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PURDUE AGRICULTURAL ECONOMICS REPORT

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MARCH 2016

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Farmland Update from Indiana Farm Managers and Rural Appraisers[1]

Craig Dobbins, Professor of Agricultural Economics

The farm press and coffee shops have been a buzz this winter with discussions of farmland values in Indiana and other Midwestern states. In February 2016, the Chicago Federal Reserve Bank indicated that farmland values in Indiana were down 2% between October 1, 2015 and January 1, 2016. Values in Illinois and Iowa declined 1% and 3%, respectively. Values in Michigan and Wisconsin increased 1% and 2%, respectively. In the face of significant farm income declines, farmland markets remain uncertain about how to respond.

To obtain a perspective about recent changes in Indiana's farmland market, members of the Indiana Chapter of Farm Managers & Rural Appraisers were surveyed during their winter meeting on February 3, 2016. To obtain information about Indiana's farmland market, members were presented with the following situation:

80 acres or more, all tillable, no buildings, capable of averaging 170 bushels of corn per acre and 50 bushels of soybeans in a corn/bean rotation under typical management and not having special non-farm uses.

Farmland Values

Responses from people representing 27 different counties were received. The average estimated price of farmland was $7,968 per acre. Five respondents indicated no change in farmland values when compared to values in February 2015. The remaining 22 respondents indicated their estimated price was lower than the value in February 2015. The average percentage decline was 9% with a range in estimated decline from 2.5% to 15%.

Not too long ago many people were asking how high farmland values might go. It would appear that the

[1] A special thanks is expressed to the Indiana Chapter of Farm Managers and Rural Appraisers that participated in the survey. The Indiana Chapter of Farm Managers and Rural Appraisers is an organization of rural land experts located in Indiana and promote the professions of farm management, agricultural consulting, and rural appraisal. Without their assistance it would not be possible to take the pulse of Indiana's farmland market.

2013/2014 values were the top. The group was asked to provide forecasts of future farmland values in one year and in five years. In one year, 15% of the respondents indicated that values would be the same. The other 85% said they would be lower by an average of 8%. The declines ranged from 3% to 15%. These respondents have a strong consensus that in the short run farmland values will not increase.

There was less agreement about the change in farmland values over the next five years. In this case, 19% of the respondents indicated farmland values would be higher, 33% indicated farmland values would be the same as current values, and 48% indicated farmland values would be lower. Those indicating that farmland values would be higher averaged 14% with a range from 5% to 20%. Those expecting a decrease averaged 13% with a range from 5% to 30%.

Cash Rents

Attendees were also asked to specify the cash rent for 2016. The average cash rent for the example parcel was estimated to be $234 per acre. The estimated cash rents varied from $175 to $300 per acre, a difference of $125 per acre. Three of the respondents indicated cash rent remained the same as in 2015. Everyone else indicated that cash rent declined. The average reduction was $20 per acre. This was a reduction of about 8%.

As with farmland values the respondents were asked to forecast cash rents one year and five years into the future. When asked what cash rent would be in 2017, 22% of the respondents indicated they would be the same as 2016. The remaining 78% indicated cash rents would be lower. The average decline in cash rents was 8.5%, just a little more than the reduction from 2015 to 2016. The range of the declines varied from a reduction of 3% to 15%.

As with farmland values the five year projection was more uncertain with 15% of the respondents indicating cash rents would exceed the 2016 level. This group expected cash rents to average 15% higher than the 2016 value. Forty-eight percent of the respondents expect cash rents to be lower by an average of 13%. The range of decline varied from 5% to 20%. The final 25% of the respondents expect cash rents to be the same as they are in 2016.

These results indicate a pessimistic attitude in the rental market. This is not surprising since there has been little reduction in cash rents since they reached their peak. At this time, it appears that many respondents anticipate cash rent declines for the next several years.

