

Statement of  
James R. Sholar, PhD  
Major General, US Army (Ret)  
and  
Professor Emeritus of Agronomy, Oklahoma State University

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“American Agriculture and National Security:  
On the Ground Experiences of Former Military Leaders”

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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 two and a half 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 US 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 cents. 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 committed 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 University Land Grant 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 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 9 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 US 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 21<sup>st</sup> 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 per cent 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 underperforms 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 US 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 1960's and 70's, 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 secondly, 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 US 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.