am interested to know what advice you can give this Committee as we look to help formulate Federal policies, work with state and local policies to help inspire those to come to the calling.

And as you respond to that, I would be interested to know that Colonel Boswell, before he left this Committee, myself and Sergeant Major Walz, we sponsored an amendment in the last farm bill that created a liaison at the USDA. I am interested to know, are you having any interaction at all with that liaison, and if so, how is that going and what insight you might have for us?

Dr. SHOLAR. Congressman, I would just start by saying at the university, we have a similar problem in getting students coming from ag backgrounds, so we are proactively recruiting city kids, if you will, to enter the ag profession. Unfortunately, most of them want to, or maybe fortunately, want to go into industry or adjunct parts of agriculture. Very few of them are focused on going back to the farm or going to the farm since that is a much harder thing for them to visualize. We probably are at the point in our country where we need to talk about incentivizing those who don't have ag backgrounds to more proactively look at careers in agriculture that involve production agriculture, not just the ancillary pieces. That is probably something we have not done. I know this Committee

and others are very focused on helping our veterans get into farming and I am aware of that, and I know we are having some success there, but we probably should be looking at other pieces as well.

Mr. GIBSON. Thank you, Major General. Other panelists?

Mr. OWENS. Mr. Gibson, first, thank you for your many years of service. We appreciate that very much.

One of the areas that we have been able to work with is we have seen that a lot of our agriculture commodity groups and producer groups have been very proactive in reaching out to the next generation. And that any emphasis we can give to help them reach out and the programs that they sponsor to encourage people to come into production agriculture will be very beneficial.

It is very difficult when you reach out and try to think about the cost of beginning to farm. That is what makes most of it prohibitive, and it is just unbelievable what it would take, and so many of us, rather than staying in rural communities, begin to take other careers that are related to production agriculture, but not directly in production agriculture. And the continued emphasis and ability to get into production agriculture would be very beneficial.

Mr. AHLNESS. Thank you for the question, Congressman. It is interesting, when I was graduating from high school I wanted to go into agriculture and go in the Army, but I knew I wasn't able to start a farm, so I went in the Army. I didn't understand the rich variety of jobs that are available in the agribusiness sector. Now I am beginning to appreciate that, as I am working at Cargill, what we do is we work with the universities. And it is kind of nice to go in and say, "Hey, you need to provide us a rich variety, a diverse group of people to come in," and I see some universities really have good outreach programs. They also do good partnership with us at different times, and so we just continue to encourage that and invest in that to make sure we can get the best quality people in the future.

Mr. GIBSON. Thank you, gentlemen. Thank you for those responses. My time has expired. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, gentleman. David Scott, for 5 minutes.

Mr. DAVID SCOTT of Georgia. Thank you, Mr. Chairman. I would like to continue because Congressman Gibson has really hit the nail on the head, because we have a national security crisis right in this country, and that is the average age of our farmers now at 60 years of age. That is a national crisis, and Major General Sholar, is that right, you also hit the nail on the head because we have to use our land-grant institutions to solve this national crisis. And I certainly agree with your comments, and all of your comments, but we have to tackle this issue of getting a new generation of beginning farmers out there. We have no choice in this matter, or else our own national security will go down if the age of our average farmer continues to climb and we are not doing anything to address the issues as to why and how to solve it. And I believe firmly that you also hit the nail, Major General in the middle there, because this is an economics issue. It is an issue of marketing. It is also an issue of information, and more than anything, it is an issue of utilizing our land-grant institutions for the reason

we put them there. The land-grant institutions were the salvation of the South after the Civil War that formed the foundation that raised the South to be competitive. That was why they were established.

Now we have this crisis. If we were able to increase the area of giving funding to our land-grant schools, as you mentioned, Dr. Sholar, it is research, it is teaching, it is extension. Why not create an additional area of funding we can give to offer those young people loan forgiveness for their student loans and scholarships if they go into farming? Because we did the same thing when we had a shortage of veterinarians. We answered that because we took up the loan forgiveness and scholarship aid to those, and we had more veterinarians in.

Because first, when these young people, as you pointed out, the Major General there in the middle, I can't see your name, the cost of an acre of land just to even start a farm is \$8,000. To get a tractor is \$75,000. These are things that we address, and then they have to face paying these student loans, not having those things in them. I just wanted to get y'all's opinion on that, because this is something that several of us on this Committee are working towards in hopes that we can create this additional avenue of funding to address helping our young people. We want to help them to take that economic burden off, at least through scholarships and loans, with a requirement that they go into farming. Then they have an inducement to do so.

Major General Sholar, am I making sense on this?

Dr. SHOLAR. Yes, sir, you certainly are.

We have selectively incentivized different groups of individuals throughout our history to do those things that we thought were most important for society as a whole. As a person who has had a foot in each of these worlds for more than 40 years each, I have a vested interest. As I travel the countryside, both in my home state and around the rest of the southern Great Plains, and even the South, it is not uncommon to see a piece of equipment sitting in a farm equipment yard that has one or two times the value of the house that that farm family is living in. That is a very difficult proposition for someone to visualize themselves going into that profession, knowing that that might be the case.

If we could, at the minimum, offer some assistance to those who are contemplating going back to the farm, a lot of this won't be new individuals who are unfamiliar with farming, but those who cannot go back to the farm. Whatever we can do to incentivize those individuals, I would say we really should be taking a hard look at that, sir.

Mr. DAVID SCOTT of Georgia. All right, thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Scott. Mr. Benishek, for 5 minutes.

Mr. BENISHEK. Thank you, Mr. Chairman. Thank you, gentlemen, for being here this morning with us.

We talked about a lot of the things that we have in this country as far as infrastructure and support for our farmers. I had the privilege of going to Africa with the Chairman, and the most profound thing that I thought about when I visited a couple of these countries was the fact that there was no private property or rule

of law, so that it was very hard for, Ethiopia comes to mind. It was hard for a farmer to invest in the land when it wasn't theirs. They had to lease the land from the government, and they weren't sure if they were going to have that land in the future.

So in your experience going around the world, to me, that is the rule of law and property rights before you are going to start investing in agriculture. Can you tell me your experiences in that regard with the places that you all have served as it relates to my question? Are there things that America could do to improve those rights or encourage governments? Can you name some places where that is an issue? Major General Owens, maybe you could start.

Mr. OWENS. Yes, sir, and I will tell you that wherever we went, two of their biggest problems, one is the rule of law. Without the rule of law, you have no sanctity of contracts, you have no arbitration between buyers and sellers of commodities. You just are not able to conduct normal, routine business that allows them to build an economy of any scale at all. Property rights, what we found was there was really broken down with no individual property rights. We think about these places that have been taken over and in conflict for multiple years. One of the first things they do is each group comes in and confiscates and takes over the ownership of the land, and there are lost records and there are disagreements. Some of those land records and disagreements went back hundreds of years, trying to argue who owned the property in Kosovo or who owned the land in Afghanistan, and whether it is under control of the village and the culture and the tribe or whether it is under the control of an individual.

And so if we can find a way to continue and establish property rights and resolve differences in land disputes, and then be able to enforce the rule of law, which personally, I believe that in those cases we found that the first rule of law had to be enforcing contracts, and being able to have an agreement between buyers and sellers of commodities, or you were not able to build an economy at all.

