Agriculture's Realignment

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The title of this year's Ag Symposium is "Structural Transitions in Global Agriculture." It indicates there are sizable adjustments being made domestically and internationally in agriculture. In the past few years, agriculture has experienced large swings in crop and livestock prices, the growth of a global biofuel market, and significant differences in crop and livestock returns. Looking forward, agriculture faces the challenge of feeding an ever-growing population and meeting a wide array of consumer demands. It seems the challenges are larger and shifts are more demanding than ever before. But when you look back at the history of agriculture, we see that agriculture has always been in constant motion, adjusting to new technologies, demands, and preferences.

Below is a graph of land use in Iowa over the past century (Figure 1). This shows how Iowa, and I would argue global agriculture, has always been adjusting to producer and consumer demands. As we see when we look back in the early 1900s, oats was the second largest crop in Iowa. I would argue this was effectively a biofuel impact as you look at the machinery we used on the farm at the time. The typical farm machine was the horse and oats powered the horse. As horses were gradually replaced by tractors, oat area gradually declined in Iowa and soybeans rose to become the number two crop in the state of Iowa. Again, I think this reflects the combination of consumer demands and biofuel issues as soybeans are a major crop for the production of biodiesel, the fuel for tractors. Through this one example, we can see how the biofuel market has always been a major factor for agriculture. But we also see how demand impacts production patterns across wide areas of agriculture.

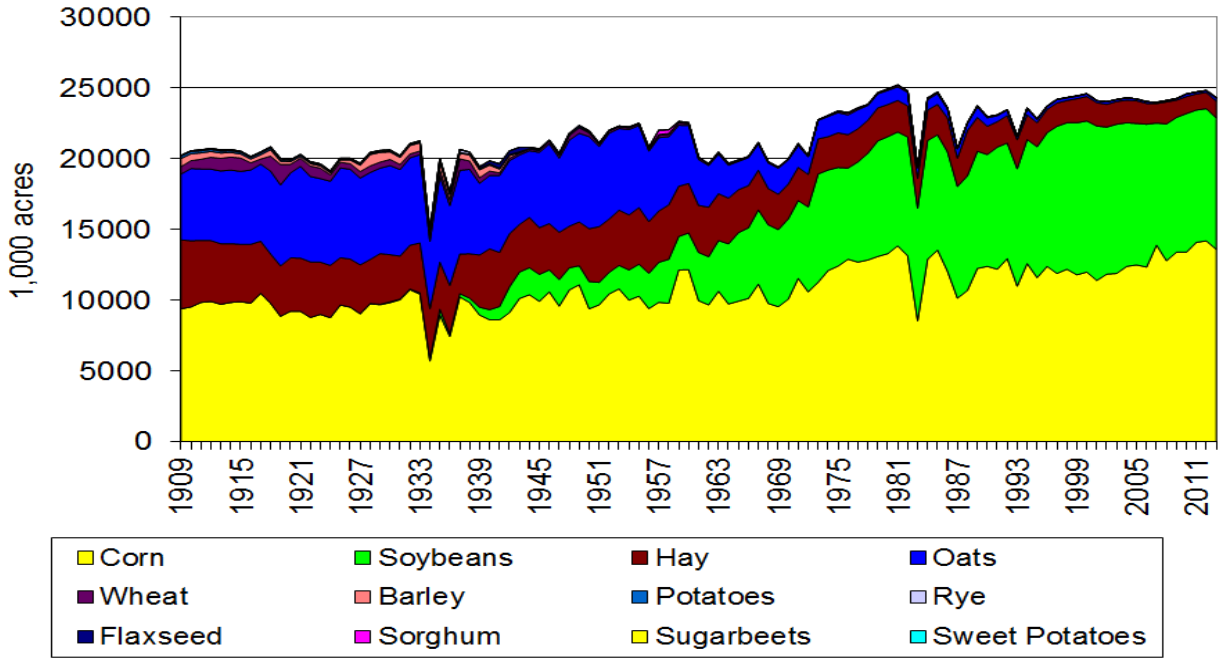

Figure 1. Iowa Land Use (Source: USDA-NASS)

