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Chinese Food (The Familiar and the Future)

The FAO estimates that our planet's population will reach 9 billion by 2050 and a large percentage of this population will be centered in Asia. Currently China is the world's most populated country with 21% of the global population yet only 9% of arable land (FAO). The challenges of producing and distributing enough food for the growing population of Asia are complex and enormous. Some of the key issues in addition to population growth are urbanization, land degradation and climate change. All of these factors contribute to what I think is the most immediate and important issue in China which is diversifying food production with a variety of sustainable practices. The food system in China is particularly fascinating and undergoing major transformation. The future of food security in Asia and for the whole planet depends to a large extent on what happens in China in the 21st Century.

One of the reasons I chose to study China's food system is because today we are living in a global economy. Floods in Australia which destroy the wheat crop affect the price and availability of bread all over the world. When you are thinking of 1.3 billion people (China's current population) it is easy to see that what happens in China will have an impact all over the planet. I think it is interesting that Chinese restaurants are the most familiar and common symbols of our global food system and diets. First of all, you can find Chinese restaurants everywhere on the planet. Even in Havana, Cuba which has been isolated from the world for many years and does not permit private restaurants there is a Barrio Chine (China Town) with Chinese restaurants (Dowlin). For many people the first food they eat that they know is from another country is when they get food from a Chinese restaurant. This is true in low-income neighborhoods in Philadelphia where sometimes the only place you can even get food is from a Chinese food store. What is also interesting is that many of the foods that we recognize from Chinese restaurants like General Tso's Chicken are really not dishes which ordinary people in China can afford to eat. So even though the world is very familiar with "Chinese Food" and has been for a long time, it is my intent to explore the recent history of food production and explore ways to increase crop yields in the future. Specifically, I will explore how improved irrigation has already increased food production in China and what can be done in the future.

One of the most populated areas in the world, China, is a land of great wealth but also of great poverty. Just hours from the new gleaming office towers of Beijing conditions on subsistence family farms are unchanged from the busy and stressful times from the turn of the 20th Century. As China has developed a wealthier middle class diets are changing. While people used to eat diets largely of rice, vegetables and fish now many more people are eating meat. Food security across China has improved but poorer counties especially in Western China still have malnutrition and hunger.

The typical subsistence family in China is a rice farmer. There are more rice farming families in China. Families may have 2 or 3 children. The policies for "one child" in China are not applied to rural farming families since people are needed to grow food. Families will especially have 2 children if the first child is a girl. A family will have one acre to grow rice and a family can grow more rice than they need so by trade they can get money for other necessities. Sometimes people will trade rice for other foods. A typical family will have an additional .5 acres for growing other crops such as peppers, eggplants or turnips and will keep some chickens and pigs. Things have changed a lot since the 1980s because now there are more family farms instead of communal farms. Families cook over open fires and most villages still do not have indoor plumbing or running water. Transportation is improving with many more paved roads. Malnutrition in China has gone down since the mid 1990s although 120 million Chinese people, many poor rural families, still suffer from malnutrition (Yunlai).

Over the past twenty years China has made great advances in food production and a lot of these advances are because of improved water management such as drip irrigation which is a sustainable agriculture technique. A turning point came in 1995 when China became a donor instead of a recipient of food from the World Food Program. Since 1996 China has a 95% rate of grain self sufficiency. The accomplishments in achieving food security in China since 1995 are already very impressive. In 2007 China became the world's largest producer of meat and eggs. With a strong economy China has resources to improve global food security and recently China announced a new commitment to addressing the food crisis in Somalia and Ethiopia (China Daily). It is also very important that China uses best practices for agriculture that not only increase food security but also respect the environment. I am interested to learn if the food advancements in China are sustainable or whether they have come at a cost to the land which could make the country vulnerable to food shortages in the future (World Food Programme).