Mr. BENISHEK. Colonel, do you have any input?

Mr. AHLNESS. Thank you, Congressman. Yes, I would add education. Education is critically important to what is going on in developing countries, and applying that not only to the males, but the female population.

One of the things that we did deliberately is when I was building my team is I made sure I was aiming for six to eight females on my team, because in Afghanistan, it is a very traditional environment, as a man I was not able to speak to women. That would be considered an insult or it would be not the proper cultural way to act. But with having women on my team, I was able to engage the 50 percent of the population I was unable to otherwise, and we were able to make differences in the lives of the people, improving the quality of life of the village overall, to make it be successful. And a lot of it came down to basic education. Absolutely, rule of law, education, you need to have a balanced approach trying to get things moving up together in collaboration with one another so people can be successful.

Mr. BENISHEK. Major General Sholar, do you have anything you would like to say?

Dr. SHOLAR. Interestingly enough, if you look at France and Germany, and I have looked at agriculture there a number of times, they don't own the land but they have a vested interest. They are incentivized to do well with that land. They don't live on the farms. You won't find a French farmer living on the land, and yet in many cases, their yields will be twice as much as ours. They are being incentivized in other ways.

I was in China a number of years ago, and they had gone from the community or collective farms to allowing individual farmers to own certain parts of fields.

Mr. BENISHEK. Well who owns the land in France?

Dr. SHOLAR. Pardon me?

Mr. BENISHEK. Who owns the land in France if not the farmer?

Dr. SHOLAR. The government. Same for Germany, and yet, the agriculture production is just spectacular. Some that we only wish we could emulate in some cases.

But in China, a farm family owns eight rows. Another family owns eight rows. Another family owns eight rows. But this was a great improvement from where they had been before where everything was consolidated and pooled and no one owned anything.

So there are probably various models that can be used. Yes, in particularly these underdeveloped countries, they need to have more say in what comes out of their labor. They don't now, and so whatever we can do to advance that cause would be very helpful.

Mr. BENISHEK. Thank you.

The CHAIRMAN. The gentleman's time has expired. Mr. Costa, 5 minutes.

Mr. COSTA. Thank you very much, Mr. Chairman, for holding this hearing. I think it is very important. Those of us here on the Committee understand the critical nature of agriculture's importance, its productivity, as well as to our national security, and world security. And so I am glad that you are holding this hearing, and frankly, we ought to do more to tell that story, because obviously, our ability to be successful over the last 200 years began with an agricultural nation that became very successful at it. Our reliable food supply is part of our national security. It gets taken for granted, but in my home State of California, we produce ½ the nation's fruits and vegetables, and it is such a diverse cornucopia. My family, like a lot of the families here and Members of the Committee, have been involved in farming and agriculture for generations.

But Major General Sholar, in your comment earlier in Afghanistan, and I have made multiple trips to Afghanistan as well as Iraq and other parts of southeast Asia and the Middle East and China, that whole area. When you said, "No water, no agriculture," that is just as applicable in California. We say, "Where water flows, food grows," which is the counter to your comment. And clearly, with the planet having seven billion people, it clicked about 18 months ago and by the middle of this century, another two billion, or nine billion people, imagine going from seven billion to nine billion in a period of 50 years. More demands, the importance of a food supply, are just obvious and critical. Our ability to provide water to

ensure that not only for in every region of America, but in other parts of the world with climate change, it is going to be absolutely essential. Our weather patterns have changed dramatically in California, and we have a broken water system. There are a lot of factors that go into that, but if in one of the richest states in the nation and the richest nation in the world with the technology and the know-how to manage and plan for the future, we can't get past the politics, and that is our problem in California primarily, the politics of water. God help the rest of the world where, as you noted, subsistence farming is where many of these countries are stuck in. And if they are hand-to-mouth on subsistence farming without the ability to have the reliability, the rule of law, all of the aspects of security in those nations but in a global sense is going to determine whether or not nation states can live together amicably or not in this century. Frankly without water, I believe water will become, as we continue to see changes in weather patterns, one of the major resource issues, like energy, as to whether or not nation states can get along together amicably or not. And we see those dynamics already taking place. In Kashmir and India and Pakistan, disputes on water are absolutely critical.

So I look at this security issue with agriculture, not only in terms of, well, you have served our nation and you tried to provide solutions to problems in those areas that we have all witnessed, but it is also our own national security. And it is complicated because the majority of Americans believe their food comes from a grocery store. According to the American Farm Bureau that two percent of America's population is directly involved in the production of food and fiber, when you look at farmers, ranchers, and dairymen. And in California, it is less than two percent, but yet, we produced \$56 billion of agricultural products at the farmgate last year in California.

So it is amazing that such a small percentage of the population of the United States and in every region of America can do so much, and there are a lot of reasons for that. Our land-grant universities that have distinguished themselves over 100 years, new technologies, new science, new ability to produce these products.

Mr. Chairman, my time has expired, but this is an issue that we have to stay on for all the right reasons, because it is not just the world's security and food supply, but it is America's security, and it makes it difficult for all of us to do our job when the majority of Americans think their food comes from a grocery store.

The CHAIRMAN. I appreciate the gentleman's comments. The gentleman's time has expired. Austin Scott, for 5 minutes.

Mr. AUSTIN SCOTT of Georgia. Thank you, Mr. Chairman, and gentlemen, thank you for your service to the country. In so many ways, this very issue that we are talking about hit home with me when I was in South and Central America looking at their agricultural capabilities, and the bottom line is, they can grow a lot of crops, but they can't get them to a market and they can't export them, and that means that their people, because of the lack of infrastructure, have been unable to capitalize on that, both at the local level and at the national level.

One of the things that I am concerned about, I mention this before I get into the question, would be: who is going to be farming

10 years from now? As both sides of my grandparents farmed and none of the grandchildren farm anymore, and certain taxes, like the Federal Estate Tax that are just absolutely devastating to our family farms, and something that I wish that we could find a way to resolve.

You have spoken on this issue before, but I just want to reiterate on this. The crop is successfully harvested in so many of the countries out there, the storage and transportation issues still pose a major threat to the food security. One of the things that is important in that storage is the energy supply and the ability to refrigerate that product. What low-cost alternatives or innovative ways to store and transport food have you seen that can be applied overseas while still maintaining the quality and the safety of the food, and what can other countries learn from the United States to help alleviate these problems?

Mr. OWENS. Mr. Scott, the infrastructure and our ability to store and market and move those foods, as you said, is critical. What we learned in places like Afghanistan and Kosovo was they did not have the electrical networks to have reliable electricity in order to have cold storage, for instance, the way we are used to cold storage, and that is where we asked each of the ag development teams and the land-grant universities to develop innovative ideas and going back to cool storage, and in some cases, utilizing solar energy where there was no electrical energy. Innovative ways to utilize storage connexes, buried to create underground cool storage, and ways that they could maintain the quality of commodities for an extended period of time. It may not be for the period that we could store it here in the United States, but we could store it for an extended period, extending their marketing period and the period of which they could then generate income for their families.