Throughout the 2014 Agricultural Symposium of the Federal Reserve Bank of Kansas City, we have seen a number of presentations looking at how producers, agribusinesses, rural communities, and agricultural lending institutions are adjusting to the current dynamics within agriculture. The producer adjustments have been driven by significant changes in net farm income over the last 10 years and a balancing, or rebalancing if you will, of crop vs. livestock returns. As the keynote speaker, J. P. Gervais, pointed out, net farm income rose significantly over the past 10 years, reaching record levels. Current projections show that net farm income will decline significantly over the next couple of years, but will remain above the 10-year average (Figure 2). So agriculture continues to have good revenues coming in to the sector. However, costs have definitely increased, margins have definitely tightened, and the balance between crops and livestock has struggled to be achieved. Over the past 10 years, the crop sector lead the charge in agriculture as crop prices and crop margins added significantly to net farm income. On the other hand, the livestock sector had to internalize those high crop prices as high feed costs. That reduced livestock returns and pushed consolidation and contraction in the sector. Looking forward, the scene has changed as crop prices have fallen, crop margins have retreated, livestock prices have reached record levels, and the potential for livestock returns is large. However, costs continue to limit the ability of the livestock sector to expand. Before, the issue was feed availability and cost, now the issue is animal availability and cost. The cost to obtain animals to build up livestock herds has increased significantly. As agriculture moves forward, this rebalancing between crops and livestock will continue as the agriculture industry depends upon all sectors producing to maximize agricultural returns. But this rebalancing also helps explain some of the cycles we see in agriculture and have experienced over our history.

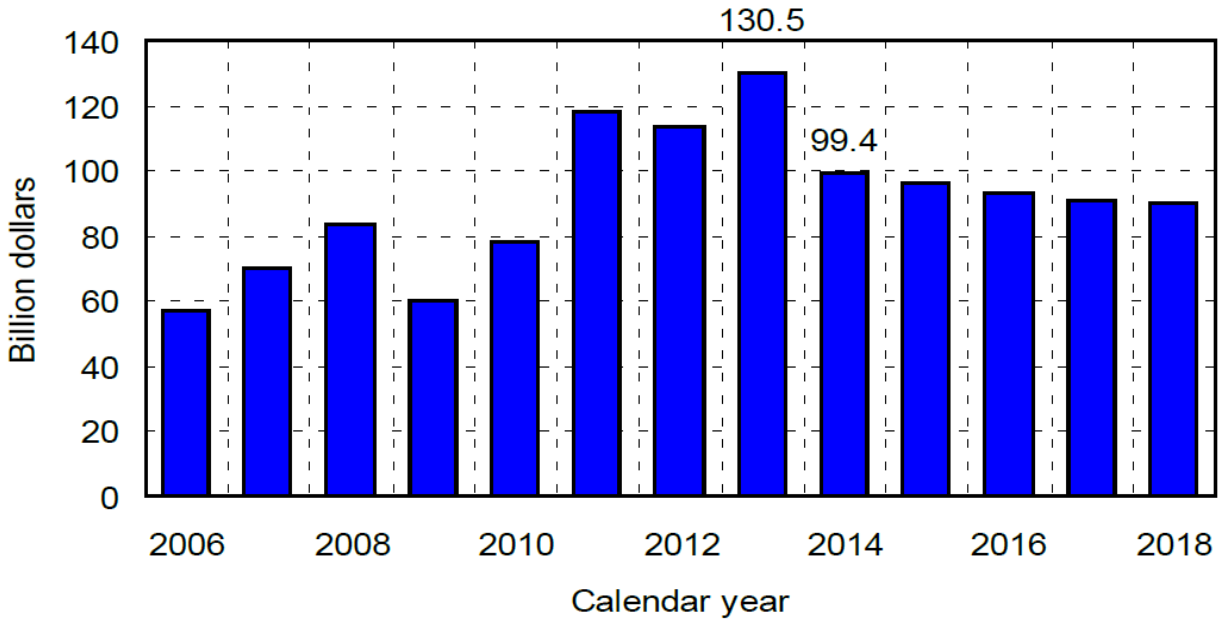

Figure 2. U. S. Net Farm Income (Source: FAPRI)