Final Thoughts

The effects of much tighter margins are rippling through the farmland and cash rent markets. This small survey indicates the adjustment process may stretch over the next several years. The majority of the professional farm managers forecast that farmland values would have a gradual decline. Using the 9% decline respondents indicated for February 1, 2015, to February 1, 2016, and the anticipated 8% reduction from 2016 to 2017, the two-year decline is about 17%. So, is this a gradual decline? How will farmland value declines of 17% to 20% change landowners' balance sheets and the conversations with their lenders?

Cash rents are also adjusting downward. Respondents indicate from February 1, 2015 to February 1, 2016 cash rent declined 8%. There were two groups when asking respondents about changes in 2017. One group indicated no further decline. The other group expected further declines with an average decline of 8.5%. Over this two-year period, this leaves a decline of 8% to 16.5%. Will there be further declines? In the spring of 2016, these reductions do not appear to be large enough for many tenants to regain profitability on rented farmland. In addition, many tenant budgets will suggest further erosion of their working capital with current costs and new-crop grain prices. This suggests further reductions in cash rents unless grain prospects improve or some costs drop more rapidly.

Small Business Administration Disaster Loans after Hurricane Katrina

Anna Josephson and Maria Marshall, Professor of Agricultural Economics

Hurricane Katrina, which hit the southeastern United States over ten years ago in August of 2005, was the costliest hurricane in the history of the country. The storm cost more than $108 billion in damages and over 1,800 lives were lost (FEMA, 2013). As a result, the recovery effort was a tremendous undertaking. In order to assist in the rebuilding, the United States government promised $45 billion in loans and rebuilding funds (FEMA, 2013). One of these sources of funding was the Small Business Administration (SBA), and their small business disaster loans.

The SBA provides small business disaster loans to businesses and individuals for losses not covered by insurance. Disaster loans are different from SBA commercial loans, which are provided by commercial banks but guaranteed by the SBA. Disaster loans are provided directly by the federal government.

SBA small business disaster loans provided to small businesses affected by Hurricane Katrina are the subject of this article. In particular, we consider the differences in small businesses which applied for a loan and small businesses which did not apply for a loan following Hurricane Katrina. As any business in a declared disaster area is eligible to apply for a loan, understanding the characteristics of businesses which applied versus those that did not apply is important. We consider these differences for a group of approximately 500 small businesses in southern Mississippi.

SBA Background and History

Following a disaster, regions are designated as "declared disaster areas". Businesses and individuals located within these regions are then eligible for financial assistance from the SBA. Businesses of any size, most private nonprofit organizations, and homeowners may apply to the SBA for a loan. Loans are intended to cover losses not fully protected by insurance. Three primary loan types exist, including: 1) home and personal property loans, 2) business physical disaster loans, and 3) economic injury disaster loans.

Although SBA loans were available following Hurricane Katrina, evidence suggests that the process was mismanaged and that many eligible business owners were either rejected or failed to apply altogether. The Associated Press released a report based on SBA data, finding that 55 percent of homeowners and businesses that applied for disaster loans were turned away. Of 318,953 applications processed, 175,463 were rejected and 143,490 were approved. Further, of the approved loans, only 60 percent ultimately reached recipients. SBA officials claim that many applicants never accepted the loans as they found other ways to rebuild. But, many applicants indicated that applications were abandoned as the process took too long and was overly complicated (Weiss, 2010).