The other thing we saw is that there had to be a comprehensive look at all development. You had to look at roads, you had to look at where to put electricity. It is like where did you want to process a commodity? That is where the roads had to go to, that is where the electricity had to go to first. We have a lot of individuals that want to do a lot of good, and everybody wants electricity. Everybody wants good water. Everybody wants good roads. But you had to come in with a comprehensive policy and target that in order to enhance the agricultural ability to store, process, and market those commodities.

Mr. AHLNESS. And if I could just add to Major General Owens' comments, it is really key to look at, as he said, the cool chain, because a cold chain just isn't possible. It is not economically feasible or practical in places like Afghanistan, rural Afghanistan. What we did is we looked at how could they be transporting things at night, rather than just doing transportation in the day to help keep it cool. But also, changing how they approach trade. Instead of trying to sell grapes, they sold raisins. We used their traditional practices and leveraged that so that they could sell their product regionally instead of trying to rush something that is not sustainable, that is relying on dollars that won't be there in the long run to set up for them. And then limiting to the extreme high value crops, like pomegranates, trying to get them out and using the cool value chain type of process.

Mr. AUSTIN SCOTT of Georgia. Did you look at a dehydration and then rehydration, you can carry a lot less when you are carrying water.

Mr. AHLNESS. Right, Congressman. No, we did not. We were looking at how could we use traditional practice as much as possible, things that were culturally acceptable to them, rather than trying to introduce something brand new into the process.

Mr. AUSTIN SCOTT of Georgia. Thank you for your service in many ways, and this is one of the things that America sometimes takes for granted in this country, that every time we walk in the grocery store, there is going to be food on the shelves, and thank you for being a part of the solution.

The CHAIRMAN. The gentleman's time has expired. Mr. Walz, 5 minutes.

Mr. WALZ. Well thank you, Mr. Chairman, and I would like to stress, and thank you personally. This series of hearings on agriculture and national security and the broader global food insecurity issue is smart policy. Your intersection of leadership here and in the Armed Services Committee, like my colleagues, Mr. Gibson and Mr. Scott, that we care about this really makes a difference, so thank you for that. And to each of you for so many reasons, but it is important that you are living proof of the incredible asset and the dynamic nature of our National Guard, which you make it very easy to advocate as the one force of how we get at this. And you are making a point that all of us are stressing the idea of how do we bring all of America's smart power tools to the fight in making sure that these countries do not become havens of the destabilized, and each of you have stressed it in such clear terms that food insecurity: we can spend a lot of money training rebels and equipping them, but if you have a hungry population with no stability, that is not going to do us any good. And it is really interesting that we brought it here, because the policies we make here really matter. Recently, General Rodriguez, the commander of AFRICOM, asked Congress to change a policy to allow him to transfer DOD funds over to USAID in support of his mission for the very things that you are doing. He gets it, but that money is siloed up. The policies are siloed up, and we are not able to get at these success stories that you are showing. I appreciate each and every one of you for what you are doing.

Just a couple specific or maybe questions you can help me understand. This one, Major General Sholar, to you. Dovetailing off this USAID piece, USAID was asking for some of these funds. They have some or whatever. They are setting up an extension service type of program in Afghanistan. I would like you to talk a little bit about that, because the challenge for many of us is we know you can do the good work. I know Colonel Ahlness will do the work and his team will do the work, which I encourage all of you to watch the documentary he is talking about, if you want to see this in practice. Our concern is long-term sustainability when we hand it over to the Afghanis, and if you could speak on that maybe?

Dr. SHOLAR. Thank you, Congressman, for the question. I was in Afghanistan one time, 2006. I was in Iraq several times. I would like to say that my knowledge and information about Afghanistan is dated; however, when things don't change over centuries in a

country like that, a decade is a blink of an eye. It is interesting to hear my colleagues here talk about the success they had, and I am impressed with that. They did get a lot of traction, but it is still a very, very difficult place to operate.

I am heartened by the fact that USAID is setting up or has set up an extension service there. It is the age old question, do you give the man the fish or do you teach him to fish?

Mr. WALZ. Yes, correct.

Dr. SHOLAR. And in this case, and in all the cases, it has to be some of both. We will get no traction in those countries unless we lead them to some success, and we are doing that, but it is going to be a long haul.

And I would kind of close my comment on this by thinking about something that a colleague from Afghanistan told me many years ago about his country, and he was talking about the bureaucracy, but in today's vernacular, what he was describing is bureaucracy on steroids. It is very difficult for those leaders to have the best interest of their population at heart when they have their own issues, and we see that in all the countries we are working on of that nature.

Mr. WALZ. I agree, and I thank you for that.

Colonel Ahlness, I will go to you. We talk in the theoretical here of stabilizing nations. Well that is great, and that is our ultimate goal, but the strategy in the day-to-day stuff is those micro projects. You talked a little bit in your written testimony, Colonel Ahlness, in the Women's Poultry Training Program, small program, small investment. How big an impact and how can we duplicate that and make that spread?

Mr. AHLNESS. Well, in fact, that did spread because as we work these programs, we shared it amongst the ADTs, and we had monthly teleconference meetings that we shared amongst a country and would share these ideas about how it worked, how to make it effective, what were the best practices so it could be put in other areas. And that program was run specifically for widows, the most vulnerable population, and helping them to reach their own success to be successful for themselves. But also, there are other similar programs we could run and other types of training programs for the other farmers, help them be successful as well.

Mr. WALZ. The continuation of your program, it has been 4 years, Colonel Ahlness, since you were there. Are you getting feedback and what are you hearing about the seeds, literally and figuratively, that you planted there? What is happening today without you there and your team there?

Mr. AHLNESS. Well, and that was a key thing, Congressman, of the ADT was to make sure we had a 5 year program, so as a third, we were trying to transition the Afghans to lead. The first couple teams developed the program, got things going, transitioning, the fourth and fifth teams turned it over and supervised to our government agencies or the NGOs who had helped make sure things would be successful, and then also would try to make sure the Afghan Government budget system works so that they would get the money to implement the programs, rather than having it come from us.

Mr. WALZ. Smart stuff. Thank you, Mr Chairman.

The CHAIRMAN. Thank you. The gentleman's time has expired. Mr. Davis, for 5 minutes.

Mr. DAVIS. Thank you, Mr. Chairman, and thank you again to our witnesses for being here. I apologize for having to leave, but I do want to let my colleagues know, I talked to one of our colleagues, Mr. Bost, who is at home holding his 11th grandchild, so when you see him, offer him congratulations.

Major General Sholar, you mentioned the expected population growth in your opening comments, and I can remember sitting in Decatur, Illinois, 20+ years ago listening to Paul Erlich talking about the population explosion and how we weren't going to be able to feed the world. Some of the biotechnology advancements that we have seen in American agriculture have allowed us to do that.

With both of those instances, with the expected population growth and biotechnology, how important of a role do you think biotechnology is going to play in developing countries that you talked about and the rest of the panel has talked about?

Dr. SHOLAR. Well thank you, Congressman. If you look at a continuum of agricultural innovation and development, maybe you start with the turning plow, the cotton gin, somewhere in there, hybrid corn, and then maybe GE crops, genetically engineered crops, have made a dramatic impact on our country. They are making some impact in the rest of the world. Let's say they are not as embraced as maybe they are in our country.