China's farming system is interesting to me because so many of the farms are small and owned by families who farm the land or landowners who rent the land to farmers. China has more than 300 million farmers and many of these farmers grow food on small plots of land (Wikipedia). That is a lot of jobs for people in China and some of these jobs are very old fashioned. Many farmers still cultivate without tractors or modern equipment. Scientists report that people in China first started rice cultivation about 9000 years ago. In the United States farms have gotten larger and more industrial as we produced more food. Is the same thing true in China? And if so, why are so many farmers still working the land? Is it just to feed their families or is there some way that China has organized 300,000 farmers to produce more food?

Many people doubt that organic farming or sustainable agriculture can feed the world. Since the "green revolution" of the 1940's people have relied on chemical fertilizers and pesticides for most agricultural production. There is no doubt that the advances of the green revolution led by Norman Borlaug were influential in increasing food production in China (World Food Prize). But a recent stunning advancement was made in China that showed that crop yields can be increased on a giant scale through simple ecological techniques as well. In 2000, farmers and scientists in the Yuaan Provence developed an idea to increase rice production that did not use chemicals and did not cost any money. By planting two varieties of rice in the fields instead of a monoculture, rice production went up in a single season by 20% (New York Times). The reason was two varieties of crops prevented the rice blast disease from spreading. Now scientists wonder if this technique can work for other crops as well. One of the reasons this project was so impressive is because it was repeated on a huge scale with 100,000 acres and 10,000 farmers and it still worked. To me this is the perfect kind of way to increase food production because it is simple and farmers only need to purchase 2 kinds of seeds. They do not need to spend more money on chemicals. China is the ideal place for research like this because experiments are possible to organize with so many small farmers.

Another kind of sustainable agriculture involves using less water for food production. Agriculture is the single largest use of water in China. In 2005 total water use in China was 560 billion m³ (cubic meters) and 64% of this water was used for farming. Before the 1990s China had very old irrigation systems which mainly consisted of open ditches from rivers. These open ditches were very inefficient and were responsible for 170 billion m³ of wasted water every year. The one benefit of very old irrigation systems is that they can survive an earthquake very well. Since the 1990s China has implemented advancements like concrete channels and drip irrigation. It looks like there is a strong relationship between irrigation and increasing crop yields. Since 1950 China has gone from about 10% of farmland with irrigation to almost 50% of farmland with irrigation. What is amazing about the last 15 years in China is that because of new water management practices water use for farming has actually gone down while crop yields have gone up. One of the reasons for this is that drip irrigation is better suited for surviving droughts (Wu).

Because China is a communist country the government has a lot of programs which can control the economy and the way people work. Giant projects like dams which have helped irrigation of crops have improved China's food production. The Chinese government has also paid a guaranteed high price for grains over the past 20 years which has encouraged more grain production and also made farmers wealthier so they can afford more resources to improve their farms (Wikipedia). For example with wells and dams and irrigation that is possible now in China it takes away some of the traditional labor of farmers have if they do not have a well or river nearby. This means more time for farming and fewer long trips back and forth carrying heavy jugs of water.

China has increased production of fish and meat through farming. In general I think fish farming is a good idea because overfishing in the oceans is a big problem. A lot of the grains grown in China are now used to feed fish as well as other animals such as poultry and livestock. One of the big challenges of increasing production of fish, meat and eggs is that it is very possible to contaminate water supplies such as rivers and lakes and even groundwater and aquifers. Overall much more research is needed about how to farm animals in a sustainable way. This is a problem in China right now like in the rest of the world. Also, a lot of grains are now used to feed cattle. This is causing China to start importing more grains from Africa.

One of the best sustainable farming practices in China is reforestation. In America I have heard that many sustainable farmers say that they are farming healthy soil as the main product. This means that if you manage the soil the crops can grow. Farming is more than just about food. It is also about water, soil and even the air. Forests are the key for healthy soil, air and water so forests are very important for sustainable agriculture. Forests are very important especially in mountainous regions for their role in water retention, preventing floods and erosion. There is also a lot of new attention on the promise of forests in providing ecosystem services like capturing carbon which could help slow down the process of climate change. It is possible that in addition to providing timber, forests may be worth money for the work they do to improve the environment. The reforestation efforts in China have helped develop an agro-forestry economy. Diverse forests in China produce tropical fruit and also crops such as pine nuts and walnuts which are now major luxury food exports (Kumar).