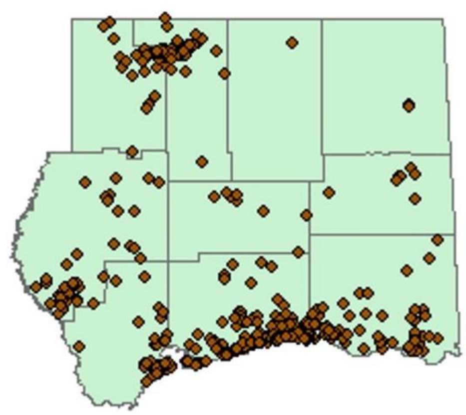


Figure 1. Locations of Businesses

Table 1. Business and Business Owner Characteristics

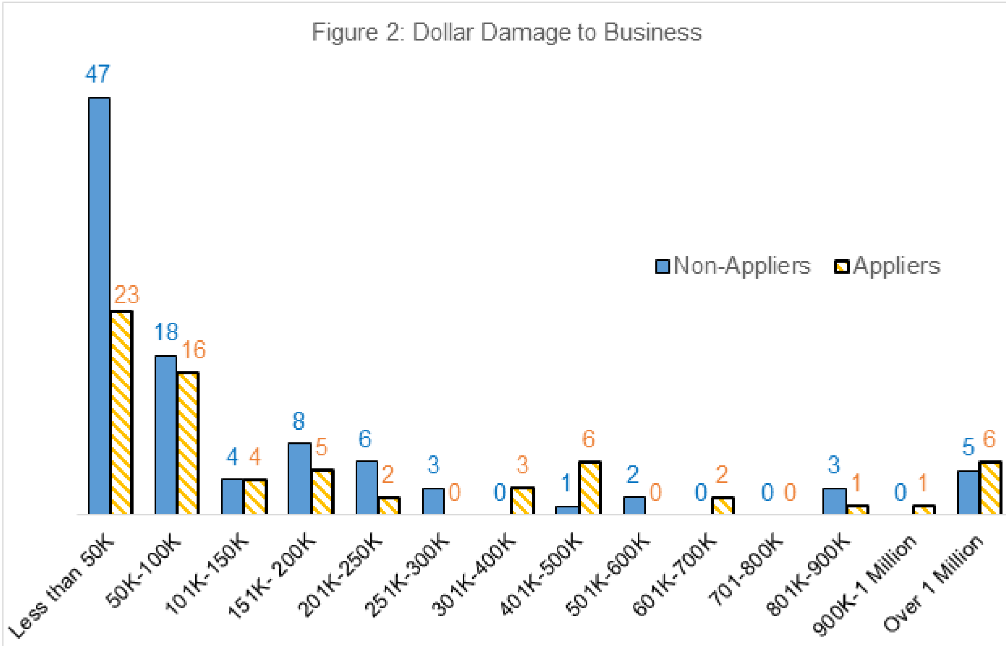
	Definition	Mean (pooled)	Mean (appliers)	Mean (non-appliers)	Significantly Different
Business Owner Traits					
Gender	= 1 if owner is female, = 0 if owner is male	0.321	0.392	0.290	✓
Education	= 1 if owner has college education, = 0 if otherwise	0.431	0.392	0.448	
Race	= 1 if owner is non-white, = 0 if otherwise	0.075	0.075	0.075	
Veteran Status	= 1 if owner is a veteran, = 0 if otherwise	0.187	0.150	0.203	
Copreneur Status	= 1 if business is copreneurial, = 0 if otherwise	0.211	0.203	0.215	
Home-Based	= 1 is business is based in the home, = 0 if otherwise	0.318	0.286	0.332	
Insurance	= 1 if business had insurance, = 0 if otherwise	0.568	0.566	0.569	
Sole-Proprietor	= 1 if business was a sole-proprietorship, = 0 if otherwise	0.462	0.480	0.454	
Damage To Business					
Dollar Value	= dollar value of damage	362,629	1,017,072	73,501	✓
		N = 483	N = 148	N = 335	

The data used in this analysis are from the 2013 Small Business Survival and Demise after a Natural Disaster Project (SBSD). The population from which the sample was drawn was deliberately limited geographically to south Mississippi. The land mass of the ten chosen counties was almost entirely to the right of the storm track, in the right front quadrant of Hurricane Katrina. These ten counties are home to a wide range of industries including services, financial, tourism, retailing, manufacturing, forestry, and agriculture. Figure 1 shows a map of business locations within these 10 counties. We include 483 businesses in our sample.