Mr. DAVIS. Do you agree with that?

Dr. SHOLAR. No, I don't, Congressman, because if you look at the study that was just released by the National Academy of Sciences, 900 studies that they took a fresh look at, 50 scientists over a 20 year collection of studies and they have declared that GE crops are safe. This is something we have long believed to be true. It is really good to have someone else say that, someone with some credibility and authority.

And this gives us the opportunity to move ahead to the next generation. It won't stop all the naysayers certainly, but it is a huge success story. But there is a whole generation of GE crops waiting to be discovered. The technology is still in the lab. But they are going to cost money. They are going to cost money for the producer to grow them. The seed is going to cost more, and we are going to need to sell those crops. Whether that could be immediately available to those developing countries remains to be seen. We may need something in parallel. Norman Borlaug, the green revolution. It is abundantly clear we are not going to feed those nine billion people with current policy, current growth.

Mr. DAVIS. Thank you, Major General, and Colonel, thank you again for your service, too. You mentioned your time in Afghanistan recently, and can you talk a little, in that aspect, about storage and transportation issues, and what may be happening here in America that we can then translate over into societies like in Afghanistan that you are trying to help become self-sustaining, and how can we then market those advancements that we have here that may or may not work in a country like that?

Mr. AHLNESS. Thank you, Congressman. Well, looking at Afghanistan, there is virtually nothing there right now, so you have to look across a border and come up with practical, reasonable ways

for them to move forward. That is why we selected pomegranates as one of the crops for them to try to export regionally, because it is a high value crop that tolerates a cold value chain well. We were able to do that well and move it forward, but we had to be cautious with other crops like grapes that just didn't have the cold value chain to move forward. We help at the local level by, first of all, increasing production. That was one of our base missions. Second, developing a co-op so that there is an association of traders so there is choice to buy it, and when production does increase, it gets off the farm, and then working with the Department of State, USDA to build some of these regional partnerships so that they have a place to export it to. It is a slow growth and trying to get it to where you raise the water and all the ships raise at the same time is what our objectives were, but it has to be modest and very sustainable, acknowledging their poor infrastructure.

Mr. DAVIS. Major General Owens, do you have any comments on either of the subjects in the last remaining seconds I have?

Mr. OWENS. Well, the two things that we would look at, one is what Colonel Ahlness has talked about was we had 52 separate Agribusiness Development Teams deployed in Afghanistan that all tried different tactics with this, and each region had its own problems with different commodities that needed to be grown, which created value, and there was no storage or ability to move and market those commodities, and the need to grow commodities to actually feed the people, such as wheat, and those interacted together. So our critical infrastructure is so important to maintain and keep for the future.

Mr. DAVIS. Thank you all. My time has expired.

The CHAIRMAN. The gentleman's time has expired. Mr. Nolan, for 5 minutes.

Mr. NOLAN. I want to thank you, Mr. Chairman, for conducting this hearing, and thank our witnesses here for your distinguished services, particularly in such a dangerous place as Afghanistan has become. I would be remiss if I didn't point out how proud we are of the National Guard in particular, but Minnesota National Guard in particular has performed so brilliantly in all of its deployments throughout Iraq and Afghanistan and other places like Kuwait. We are so very proud of all of you.

I, for one, am particularly proud of the Minnesota Guard's effort on agriculture in Afghanistan. Some 40 years ago, this Committee established a bipartisan presidential commission on world hunger, and determined that food first was the foundation of security in the world. And it wasn't producing ornamental flowers and fat cattle for export back to the United States, it was showing widows how they could put together a little henhouse with eggs and some grain, and to be able to make a living. And so we are so very proud of that effort, and clearly, that is the key. That is the key to securing peace in this world.

So that is a compelling story I found with interest your story. We have joked about it, but it is the God's truth and other Members here have talked about it. You thought about going into farming or getting a job, and those of us from the farming country know that if you want to be a farmer, you still have to figure out how to make

a living. And you found a brilliant way to combine both, and nice work at it.

I wish we had more time. I have so many questions here I wanted to ask. I have looked through some of the Inspector General's reports on Afghanistan, and because it is such a dangerous place, because you can't inspect, because you can't audit. My question: how dangerous is it? If you can't inspect, you can't audit, we get reports that a lot of the money, whether it be USDA, USAID, non-governmental, governmental, so much of it ends up in the wrong places. How corrupt is it, and how much progress have we made in steering people away from the poppy seed production into food production?

You talked about the importance of the co-ops, and you read stories where they had a brilliant crop and just an abundant production, and it ends up rotten because they don't have a way to get it to the market. There are kind of some broad questions. If I could, I would like to start with you, Colonel Ahlness. How dangerous was it? How corrupt is it? We hear it is the number one narco-state in the world. Business communities say it is the most corrupt nation in the world. I can't imagine what it must be like to have to work in that kind of an environment, because of its importance and because of its danger, but thank you. Please respond.

Mr. AHLNESS. Thank you, Congressman, and Afghanistan is an incredibly corrupt place, and it is very difficult. That is why when I went in, I said money is not going to be a metric for us, so we are not going to measure our success on how much money we spent. We want to build it based on how successful we are.

For example, one project, we wanted to build a 10 acre perimeter for stockyard, and when we first started and the first bid went out, it came in at \$2.1 million for that wall, and I said no. But the Afghans' culture is to come in with a wildly high bid and then negotiate down, but we had to work on 10 U.S.C. rules, which is take the lowest acceptable bid. As a commander, I said all those bids aren't acceptable. We had to do that four times until about 8 months into our deployment we finally built it for \$60,000. But that is just the way it is, and unfortunately, people don't have the cultural understanding, so a lot of times, we way overpaid and the Afghans actually looked at us as corrupt because we way overpaid for things and we didn't negotiate. But we have to follow our own laws as well, so sometimes our laws get in the way of what we need to do well.

Just one other thing is the way to beat poppies, there wasn't a lot of poppies in our area, it was an Afghan issue and the Afghans addressed it, and they addressed it as a value decision. We could not out pay for farm produce if someone chose to produce poppies, but we talked to them and the Afghans talked to them, and said do you want your sons to get hooked on this and they would say no, and as a result then people won't do it. And that is what has to be a valued decision.

Mr. NOLAN. Thank you so much. My time is up.

The CHAIRMAN. The gentleman's time has expired. Mr. Kelly, 5 minutes.

Mr. KELLY. Thank you, Mr. Chairman, for talking on two of my favorite topics in the world, which is agriculture and the military.

I have spent about 30 years and I have served with Colonel Briorf. If you knew him, I went to war college with him, have worked with the 36. I have also worked with the Red Bulls and a war fighter a couple of years ago, so I understand the importance of our National Guard.

Colonel, you had a comment, money is not a metric or not the metric to use when you are dealing with them. And having been in Iraq, but Afghanistan, I know the cultures are similar in a way.

We have had many hearings on whether or not to use bags of rice with USAID written on them or vouchers or money. Which do you think is less likely to be used in a way that we intended it to be used?