For agribusinesses, the past several years have been difficult to say the least. Agribusinesses have been caught in a margin squeeze. The high crop prices that we experienced over the past several years do not necessarily translate into high agribusiness returns. As Mary Shelman brought out in her discussion, agribusinesses instead turned toward managing their margins by controlling their supply chains, tailoring their products and messages to customers, boosting supplies via price and non-price signals, and focusing on international markets to gain on the growth that we see worldwide. Many of these moves are driven by the need to deal with increased volatility that agribusinesses are experiencing, not only from crop and livestock supplies, but also from consumer demands for various products. By controlling supply chains and tailoring products and messages to customers, agribusinesses are trying to control as much of the value chain as possible to direct it exactly at the customers they're trying to reach. And just as agricultural production has realized that the marketplace is now global and international trade is a major component to agriculture, we're seen the same thing with the agricultural businesses, focusing on growth worldwide, concentrating on areas where we see major population and income growth helping drive demand for agricultural products. A key example of this is developing in the livestock sector. As several presenters brought out, U.S. domestic per capita meat consumption has been declining. Growth for the livestock sector is being driven by export demand. Global meat demand offers tremendous opportunities for the sector, but also carries significant risks, such as market access, political uncertainty, and macroeconomic and exchange rate concerns.

Carl Casale provided an industry perspective to the discussion. In his comments, he referred to how changes in technology have created a 24 hour/ 365 day marketplace where agribusinesses and consumers interact. And not only has market timing changed, so has market

scale as agribusinesses compete in a global marketplace for agricultural products, food, and energy. He listed several factors that agribusinesses must maintain to stay relevant to their global clients. Those include maintaining significant market and price discovery knowledge, remaining competitive in the export business, managing global arbitrage risk, providing year-round customer support, offering long-term growth prospects, and yet keeping a connection to many agricultural producers within the system. Chuck Studer, from John Deere, echoed many of those themes. As an input supplier, John Deere has a core focus of providing value to agricultural producers by concentrating on an evaluation of the entire crop production system and looking to increase performance, efficiency, and yield, while reducing cost. But he also brought out a list of deeper customer desires for: improved safety, sustainability, decreased environmental and societal impacts, and labor savings. Customers in agricultural markets no longer just think about the direct quality of the product and the price. They are increasingly seeking additional attributes in the transaction and are willing to shop around to obtain those attributes.

A good example of those additional attributes is the philanthropy work that many agricultural (and non-agricultural) businesses do. Consumers want to feel good about the products and brands they support and purchase. Philanthropic efforts provide a "win-win" situation in this case. The philanthropy can address local, regional, or global problems, providing a public good, while at the same time, creating good feeling for the business performing the philanthropy for customers, both current and potential. This was highlighted in Joe Swedberg's presentation on Hormel's Project Spammy initiative. The project seeks to improve lives via improved nutrition, educational programming, and leadership development. The specific application was providing a fortified poultry product into school and emergency feeding programs in Guatemala. But the general story is that of a company delivering on the principles of integrity, innovation, and philanthropy and that is a story that resonates with global consumers.

Rural communities within the U.S. have also had to adjust as agriculture has expanded in its value over the past several years. But that growth in value does not necessarily mean expansion in rural communities. In fact, what we have seen is that rural communities have had to either innovate to maintain their populations or decline. We've seen more concentration and reliance on non-agriculture enterprises in our rural communities. Rural communities are attempting to push back against certain trends. For example, the so-called brain and wealth drains, where younger people and wealth creators within rural communities move to larger cities to find opportunities to challenge and reward them. We have also seen rural communities push back against homogenization within their own communities and attempt to create a competitive environment so that the communities can compete for small businesses to provide opportunities for economic growth. And these economic growth opportunities are not limited to agriculture. As Don Macke discussed, rural communities looking to remain vital and prosperous are increasingly exploring non-agricultural pursuits. Mr. Macke highlighted a couple of examples of

public-private partnerships, led by local social and civic leaders, that have stimulated growth in rural communities. The lessons he drew from these examples are that it is important to have collaboration among local leaders, a positive role for governments in any economic development initiatives, community engagement and ownership in all stages of development, and the need for documentation of success to turn a long-term strategy to a long-term commitment.

As Mark Partridge pointed out, the farm economy has gone through significant adjustments over the past 100 years. Technology displaced labor on the farm. That allowed people and economic intensity to shift more to urban areas. Thus, farming is a much smaller component of the overall economy and of rural economies. In comparison to the 1980s, current farm employment has roughly half of the share it had then. Much of U.S. agricultural production is concentrated within relatively few farms. 10% of the farms produce 80% of agricultural sales. And many farms now depend on non-farm income as opposed to the other way around. Thus, a decline in the agricultural sector has a smaller impact on the U.S. economy that it did in the past. And while the impact of an agricultural sector decline will be borne more by rural communities, even within rural communities, the impact will be less than it has been in the past.