Appliers v. Non-Appliers

In this analysis, we consider eight primary characteristics of business owners: 1) gender of the business owner, 2) education of the business owner, 3) race of the business owner, 4) veteran status of the business owner, 5) whether the business was copreneurial (defined as a couple working together in the management of the business), 6) whether the business was home-based, 7) whether the business had insurance, and 8) whether the business was a sole-proprietorship. The revenue of the business and damage experienced by the business are also considered. Table 1 gives the definitions of the owner characteristics considered, as well as means for the different populations including 1) the entire sample, 2) businesses that applied for a disaster loan, and 3) businesses that did not apply for a disaster loan.

In Table 1, we consider the means for the entire sample, as well as for the appliers and non-appliers. There is also a column which indicates if the means of appliers and non-appliers are statistically and significantly different from one another. Only a single variable has a statistically different mean for appliers and non-appliers: gender of business owner. While 32% of all businesses in the sample have a female owner, 39% of those who applied for a loan were female, while only 29% of those who did not apply were female. This indicates that female business owners were more likely to be appliers. It is not clear at this time why women would be more likely to be appliers, on average, than non-appliers; however, based on the support by the SBA for women-owned businesses, perhaps the greater application of women is a signal of the success of these programs (SBA, n.d.).



Other characteristics of business owners are not significantly different between appliers and non-appliers. Some traits have slight, though not statistically significant differences. These include:

1. Education: 43% of business owners have a college education; only 39% of appliers have a college education while 45% of non-appliers do.
2. Veterans: 19% of business owners are veterans; only 15% of appliers are veterans while 20% of non-appliers are.
3. Coprenerial status: 21% of business owners are copreneurs; only 20% of appliers are coprenerial, while 22% of non-appliers are.
4. Home-based: 32% of businesses are home-based, only 29% of appliers are home-based, while 33% of non-appliers are.
5. Sole-proprietorship: 46% of businesses are sole-proprietors; 48% of appliers are sole-proprietors, while only 45% of non-appliers are.

For the remaining two traits, there are effectively no differences; 7.5% of all the groups are non-white, while 57% of all groups had insurance.

Several of these similarities are encouraging. In particular, there seems to be no bias for application towards only those with college education and no bias against application for non-white business owners. As the SBA seeks to help all business owners and other eligible individuals impacted by disaster, it is encouraging that no bias in application is evident. However, one of the lacks of difference is somewhat surprising. That is, the result that there is no difference between appliers with insurance and non-appliers with insurance is somewhat unexpected as SBA loans only cover losses not covered by insurance. Thus, it would seem that those without insurance would be more likely to apply, though this is not the case. This can be explained, however, as insurance is often mandated for homeowners or renters. It is possible that businesses had insurance, but did not have enough insurance to cover the damage sustained from the storm. This resulted in businesses with insurance applying for loans, causing no difference between appliers with insurance and non-appliers with insurance.

It is also important to consider the financial considerations of the business. The first of these considered is the size of business revenue. There is no clear distinction in the size of revenue between appliers and non-appliers; businesses with revenues over a million dollars are not significantly less likely to apply, nor are businesses with revenues less than $50,000 significantly more likely to apply. This suggests that application status is equitable across businesses, with respect to revenue.

Additionally, when considering application for loans, it is imperative to consider damage to the business. This particular variable measures the damage to the physical facility in which the business is housed. Mean statistics are given in Table 1, with a range seen in Figure 2. Table 1 shows that, on average, businesses had an average of $362,629 of damage. As one would expect, for those who applied for loans, damage was much higher: $1,017,072. Further, for those who did not apply, damage was much lower: $73,501. This follows expectations, as those with less damage are less likely to apply, as they have less need for the loan; their losses may be covered by insurance or they may be able to independently cover the cost of reconstruction. Conversely, those with more damage are more likely to apply, as their losses may not entirely be covered by insurance and it would be difficult to independently cover the cost of repairs.