Mr. AHLNESS. I think you are right, Congressman. It is best if we can bring in the services, and better yet, if we can align our resources so we can monitor and track it going through their government systems so we can help train them to do it the right way and supervise it, and hopefully catch them doing the right way and keep them doing it the right way so we can be successful.

Mr. KELLY. But it is very easy for money or vouchers or other things to be misappropriated in these countries which are still forming and where corruption is a little different. They have different cultural values than what we have, correct?

Mr. AHLNESS. Absolutely, Congressman, and it is well known that a lot of U.S. money ended up in Afghani bank accounts in some third world country, or as the general just relayed to me this morning, there are a lot of very big houses around the Ministry of Agriculture in the Bagram area, so I mean, we knew that money was diverted where it shouldn't have been.

Mr. KELLY. And again, I thank all you gentlemen for your service, both in agriculture and in the military. I actually said it on the 4th of July this year. One percent of our nation serves in our military forces, and you guys said two percent, but it is between and one and two percent farm, and so you are in both of those categories and that is very important to me.

One of the things I want to focus on is the National Guard. Mississippi has a partnership with Uzbekistan. Each day, it has a partnership program with the states. Many times, we focus on the military training aspect of that. Have we looked at or do you think there is potential to use that same program to help them set up systems and co-ops and those things with those state partnerships with the National Guards to help them set up a working—

Mr. OWENS. Mr. Kelly, thank you for your service, and yes, sir, the State Partnership Program is very unique. General Ahlness would probably let you know that it was a Mississippi security detail that provided security for that Minnesota ag development team in Zabul Province, and Mississippi was gladly one of those states that helped us deploy Agribusiness Development Teams.

The State Partnership Program is limited today to military to military relationships. There is a potential in those areas such as Africa and other places where we have state partners for military and civilian relationships, and I would encourage the Committee to really look at how do we get to a point where we can have military to civilian that then can translate to civilian to civilian. Because right now, it is military to military and then you don't go to the

civilians, and that state partnership gives you a lot of capability and reach-back to those individual states with those state partners, and they develop such an important relationship. And you will know that in Mississippi, they bring our partners over and train them in Mississippi, and Mississippi National Guardsmen go and train them, and we have a great potential in the conduct of what we would call stability operations, either the phase 4 of a conflict or even after a total conflict, or maybe in prevention of a conflict in places that the State Partnership Program, if it was expanded to allow for military to civilian engagements, could use things like the Agribusiness Development Teams.

But I will tell you that a whole brigade combat team like the 155th in Mississippi brings a whole community of civilian skills to the table that have the potential to, we were able to fix a factory in Afghanistan that was a furniture factory because we had a mechanical engineer and a furniture design engineer that were Calvary scouts.

Mr. KELLY. Let me real quickly, General. Stability is based on food sources in many cases. Is there any statutory prevention that keeps the partnership program from being used like that.

Mr. OWENS. There is a statutory prohibition of the military to civilian engagements at work.

Mr. KELLY. I yield back, Mr. Chairman.

The CHAIRMAN. The gentleman's time has expired. Mr. Ashford, for 5 minutes.

Mr. ASHFORD. Thank you very much, Mr. Chairman. This is a very intriguing topic, and I know back in Nebraska and my district I am always kidded because Omaha, and for being on the Agriculture Committee, because we only have one farm in Douglas County. We actually have ten, not one, but we obviously are exceedingly interested in agriculture. It is our number one industry.

This concept that you are talking about, Major General Owens, and everyone is talking about where the veteran National Guard member or veteran comes back to Nebraska and wants to go into farming or agriculture is very compelling. And when we talk to our veterans, without a question, it is one of the top two or three professions that these veterans want to get in. No question about it. And we have our veterans job fair type things or meetings, we talk about entrepreneurship and starting your own business and so forth, it comes back to agribusiness in some way, or agriculture.

I am very interested in your comment about how someone comes back from service, leaves the military, gets into agriculture. They would be a fabulous ambassador to go back dealing with other civilians—not with military, necessarily, in those countries, but civilians, and that is what you are referring to. Is that essentially what you are talking about, Major General?

Mr. OWENS. What we are referring to is we have many veterans which have come back and have served on active duty and then joined the National Guard returned home, and those National Guard units have developed partnerships with states and countries all over the world and those partners right now are limited to military to military engagements and training and development. There is no potential to use those civilian skills that they have within those National Guard units in those individual states like Ne-

braska, and work with their partners to train on a civilian side and then be able to hand that off at some point to a civilian.

Mr. ASHFORD. Right, that is an excellent idea, but in addition, and we have our partner countries as well as you suggested, and the National Guard does engage in those military to military collaborations, but it would be an excellent idea to expand that.

But also as an opportunity for veterans who aren't in the National Guard who have served in these countries, and whether it is in Africa, for example in some of our industries in Nebraska are engaged in a single pivot farm operation in Africa where you can do a single pivot valley irrigation, Valmont single pivot irrigation system, and have ten or 12 small farms that actually are starting to produce and distribute food in those countries, and mostly in east Africa. But those people that are coming back, going to work for Valmont, let's say, can go back to Africa as part of these kinds of programs, even though they have left the service. I see that as an opportunity as well as your example. I don't know if you have any other comment. Colonel, do you have thoughts?

Mr. AHLNESS. Yes, thank you, Congressman, and that is one of the reasons that I ended up at Cargill is that Cargill recognizes the value proposition of hiring veterans, and so I bring to that force and we joined American corporate partners where we help mentor veterans as they are considering their transition about how do they make it to corporate America, and in our case specifically, in the agribusiness realm. And then we are also looking at how can we go to the bases or posts where service members are being discharged as they transition out of active duty, and they want to come back home. And of course, our company, Cargill, is across the nation, 750 locations, so we want them to come back and work for us. Those are the value propositions veterans make, and we are trying to bring them into the business.

Mr. ASHFORD. And you are doing an excellent job in Nebraska at Cargill, and thank you for that. Near my district, the Cargill plant there is a major employer of veterans, and then actually exchanging those people going back. Let's say they are working for Cargill and 6 months leave from Cargill and go back and work with a National Guard unit, even. A lot of flexibility could be built into that.

Mr. AHLNESS. Yes, Congressman. We are full engaged or signed on to the ESGR Statement of Support, so we fully support that above and beyond the legal requirements.

Mr. ASHFORD. Thank you, Mr. Chairman.

The CHAIRMAN. The gentleman yields back. Mr. Newhouse, 5 minutes.

Mr. NEWHOUSE. Thank you very much, Chairman Conaway, for holding this hearing. I want to thank all three of you gentlemen for being here, and thank you for your service, both in the military as well as your work helping other nations rebuild their infrastructure.

I couldn't help but remember something I heard a long time ago. Former Secretary of Agriculture, Earl Butz said something like you can't talk politics to a starving man, which if you think about that, it is a lot about what we are talking about here, how important food stability is in a peaceful world that certainly all of us are

striving to achieve. I appreciate all of your work in helping people be more sustainable in their food supply.