Agricultural lending institutions have also adjusted, given agriculture's recent shifting. As crop prices had reached record levels and now livestock prices are reaching record levels, we tend to see a more cautious approach from our agricultural lenders. We see a stronger combination of financial and risk management strategies within the recommendations coming from our agricultural lenders. Some of this is a reaction to the recession that we just went through the past several years, but also some of it harkens back to agriculture's last large surge and decline during the 1970s and 1980s, where agriculture and agricultural lending suffered fairly large losses. Given the adjustments there, part of the approach this time around from agricultural lending institutions is to take a broader perspective on the risks and opportunities within agriculture. As banks have evaluated risk within agriculture, they are not only looking at price and production risk, but also looking at policy breaks both domestically and internationally. They are evaluating logistical risks, transportation issues, tax issues, international trade markets, and the list of risks goes on and on. So it's more than just a concentration on the risk for the individual farm, it's an examination of the broader range of issues across agriculture and taking a broader perspective on the opportunities within agriculture. We've seen expansion within the agricultural industry. We see international opportunities continue to flourish. And so while agricultural lending has been cautious, it has also been very willing to step forward to help farmers continue to adjust and innovate to the consumer demand patterns we see.

As Elizabeth Hund outlined in her presentation, agricultural lenders are examining global trends to analyze agricultural opportunities and risks. Population trends show that south and east Asia are expected to grow by 56%, followed by Africa at 32%. Meanwhile, more developed economies, such as North America and Europe, are projected to grow at much slower rates or even decline in population. So population trends support growing agricultural markets in Asia and Africa. But for strong markets to develop, income growth is needed as well. With income

growth, protein demand shifts from plant sources to animal sources, opening up new markets for livestock. Another trend is the separation of agricultural production and consumption. Many of the major production areas for global agricultural products are in the Western Hemisphere. Meanwhile, the population trends show the majority of consumers live or will live in the Eastern Hemisphere. This separation creates risks within agricultural trade and highlights the need for larger capital requirements for agricultural lenders. The risks include exchange rate volatility, commodity price and production risk, building trade volumes, and counterparty risks. Agricultural lenders have also explored transportation and trade risks as logistical issues, trade embargos, and tariffs can complicate and limit agricultural trade. To manage these global risks, lending institutions have developed larger capital requirements and credit facilities, have created expanding global syndicates to connect agricultural trade and capital in countries throughout the world, and forged links with private equity and hedge funds to capture enough capital for finance agricultural production and trade flows.

For most of the symposium we have concentrated on the sheer population growth expected worldwide over the next 35 years. Estimates show that by 2050, 9 billion people will live on this planet. A lot of that population growth is centered in South Asia and Africa. The call across agriculture over the past 7 to 8 years has been the search for how we will feed nine billion people. A lot of the discussion recently has been on China, given China's stature as the most populous country in the world. And while China represents a very strong example of the amount of demand growth we can see due to population and income growth, it is not the only story we need to pay attention to as we move forward. For international income growth is developing in many places over the coming decade, not only in China but also India, Vietnam, and Southeast Asia as a whole. So it is likely that we see China as the first wave of coming lines of stronger agricultural demand from international markets. In fact, as I look forward, I see China as the hot market today, India may be a hot market in 10 to 15 years, following that is likely to be Africa as we look 20 to 30 years from now given the trends in population and income growth (Figure 3).