Figure 2 expands on these damage statistics. Not shown in Figure 2 are businesses with a damage value of zero. For those businesses which applied there are 79 businesses with no damage while for those businesses which did not apply there are 240 businesses with no damage. It may be somewhat puzzling that there would be appliers with no damage. However, this is possible as businesses are able to apply for loans related to economic injury or damage to personal property with no reported damage to the physical structure of the business. However, it is worth noting that businesses with less than $50,000 of damage which do not apply are the largest group represented; this makes sense, as those with less damage are less likely to apply.

Why Apply or Not Apply?

Small business disaster loans from the Small Business Administration were available to businesses in Mississippi following Hurricane Katrina, in order to help them recover losses not otherwise covered by insurance. This article reports on differences between the businesses which applied and the businesses which did not apply for an SBA disaster loan. We examined several characteristics of the business owner, as well as two financial measures. The analysis largely revealed that there are few differences between those businesses which applied and those businesses which did not. While female business owners are more likely to be appliers than not, there are no significant differences with respect to education, race, veteran status, or insurance.

Two circumstances have mixed results. First, there is not a definitive discrepancy in business revenue between appliers and non-appliers; businesses with revenues over a million dollars are not significantly less likely to apply, nor are businesses with revenues less than $50,000 significantly more likely to apply. However, there is a strong distinction with respect to amount of damage: the average damage for those businesses which apply is nearly fourteen times greater than damage for those businesses which did not apply. Thus, the amount of damage was more important than size of revenue for businesses which would apply for an SBA loan.

Although these results do not tell us everything that we may want to know about the differences between appliers and non-appliers, it does suggest that there is little bias in the process of application for SBA loans. Given the controversy at the SBA which followed Hurricane Katrina due to difficulties with the application and administration process for the disaster loans, this is an encouraging result.

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This article is based upon material from the Purdue University Project "Small Business Survival and Demise after a Natural Disaster", supported by NSF Grant #0856221-CMMI and "Small Business Disaster Recovery Process: An Analysis of Rural Communities in Mississippi" supported by USDA-NIFA grant # 2011-67023-30609.

The Agricultural Communications Gap: Agricultural Economics Responds

Jessica Eise, Director of Communications, Agricultural Economics

Some two hundred years ago, over 90% of Americans worked in or around agriculture. Farming and food production was a way of life. With the majority of people growing up on or near a farm, our population understood our food system. Agriculture permeated nearly everyone's existence, and this provided the population with a baseline of knowledge to form opinions.

Today, our culture has radically shifted. Due to impressive increases in productivity and efficiency, only 2% of the American population works in or around agriculture production. While this has been a great advancement for our nation, it has had an unintended effect on communication. The gap between those who 'know' agriculture, and those who do not, has dramatically grown. The consequences of this gap have not been positive in some cases.

Familiarity to a subject or issue provides us with many insights. When a rainy summer only means you cannot go on as many bike rides or morning walks, you understand the consequences of weather conditions very differently than someone in agriculture. To a farmer, weather conditions are significantly more than just a minor inconvenience – they can make or break that year's crop.

When considering communicating with those outside of agriculture it is safe to assume that 98% of the American population does not understand production agriculture. They are far removed from the realities of the sector and likely do not know anyone who works in the field. Given the geographic realities of farming (the necessity for *space*) plus the migration of Americans to urban areas, there is even less overlap.

People without exposure to agriculture are not intentionally careless or insensitive. Most behavior is driven by ignorance. Decades ago, a neighbor would have been keenly aware of the impact of weather on their farmer neighbor, and would have developed an understanding and respect over years of interaction and day-to-day communication. This is no longer the case. Demographic shifts have cut off the lion's share of informal communication between agricultural stakeholders and everyone else.

With most of the informal communication opportunities gone, it has become incumbent upon both agricultural stakeholders and interested consumers to proactively communicate. To date, this has not always been a priority of those within agriculture, and on the consumer side, seeking balanced information has not always been done effectively or thoroughly. A starting point for moving forward is to recognize these altered demographics, and to consciously decide to re-open lines of communication between agriculture and the broader society. As a department, we have started down that path.