I did have a couple of questions that I wanted to talk about or ask you about. In my former life, I was the Director of Agriculture for the State of Washington, and I had the opportunity and privilege of going on several trade missions to help increase international trade. And I realize that some of the work that you folks have been involved with, trade means different things. It may not be across the ocean, it may be just a few miles down the road. But I wondered if you could talk about the importance that trade, it sounds to me like that you have worked on that, Colonel, and both Major Generals have as well, increasing the people's ability to produce a little extra to augment their income. Could you talk about how important that is in building relationships? We are engaged in a lot of discussions right now concerning international trade, increasing partnerships abroad, and is that something that you saw as important in helping a country or a people better themselves? Colonel or Major General, whoever would like to start.

Dr. SHOLAR. Let me just, Congressman, start by correcting the record just a bit. I am an Army Reservist, not a National Guardsman, with deference to my colleagues to my left. We work close together—

Mr. NEWHOUSE. I am sorry if I made that mistake.

Dr. SHOLAR. No, that is okay. I just would be remiss if I didn't point that out.

I will say that my convoy security guard when I was in Afghanistan was from the 45th Infantry Brigade, Oklahoma National Guard, and I was proud to have them.

At one time, Afghanistan was noted for the high quality of several of their fruit and nut products for export, world renowned, and now we have broken infrastructure, broken production, broken export, broken everything. They can't produce for themselves. That is how quickly things can deteriorate when there is not a focus on doing things right.

And so I will pass the baton to my colleagues here, but at one time they were so much better than they are now.

Mr. NEWHOUSE. That is interesting. Thank you.

Mr. AHLNESS. Yes, Congressman, I do that too. Everyone talks about the great raisins that came from Afghanistan in 1973, and how they used to be in the stores here in America, but as was said, 30 years of war has destroyed the infrastructure and a lot of the knowledge around that.

What we tried to do is work how could we demonstrate? I talked about pomegranates. We worked with the Department of State so that they could use excess air capacity that came in and actually to pay for that and ship over to the Mideast so they could see that what is in the realm of possible. We demonstrated the realm of possible, and then helped them develop slowly the infrastructure so they could do it themselves.

Mr. NEWHOUSE. I appreciate that.

Major General Owens, as a fellow ag economics major from Washington State University, you are Texas A&M. I just wanted to let you talk a little bit about the work that you have done with

land-grant universities and maybe give us some examples of some of the things that you saw as important there.

Mr. OWENS. Well thank you, Mr. Newhouse. What was important is, as I mentioned earlier, we fielded 52 different Agribusiness Development Teams from 17 different states, and that didn't mean that only 17 states contributed. For instance, Colonel Ahlness had a member, that was part of his team, was from North Dakota. They trained with North Dakota State University. The land-grant universities were essential to build as partners with each of the Agribusiness Development Teams. The land-grant universities provided the reach-back capability to the right technical experts that could help. We didn't know about pomegranates, we didn't know about grapes, but Fresno State knew about it or UC Davis knew about it, or Purdue knew about it, or University of Nebraska. Somebody knew.

Mr. NEWHOUSE. Or Washington State, maybe.

Mr. OWENS. Or Washington State knew. Washington State was actually beneficial in a lot of the wheat work that we did with their great wheat growing regions in Washington. But the land-grant universities freely opened up and provided that reach-back capability and a partnership. For instance, Texas Extension Service put an Afghan county on their website that allowed the Agribusiness Development Teams from Texas to have the exact same reach-back as any extension agent anywhere. And some of the states even offered us through VTC training for Afghan ministers and extension agents by VTC, and to their universities or local high schools. It was a great partnership that we could reach back and forth between the land-grant universities and the Agribusiness Development Teams.

Mr. NEWHOUSE. I appreciate that a lot. Our land-grant universities do so much for us here nationally, and it is good to hear that they are working so hard internationally as well.

I appreciate your indulgence, Mr. Chairman, and I yield back.

The CHAIRMAN. The gentleman yields back. Mr. Yoho, for 5 minutes.

Mr. YOHO. Thank you, Mr. Chairman. Gentlemen, I appreciate your being here, and again, I appreciate your service as everybody else has said. What you are doing is so important, and as one person said that you can't talk politics with somebody that has an empty belly. And George Washington always stated that to have national security, you have to have a national food security, too. And so what you are doing is so important.

Major General Sholar, you were talking about the GMOs. How well are they received in other countries? I know you talked a little bit about that, and then you quoted that article which is so important that we and the USDA get out there as a policy, a public awareness, and then there was the article that just came out with the 100 Nobel laureates all in agreement on the safety, the effectiveness of the GMOs. My question for you would be what would you recommend on a policy to get the benefit of these products out there, knowing the success of them, the safety, the effectiveness, and the efficiency of growing them?

Dr. SHOLAR. Well thank you for the question, Congressman. I believe we just have to stay the course. This has not been an easy

road to get the adoption of GM crops or GE crops that we have. There is still confusion out there in some parts of our culture, but there is among certain elements of our society, that will always be the case. There will be people who are arguing against certain foods, even if they are not GE. So there is something to overcome there.

It is important for us to have as unified a voice as we possibly can, though. At the same time, we lament the fact that they are unaware of where that steak on their plate or where the food on their plate comes from, and yet, we have a part of our society that is more linked to where that food is coming from than ever before. We have to take advantage of that. We have to educate one side and be sure that the side that is engaged in understanding their food has the right information.

And so to put a bow on it, we have to have a unified voice.

Mr. YOHO. Okay, I appreciate that, and I agree 100 percent with you. And that is one of my goals out of our office to go ahead and do that.

Major General Owens, you were talking about the land-grant universities, and I come from the University of Florida and I have to give a shout out to them, so go Gators. They have done so much work on those, extending the production of agriculture. We have a great food animal production program that is going on in northern Africa.

But you were talking about going into these countries. How do you go into a country when you have the whole continent of Africa has 1.11 billion people on the continent, 650 million don't have electricity, to go in there and develop an agricultural product or market or sector, and you are talking about the corruption that is going on. We were in the Congo, the President of the Congo and his twin sister are billionaires, and we give millions of dollars, over the years billions of dollars, when you have the corruption that is going on in there. Do you work closely with MCC, the Millennium Challenge Corporation, and do you put metrics in place that you grade these countries, and if they don't meet those metrics on corruption, on infrastructure, the rule of law, do you pull out or are you guys willing to do that? Or are there waivers through the military? I know you are trying to do other things to get that assistance in there.

Mr. OWENS. Well one of the things we learned by the work that we have done in some of these other nations on ag development is that large scale projects that spend a lot of money, it is very hard to control and sustain those. We even found that in small scale projects. For instance, some of the Agribusiness Development Teams in the protection of watersheds began to build check dams, the old-fashioned, just small check dams, to preserve the watersheds and reduce erosion. What we found is when you built something for individual people, then they came back and expected you to pay to maintain, to pay to continue and sustain it. We had to find innovative ways to bring in some type of ownership.

Unfortunately, I would say in some of those projects, due to corruption 40 or 50 percent sometimes of the money just gets skimmed off somewhere in the process. And unfortunately, it is very difficult to sustain. Our long-term development projects some-

times turn into a series of 1 year projects rather than a 10 or 12 year program like the ADTs put in place to make things happen.

Mr. YOHO. All right, thank you. My time has expired, but again, I appreciate the work you guys do. Thank you.