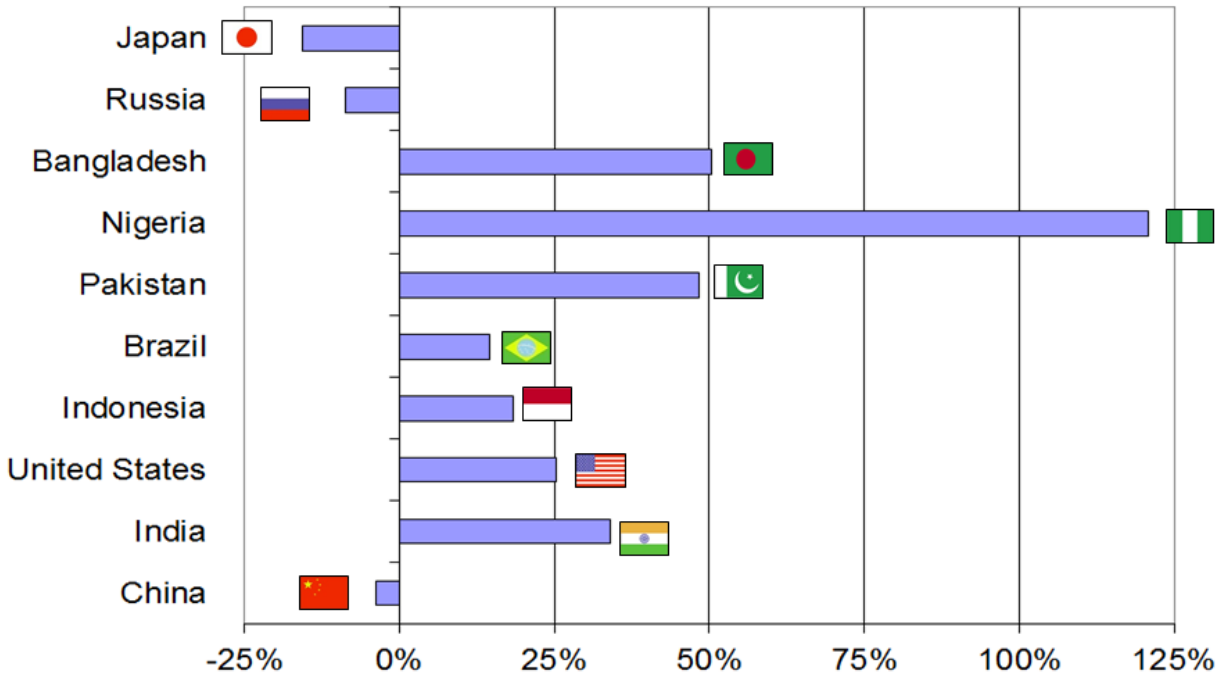

Figure 3. Projected Population Shifts before 2050

But beyond the nine billion people to feed, I think we need to examine that the nine billion people will be searching for the products that will power their lives, that will provide the energy sources for them to not only eat, but to produce, work, and live. If you will, the biofuel evolution will continue as we moved from the horses to the tractors to renewable sources of energy. As we look at the demand for energy over the coming decades, just as with population, we see tremendous potential growth across South Asia, Africa, and Central and South America. China again serves as our classic example. In the early 1990s the vast majority of Chinese people traveled by bicycle. Over time we've seen more and more cars move into the Chinese economy. We've seen companies adjust to changing logistical patterns within China. McDonalds moved from strictly a countertop service to drive up service to delivery service, reflecting the changing transportation patterns in China. So we continue to see the evolution of how agricultural and food demand changes to meet the shifting consumer demands and needs.

I think this focus on China helps highlight the strong hold international demand has for agriculture. Another example of this is to look at how recent free trade agreements have impacted agriculture. One of the major agreements has been the North American Free Trade Agreement or NAFTA. Since NAFTA was passed in 1994, we have seen significant changes in the agricultural trade flows between the countries covered by NAFTA, the U.S., Canada, and Mexico. We have seen two-way trade between the countries expand by over 350%. Net growth has been seen across all three countries as both imports and exports from each country have expanded by at least that much. And so if we look at the consumer demands, we see that it is not only our domestic consumers that we are answering to, but international customers as well. And responding to their wishes helps increase the value in our markets.

That increase in demand value in our markets has driven net farm income to record high levels. Over the past several years, those in agriculture have reinvested those returns back into the industry. The main way we see this is through agricultural land values. In fact a lot of the discussion before the symposium was directed towards the record high land values that we are seeing today and whether the patterns we have today line up well with the experience from the 1980s. The 1980s, of course, was a classic boom and bust cycle for U.S. agriculture. There was a tremendous increase in land values, followed by a tremendous decrease several years later. However, when we look at farmland values, we tend to have value cycles roughly every 30 to 40 years. The three strongest runs were in the 1910 to 1920, 1973 to 1981, and the current period. In each case, we saw significant increases in land values. In two of the three cases, we saw significant increases in gross and net farm income. However the 3rd case (the 1980s) was characterized by a small increase in gross farm income and negative net farm income. And maybe that's the difference here which separates the run upwards we have experienced recently from the route that we saw in the 1980s. The fundamentals underneath agriculture and agricultural land values are better now than they were during the 1980s run-up. Several speakers broached the subject of land values and worked through the factors that shaped the recent run on land values, strong crop prices, low interest rates, and strong farm balance sheets. And now as incomes back down over the next several years, agricultural land values will decline in tandem, hopefully avoiding the free fall like the 1980s due to the underlying fundamentals that supported the run.