There are many ways to increase crops and improve the disease/drought resistance crops through research. Because China has recently become a wealthier nation many of Chinese advances in agriculture over the past 20 years are the result of implementing best practices and adding infrastructure. In the future I expect that China will invest a lot more money in research such as China is strengthening its research programs at universities. For example, the research for growing 2 varieties of rice plants was from Oregon State University in the U.S.A and in the future maybe more research will come from China.

Much has been written about soil degradation in China. In fact even though China is 95% grain sufficient, yields of some grains have started to decline recently. There is also concern of contamination of water sources. There is a lot more interest in China about sustainable agriculture and organic farming. I think this is a good idea because it works perfectly with the small farms and labor intensive farming practices in China. There is also potential to improve the sustainability of food production in China through urban and peri-urban agriculture. Urban agriculture is a sustainable practice because lots of people live in the cities and they can be close to food sources.

Recent trends of the Chinese government encouraging Chinese companies to acquire land in Africa for production are a cause of concern to the international organizations concerned that China is trying to control food production in some regions of Africa. This trend is seen also among other wealthy but land-poor nations. To me, this is not a sustainable practice because of famines in Africa it is important for

Africa to increase food production to feed its own population instead of exporting crops for animal feed in other countries.

Climate change is a huge potential threat to agricultural advancements in China. One of the reasons sustainable agriculture is so important is because it has the potential to limit China's contribution to worsening climate change. Basically, climate change could affect poor rural subsistence families because it could greatly decrease the availability of water.

Overall, I feel that the great accomplishments in improving food production in China outweigh the negative developments. And, sustainable practices like drip irrigation and crop diversification are a big reason we have seen the improvements. China is a success story but questions remain about whether this success can be maintained.

Although the advances in China's food system over the past 25 years are very impressive there is also some cause for concern. I am particularly concerned about the enormous population in China and in the Asian region and of the scale of the challenge of providing food for that many people. As diets in China become more Americanized by eating more meat, processed foods and even worse, more fast food I am worried that China will get the same problems as America's food system. For example more than 60% of the American population is overweight (CDC) and yet we still have many disparities such as hungry children and families. Just at a time when Americans are trying to turn our eating habits around it seems wrong that another country is gaining what we are trying to lose. I hope as many American's first learn about other country's foods from Chinese restaurants, China can learn from America's food mistakes and the recent efforts to make things better.

Over the next several years I hope China will continue to pursue advancements in sustainable agriculture. Because China is a wealthier nation now I believe the government can make many of the necessary investments to fully reach Millennium Development Goals. One of the reasons I chose to study China is because China has already made so much progress in achieving their goals. For example, China has already cut in half the number of people living in poverty and China has already met the goal of providing primary education for children across the country (China). I believe that China needs more education for rural families. In the United States universities train farmers as well as young people who might go into farming. I believe China should continue to implement large reforestation programs and continue to promote drip irrigation. I believe that China must invest more money in the poorer Western Provinces. More cooperation between agricultural researchers from the United States and China could definitely help discover more cost effective and environmental ways of producing more food.

China was one of the first places in the world to implement agricultural innovations such as irrigation on a huge scale. Some of the ancient irrigation systems are still in place. With 1.3 billion people to feed and even more people in the Asian region, China needs to be a lead player again in agricultural innovation. By changing from government communal farms in the 1980s to family farms today, China has made some dramatic changes already. The next step is to empower rural family farmers with education. For example, Dr Jiyan Jin, winner of the 2010 International Fertilizer Prize Norman Borlaug Prize focuses on sharing best practices in agriculture with rural farmers in China through an impressive series of rural workshops and the use of technology (IFA). China is undergoing a huge period of growth and development and the country has made great strides towards achieving food security over the past twenty years. I believe that increased educational programs hold the key to the future.

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