The CHAIRMAN. The gentleman's time has expired. Mr. Lucas, for 5 minutes.

Mr. LUCAS. Thank you, Mr. Chairman, and I can't help but think for a moment about the comments from my colleague in Georgia, Mr. David Scott, about the unique and wondrous nature of the land-grant system. And sometimes, we forget in this country, and even occasionally in this Congress, how wondrous it was that since the 1862 Morrill Act that a university education has been available to virtually every American, and prior to 1862 that was not the case. This was the first country in the world to make that possible. And in the 1890s it came into the system, in the 1994, the creation of the land-grant system, followed by the Hatch Act and the Agricultural Research Service and all of those things, and the Smith Lever Act in 1914. The ability to train professionals, scientists, and actual technicians; the ability to research and to disseminate that information.

I turn first to you, Major General Sholar. You commented earlier about land ownership patterns in various countries, so obviously in your career as an agronomist, in your 39 years as a military officer, you spent a lot of time in and out of the country. I will then ask the rest of the panel to follow on this, if you would, but are there any other systems around the world that are comparable to our land-grant, ARS extension service model, and if so, since there is always room for improvement everywhere, does anybody on the planet do it in a way that maybe we should think about enhancing this combination of resources that we have employed for a century plus?

The floor is yours, Major General.

Dr. SHOLAR. Thank you, Congressman, for the question. Obviously, I am a strong, strong advocate of the land-grant system, having spent more than 40 years of my life working in it. Western Europe models our system some, but not the intense local help that we provide with our extension system. One of the major differences, and of course, it is a common issue with our commodity groups in our country, is the incentives that those countries provide directly to their producers.

But I recall, very briefly, during the floods in New Orleans and discussions about how that could have happened, how we let that infrastructure decline, degrade to where that could happen, and they were talking to a gentleman from the Netherlands, and he said we have a way of life that we like. We are willing to invest in our infrastructure to live below sea level. I am not suggesting that we attempt to live below sea level, but to have this to continue the preeminence that we have had, we have to continue to invest. And we have taken a knee just a bit. We are not investing at the level we were, either at the state or the Federal level. I know the fierce competition for those dollars, but Congress and all of our leaders in the country have a some tough decisions to make to maintain where we are.

Mr. LUCAS. It is still fair to say, General, that our land-grant and Agricultural Research Service extension service model is still the best in the world?

Dr. SHOLAR. Absolutely, absolutely. There is none that even comes close, Congressman.

Mr. LUCAS. My other two friends on the panel, any observations from your experiences in other countries or in other parts of the United States along this line?

Mr. AHLNESS. Yes, Congressman, I don't have experience in other parts of the world, but I can say that as I was training up for the mission and during the mission, any state that I reached back to, they freely gave the information. And when we had issues, the network of the different state extension services, they would talk to one another to get us the answers we needed. It was a tremendous resource that was much appreciated and made a huge difference.

Mr. LUCAS. As this Committee went through the last farm bill process, I was amazed occasionally by the observations of some people about why do we spend the money on our land-grant colleges? Why do we spend money on research? Why do we do extension? An occasional refrain from some of my idealistic colleagues was let corporate America do it. But the fact of the matter is, the land-grants train the scientists, you gentlemen, provide the basic skills, create the pool then that the rest of the market economy uses to perfection, and in all fairness, the Agricultural Research Service provides a balance with corporate America to make sure that we all have access to technology in affordable ways, and in the extension service, disseminating that information. I mean, just disseminating that information so critically important.

Again, sometimes we in this Congress and in this country overlook what works so well, so efficiently, to our detriment, and I hope that is never the case, and I appreciate the efforts that you all have provided with all of the systems we have, and why it is important to keep it.

And with that, I yield back, Mr. Chairman.

The CHAIRMAN. The gentleman yields back. Mr. LaMalfa, for 5 minutes.

Mr. LAMALFA. Thank you, Mr. Chairman. Major General, Major General, Colonel, welcome. Thank you for serving.

Following back up on the GE crops and such, Mr. Davis talked about that and Mr. Yoho and others, I am sure, before I was able to arrive. Again, in a growing population, it is expected to hit nine billion by 2050, that it would be a very strong tool to have available. Food insecurity, a possibility to increase production. We control better nutritional aspects of the food itself. But again, there is skepticism. We talked about it here domestically. What level do you find that skepticism in other countries and other continents? Is it a big deal like it can be here so much? Is it something that we need to work and develop more confidence in this as a tool on that, especially if the alternative is going to be malnutrition? All three of you on the panel, please, if you wish to.

Mr. AHLNESS. Congressman, I will just start first. Sorry, Major Generals. I only have Afghanistan to look at, and we distributed Ug99 rust resistant and drought resistant wheat to the farmers, and that is what they relied on for their subsistence. The other

crops tend to be test crops that they sold for profit. They had no issue. In fact, the grain they saw was Ug99, they were relieved because they knew that they would be able to plant more and harvest more for their families, and there would be less food insecurity. I saw absolutely no problem with using that type of genetically modified seed for their crops.

Mr. LAMALFA. Was that more third world or westernized?

Mr. AHLNESS. Again, that is my experience in Afghanistan only. That is all I can speak to.

Mr. OWENS. I would say in our developing countries there was not the resistance to the GMOs. The biggest problems we had with GMOs was the affordability of the technical fees and affordability of those crops, and being able to sustain any utilization of the technology.

The other thing I will say is that when you have people that are malnourished and there is food insecurity, they don't seem to worry about a lot of those other issues.

Dr. SHOLAR. And I would just add, one of the things we have not mentioned this morning is stress tolerant crops. We have talked about disease resistant, insect resistant, but the tolerance to stress, and part of the reason for that is it is so difficult to get at. We have had work on drought stress on crops forever, or for a long time, but we have not made the progress we have in other areas. But that is an unfulfilled dream or wish. We will not get more water. Water tables are declining precipitously here in our country and around the world. I read where the water table in one area is dropping by 25' per year. That is mind boggling. We are going to have to have more progress with drought or stress tolerant crops.

Mr. LAMALFA. What more should the United States, either in the private-sector or the Federal Government, be doing to help with promoting this GE science, or do you think we are doing enough? What do you think on that?

Dr. SHOLAR. Well, Congressman, one of the things that is really interesting to me, the ag research leader of Bayer Company recently had an article in *Seed World Magazine*, and the gist of it was how we as a people should be investing more heavily into public research. Now this is one of the largest companies in the world not exactly clobbering us.

Mr. LAMALFA. U.S. investment or international?

Dr. SHOLAR. U.S. investment, because we have let that decline some, and we are not going to maintain our position—

Mr. LAMALFA. Do you see international investment as being a part of that, too?

Dr. SHOLAR. Absolutely, and of course, part of the problem is the consolidation of the big players. That is going to be an issue, what will they be interested in? The public-sector has to maintain the role that they have, because the private-sector will be interested in some things, and not everything.

Mr. LAMALFA. What can the developing countries be doing more so?

Dr. SHOLAR. Pardon me?

Mr. LAMALFA. What can developing countries be doing more so, either in that directly, or what would you say in general?