To conclude I would like a look at a map of arable land across the globe (Figure 4). When we look at agricultural lands, we see that there are a few significant pockets of truly solid agricultural lands, where the soils are highly productive and highly resilient. As we think about the challenges that agriculture faces over the coming decades, we will continue to rely upon the same areas that have been in production agriculture for most of our history, with the three most productive pockets of agriculture being the central U.S., southern Brazil and northern Argentina, and the Black Sea region of Ukraine and Russia. Those three areas will continue to be the major sources of agricultural, especially crop, production as we move forward. Land is a hard asset to come by. While new land is being created (via volcanism), it takes thousands of years before it's ready for farming. So we know our land base is limited as we go forward. We also know as we move forward to address the needs of a growing global population that we will face other challenges that will arise as the years pass. For example, how can we increase water use efficiency within our agricultural pursuits? But as we look ahead, agriculture is actually fairly well set up to address the needs of our growing population. We have had strong production growth over the past few decades that puts us on a trajectory to produce enough product to meet upcoming needs. We continue to improve upon agricultural efficiency, limiting the losses as we move product from the farm gate to the consumer. So while the challenges are great and the targets are high, I believe agriculture is well positioned to address the coming needs. Just as agriculture has responded to past shifts in consumer needs and preferences, it will continue to do so for future needs and preferences.

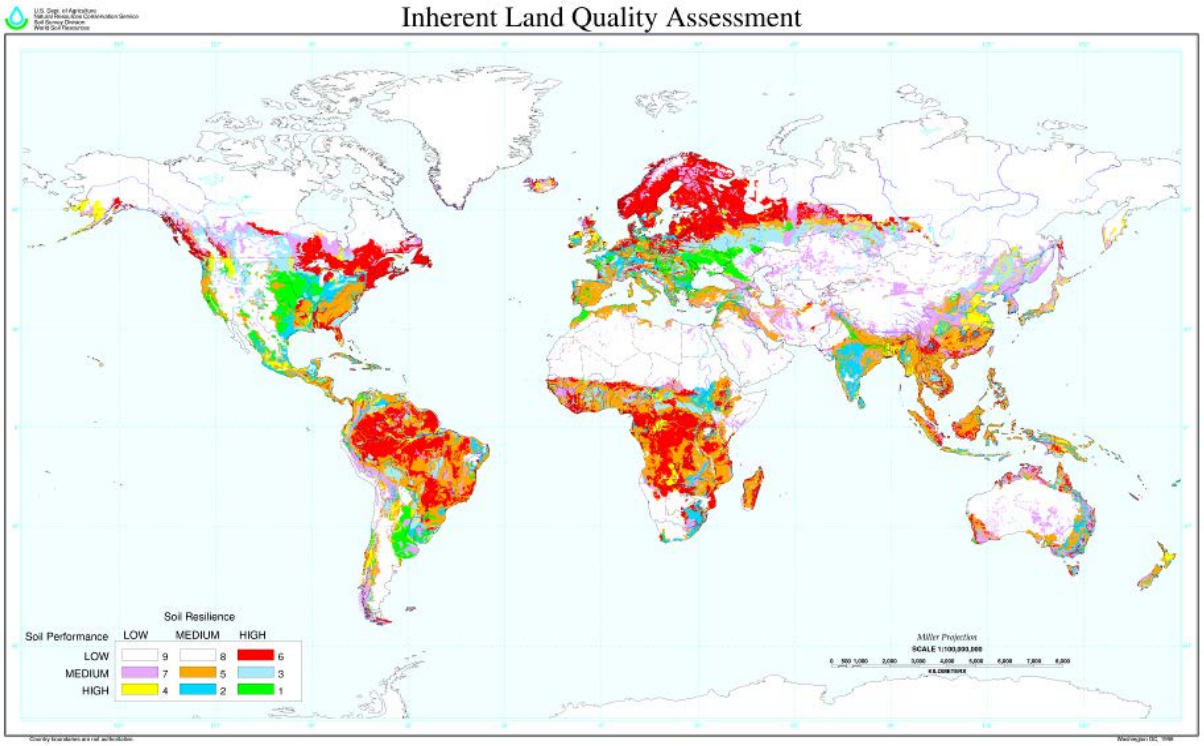

Figure 4. Global Arable Land (Source: USDA)