Purdue Agricultural Economics Department Responds

With these goals in mind, the Purdue Department of Agricultural Economics has initiated a number of programs and changes to help better communicate agricultures important stories.

New Center: The Center for Commercial Agriculture was created to study global security of food, fuel and fiber in a way that is relevant and impactful to the farms managing these sources.

New Undergrad Class: The majority of our Purdue undergraduate students and a growing number of our Ag School students do not have a farm background. In order to narrow the communications gap, the Department has initiated a new class, *Introduction to the Business of Commercial Agriculture*. The course uses case studies, field trips, and guest lectures by farmers and agribusiness managers to learn from each other.

Events Mix Agriculture and Urban: Each summer, the Department and Purdue Extension sponsor the Indiana State Farm Management Tour. Each June, four or five farms and Ag businesses host the two-day event. They open their site to the public to see the latest technology and to talk about managing Ag businesses. While agricultural managers are the dominant part of the 500 attendees, an increasing number of urban families are also learning about their farm neighbors.

Keeping Consumers Informed: Ag Economics faculty are actively engaged in providing hundreds of media interviews each year on how agriculture works and why it is critical to consumers. Whether it is explaining how a drought will influence food prices to *USA Today*, explaining how Avian Influenza affects the availability of eggs to a syndicated radio show, or explaining how corn ethanol affects the gasoline market to a *Wall Street Journal* reporter, through the mass media, the Department helps educate millions about the role of agriculture.

Graduate Course: The department has created a new one-credit course for our graduate students dedicated to teaching communication and multimedia skills in the agricultural context. This course, *Multimedia and Communications in Agricultural Economics*, teaches our graduate students practical communications skills in today's environment.

Online: The department's website hosts a range of information on agricultural economics, and the department is newly present on Facebook, Twitter, YouTube as well as producing biweekly podcasts.

Growing the Pork Industry: Exports to China

John Lai, Graduate Research Assistant and H. Holly Wang, Professor

The U.S. pork industry has had to face numerous complex challenges over the past decade including an era of high feed prices and the porcine epidemic diarrhea virus (PED) in late 2013 and 2014. In 2015 and 2016 the industry has responded to lower feed prices by expanding production and has recovered from PED. As a result of these events, per capita pork consumption has recovered from a low of 46.4 pounds in 2014 to over 50 pounds for 2016. After two years of rapid recovery, long-term projections from the USDA (Westcott & Hansen, 2015) suggest more moderate, but continued gains over the next 10 years.

One likely avenue for that future growth can be found in exports. Given the importance of China as a buyer of food commodities in recent years there have been multiple studies examining their pork market and also studies to better understand their pork consumers.

There was much optimism in the U.S. a few years ago regarding the potential for greater pork exports to China and Hong Kong, but the actual results are more mixed. China primarily produces their own pork. In 2015, 98.5% of their pork supply was domestically produced and only 1.5% was imported. In addition, imports have stayed near 1.5% of supply since 2011, indicating only small import growth.

Figure 1 shows the percent of U.S. pork exports that moved to China and Hong Kong combined. In the two peak years, there was a lot of U.S. excitement as those two countries represented 18% and 16% of total U.S. pork exports. However by 2015, the importance of China and Hong Kong to the U.S. export program dropped to 8%. The volume of pork