Dr. SHOLAR. Well, I would just say that this engagement that we have at all levels, both at the government level, at the education level, what these gentlemen's areas of expertise, because there is so much bureaucracy, so much corruption. Some of the support is going to drift away, and so it is just such a complex unsophisticated world in some ways, but we have to remain engaged.

Mr. LAMALFA. Maybe us as an outside source might be better to help protect that until it is more ready for—

Dr. SHOLAR. Absolutely.

Mr. LAMALFA. Okay, thank you, Mr. Chairman.

The CHAIRMAN. The gentleman's time has expired. Mr. Allen, do you have questions? Go ahead and start the clock. No, I was teasing. Reset it. I was teasing.

Mr. ALLEN. No, go ahead.

The CHAIRMAN. Mr. Allen is recognized for 5 minutes.

Mr. ALLEN. I apologize. There is a lot going on this morning here in this town, but my main reason for getting back here is I wanted to thank you for your service. I am from Augusta, home of the Cyber Center of Excellence at Fort Gordon, and I do appreciate your service, not only to this country, of course, agriculture is the largest industry in our district, largest industry in our state. I am a farm boy, and so it is very dear to my heart.

What I wanted to do, Colonel Ahlness, you had mentioned in your testimony due to the 30 years of ongoing war, much of the agriculture practices that would normally have been passed down generation by generation were lost because of family members being away at war. My dad was actually drafted in 1942 and served to 1945. You also said that 30 years of war had changed the alfalfa crop, among others, and can you expand on how a prolonged war in the region affected their ability to grow a sufficient food supply?

Mr. AHLNESS. Yes, Congressman. It is very simple that a lot of people with the knowledge were killed because of the war, or taken away from the business of growing crops. We would see that we could increase production of almond trees by up to 30 percent by just teaching them again how to properly prune the tree. Now that is real basic stuff, what is a proper way to use an integrated pest management plan to help make sure that they reduce the pest impact on their grape crop, and by doing that, it could increase the production by ten percent. Replacement of root stock, they were so concerned about losing the production capability that they would not remove old trees from their orchards, they would welcome us giving them new trees, but they wouldn't take the other ones out, and we are trying to help them understand that you have to remove those things to move forward. Things that they had understood in the past, but they just forgot that because they are fighting. How can I make sure me and my family survive? We are going to hold on to what we have and not try to do the right type of practices to advance their needs.

Mr. ALLEN. Well, that is the biggest responsibility I see of this Committee, because our farmers are aging out, like many of our skilled workforce, and so we need to get young people engaged. Any ideas that you may have talked about this morning, when our veterans who come back and they are looking for something to do?

And I will tell you, there is nothing better for the mind than nature and the farm, in my opinion. In fact, my dad used to have to take long walks when things weren't going just right, but he would come back from that long walk and he would have a new idea, and he would be invigorated, being out there on that farm. But is there any idea out there about how we can get our veterans coming back home that maybe have not had farm experience that are looking for a great industry to get involved in that we can promote here on this Committee as far as our veterans are concerned? I will leave that to any of you to answer that question.

Mr. AHLNESS. All right, Congressman, I will give it a start.

Mr. ALLEN. Okay.

Mr. AHLNESS. Since I am working in the corporate world now and one of my missions is to help bring veterans on board, we are looking out there and we see a lot of good things out there.

First of all, there are 45,000 nonprofits that are oriented on veterans, and a number of those nonprofits, I got that from the U.S. Army Soldier for Life Program. There are a lot of good nonprofit groups out there that are helping veterans say how can I make this transition into something that I like? And there are a number of those focused on agriculture. Now what I would say is how can we help them find their footing and get the word out to the veterans or to the transition posts, the transition programs, so that people can learn about that?

As I stated earlier in my testimony, I didn't know all that was available in the agribusiness realm, so I went in the Army, but if I would have known about some of those other opportunities, it would be a great opportunity for a lot of these veterans to find their new passion once they leave their service.

Mr. ALLEN. Any other comments on that as far as engaging our vets in this industry?

Dr. SHOLAR. Well, I am aware, Congressman, that this Committee has engaged the veterans and heard from the veterans and it is about engagement. These things aren't going to solve themselves, and I would applaud the work that this Committee and others in Congress are doing. These individuals deserve everything we can do for them.

Mr. ALLEN. You better believe it. Yes, sir.

Mr. OWENS. Yes, sir, engagement and education and the ability to find a financial means to get into agriculture, any of those areas would be beneficial for our returning veterans.

Mr. ALLEN. Well, you have my support. Thank you very much, and I yield back, Mr. Chairman.

The CHAIRMAN. The gentleman's time has expired.

Well, gentlemen, thank you very much for the testimony this morning and answering our questions. This hearing on the interconnectedness between national security and agriculture is one of a series we have done. This has been really terrific information this morning to see your firsthand experience in other parts of the world where it is clearer the connectedness between feeding folks, hunger, and the agriculture industry, the impact it has in the economy and their own national security.

We have taken our advantages for granted for way too long, and part of our role on this Committee is to try to help point out to ev-

eryday Americans that having not only the most abundant and safest but affordable food and fiber supply is not accidental, and they have a vested interest in maintaining a strong, vibrant production agriculture industry and the impact that has on rural America couldn't be more important, and then the link to national security, of course.

I was privileged to spend one Sunday afternoon in Jalalabad before the Agribusiness Development Teams came into existence, and I was with a group of 101st Airborne warriors sitting around a table, basically having a Chamber of Commerce meeting because they were trying to figure out how to use the agriculture assets there in and around Jalalabad. You mentioned pomegranates. That was one of their products as well. How they could get it to Kuwait, because they thought they had some contracts in Kuwait to export this stuff, but they need electricity and they need refrigeration, and these are warriors. They didn't know "come here" from "sic 'em" about any of this stuff, but they were fully engaged trying to figure it out on behalf of the Afghans.

The day before, the Saturday before, they had been in an 8 hour running gunfight with bad guys. They took that hat off, and put the Chamber of Commerce hat on. They were really excited about a group of National Guardsmen who were also warriors but were farmers from Missouri that were coming in a couple of months, because they were excited about some real-life agricultural experts who made a living doing it were on the way to help them with that. This was maybe the forerunner to the Agribusiness Development Teams, and I got to see that for myself, and I was really impressed.

You all served for a long, long time. We ask our military to do a lot of things. Many times, we ask them to do stuff they are not qualified to do. That never stops them, never hinders them. They just go get the job done, so thank you for your long service. I appreciate that.

As our nation sets priorities for resources, against a backdrop of \$19 trillion in debt and growing, I guess all the competing issues that are out there, this hearing and your testimony will help us convince our colleagues on both sides of the aisle how important the resource allocation that we do wind up with that goes to ag education and ag research and the safety net that underpins the production agriculture system in this country that it is one of those priorities that we need to work on and protect as we try to cope with both the struggle of limited resources and continued challenge we have, moving forward.

Under the rules of the Committee, the record of today's hearing will remain open for 10 calendar days to receive additional material and supplemental written responses from the witnesses to any questions posed by a Member.

This hearing of the Committee on Agriculture is adjourned. Thank you.

[Whereupon, at 11:55 a.m., the Committee was adjourned.]