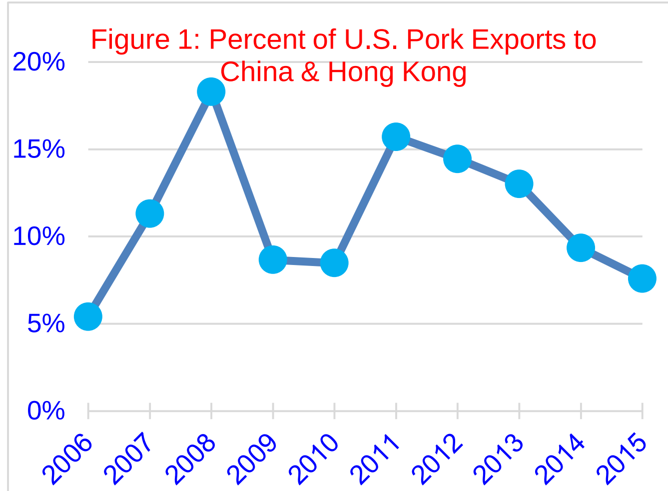

Figure 1: Percent of U.S. Pork Exports to China & Hong Kong

exports from the U.S. to Hong Kong peaked in 2008 and has fallen since while the volume of pork exports to China peaked in 2011 and has fallen since.

In recent years, China and Hong Kong combined are buying more total pounds of pork from the world, just not as much from the U.S. This means that other pork producing countries have been getting more of the Chinese/Hong Kong business. Two likely reasons are the PED virus that cut U.S. production in 2014 and resulted in record high U.S. pork prices in 2014 and 2015. In addition the U.S. dollar has been strong

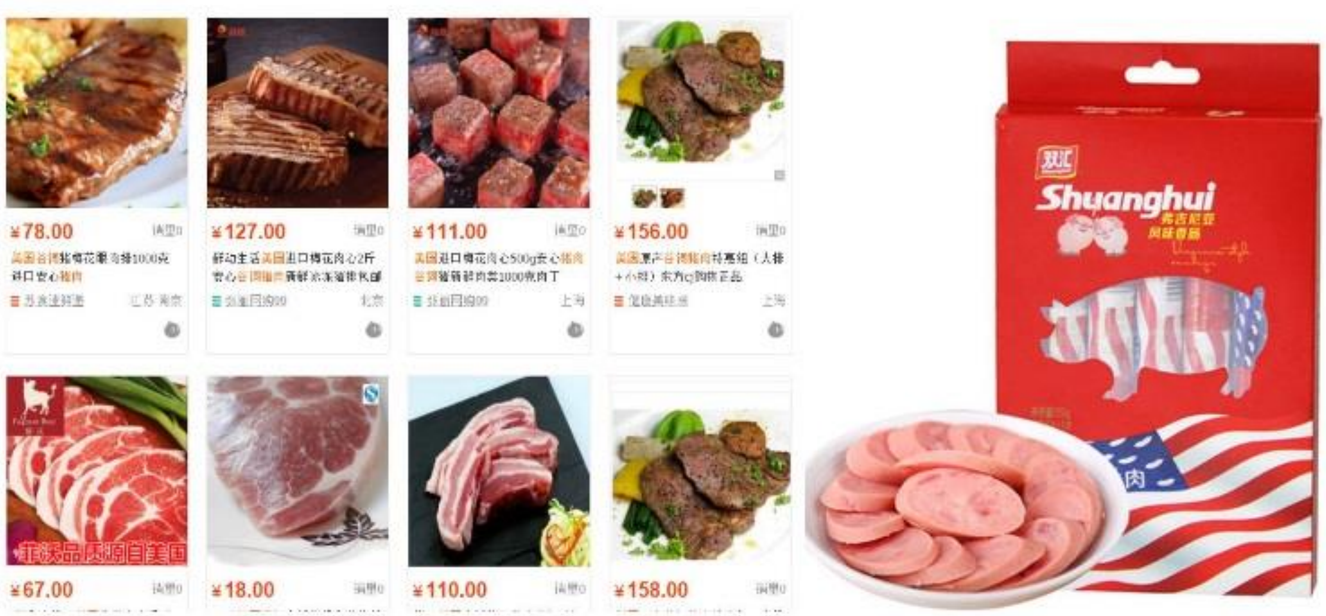

Figure 2 Pork marketed online at various prices.

relative to other currencies since 2014 and this has tended to make U.S. pork less competitive relative to other pork exporting countries.

Get to Know Chinese Consumers

If the U.S. is going to grow the Chinese/Hong Kong markets then a better understanding of consumer taste and preferences will be helpful. The goal is to carefully match pork export products for each segmented market. Here I review some of those findings.

David Ortega and his colleagues at Michigan State University along with Holly Wang at Purdue University found that consumers in China differ from those in Hong Kong. In China, more attention is paid to the freshness and packaging of pork and therefore domestic produced pork is preferred. On the other hand, consumers in Hong Kong prefer pork from developed countries like the U.S. and consider the meat to be of higher quality than meat from mainland China. Regardless of whether the pork is domestic or foreign, food safety is considered the most important indicator of pork quality for both regions, a belief that has been strengthened in recent years due to numerous Chinese food related scandals.

Another study examined Chinese consumers' preferences and willingness to pay for traceable food quality and safety attributes. Researchers at the Synergetic Innovation Center of Food Safety and Nutrition found that government certification was the most important quality indicator for consumers. Murphy et al (2015) explains that consumers also had strong preferences for very fresh-looking pork with traceability information which includes the farm source and slaughtering, processing and marketing information.

Finally, a study conducted by the Center for Meat Safety and Quality at Colorado State University showed that for 70% of Chinese importers, the price was considered as highly influential in where they buy pork, while only 20% of importers in China and Hong Kong considered the exchange rate as a deciding factor. Wu, et al. (2015) explains that the same group defined food safety as using government, or third party certifications.

Although many pork products imported from developed countries are considered safer and of higher quality than domestically produced pork, Chinese consumers have misinformation about U.S. pork such as its dull taste, the use of growth hormones, and ractopamine. For these reason, Wang, argues that it is difficult for U.S. pork to compete with Chinese traditional pork in the retail market directly. Instead, it may be more beneficial to promote U.S. pork as a high-end, high-value product. Figure 2 provides two examples of U.S. pork products sold on-line in China. The cuts shown are from different vendors, they all are in western style instead of the traditional Chinese style, and each are priced quite high.

Shuanghui is the signature brand for WH Group that acquired U.S. based Smithfield Foods and specifically indicates the flavorful product is from Virginia. This promotes the image that U.S. pork is for Chinese consumers seeking an upscale western lifestyle.

There is an increasing need for U.S. pork exporters to connect with pork importers in the international arena. China and Hong Kong provide a market with a growing middle class who are seeking a higher quality and safer source of pork. However, there are other pork exporting countries seeking the same markets. For U.S. exporters to be successful they must understand the expectations of pork importers in China and Hong Kong and simultaneously fill the needs of those consumers.

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New Faces in Agricultural Economics

Dr. Bhagyashree Katare

Dr. Bhagyashree Katare joined the department in August of 2015. She earned her Master of Financial Mathematics degree, Master of Science degree in Applied Economics, and a Doctorate in Applied Economics from the University of Minnesota. During her doctoral program, Dr. Katare has taught courses in Economics and Statistics as an adjunct faculty. She has also worked as a consultant for World Bank and Young Lives Project. Dr. Katare's research interests are in the economics of food, health, nutrition, and particularly on the empirical analysis of consumption behavior related to health outcomes. Her current research centers on the economic determinants of weight gain and the spread of obesity. In the next few years, Dr. Katare will develop a research program focused on understanding how environmental factors and peers influence the health choices and decisions of individuals. Her teaching responsibilities include an undergraduate course in agricultural marketing.

Dr. Nathanael M. Thompson

Dr. Nathan Thompson joined the department in February 2016 after completing his PhD in Agricultural Economics at Oklahoma State University. His research and extension programs will focus primarily in the areas of production economics and farm management, with a specific emphasis on risk management as it pertains to farm-level decision making. Nathan has a strong interest in interdisciplinary, applied research with practical implications for producers and other relevant stakeholders. Some of his previous work has involved determining the economic feasibility of alternative technologies and production practices for both crop and livestock producers. In his dissertation, Nathan evaluated the economic feasibility of genetic testing in beef cattle production. This included a series of papers looking at the value of using genetic information to improve the selection, management, and marketing of cattle.

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