DIVISION OF AGRICULTURE

RESEARCH & EXTENSION

University of Arkansas System

Trends for Arkansas Field Crop Yields, 2004-2013

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Increasing yields are an indicator of improvements in crop production technology. Technological advancements allow increased production without additional acreage inputs. Producer profits increase as increased yields lead to greater revenue for each acre in production. Technological improvements which improve yields include inherent seed characteristics, genetic modifications, chemicals, and management practices. Environmental conditions in a single year may lead to deviations from a prevailing yield trend. A statistical measurement that accounts for annual yield volatility is useful for discerning long-term yield trends. This report utilizes annual crop yields in conjunction with Olympic average yields for evaluating Arkansas field crop yields during 2004-2013.

Annual Yields for Field Crops

State annual average yields for major Arkansas field crops during 2004-2013 are presented in Figure 1 through Figure 6. Data are from the National Agricultural Statistics Service (USDA, NASS 2014). Each figure includes the Olympic average for a five-year period. Olympic averages are the average of three years after excluding the highest and lowest yielding years for each five-year period. For example, the Olympic average for cotton in 2013 is the average of yields in 2010 (1045 lbs./ac.), 2011 (929 lbs./ac.), and 2012 (1064 lbs./ac.). Yields in 2009 (818 lbs./ac.) and 2013 (1149 lbs./ac.) are excluded from calculating the Olympic average. This method of calculating averages reduces volatility that is caused by extremely low and high yields that may be deviations from a prevailing trend.

Figure 1 shows Olympic average cotton yield is on a declining trend after 2007. Average annual cotton yields are on an increasing trend in recent years, but yield volatility minimizes the impact on Olympic yields. The historical maximum cotton yield occurred in 2013 at 1149 lbs.\ac. Figure 2 shows corn with an increasing trend beginning in 2007. The historical high corn yield is in 2013 at 187 bu.\ac. Soybean yields in Figure 3 have an increasing trend for the entire 2004-2013 period. Olympic average yields return to an increasing trend in recent years after four years of no increase. The historical high soybean yield of 43.5 bu.\ac. occurred in 2013. Rice yields in Figure 4 have a steady increase from 2004-2007. Olympic average rice yields declined for the next five years before increasing in 2013. The historical high rice yield occurred in 2013 and was 168 bu.\ac. Grain sorghum yields in Figure 5 achieved a historical maximum in 2013 at 102 bu.\ac. The Olympic average reached a high in 2008 and is since then on a declining trend. In Figure 6, the historical high wheat yield is in 2013. The Olympic average wheat yield is on an increasing trend beginning in 2009.

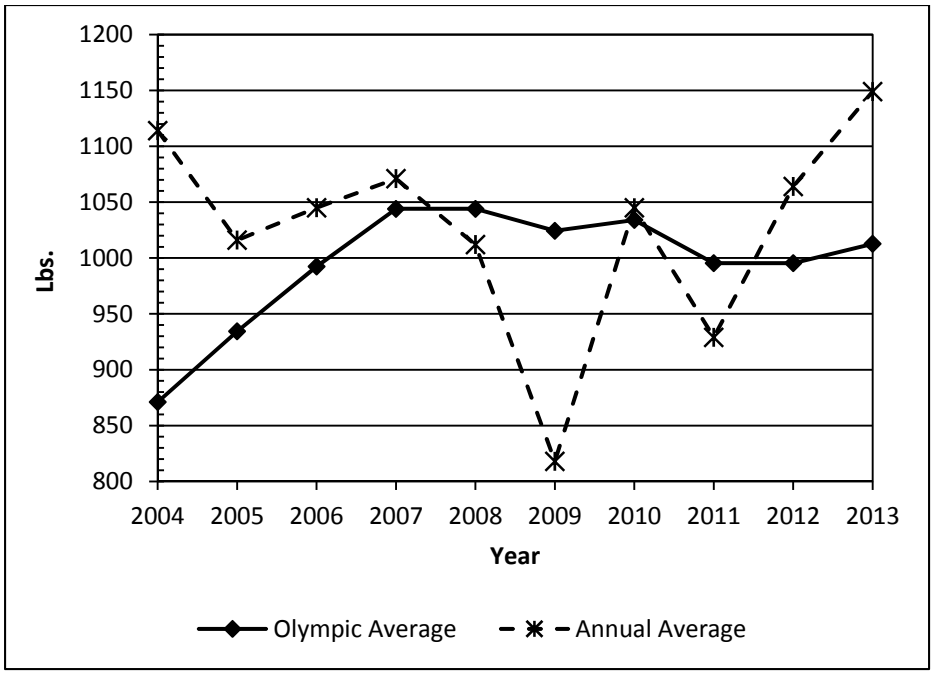


Figure 1. Arkansas Cotton Yields, Annual and 5-Year Olympic Average, 2004-2013

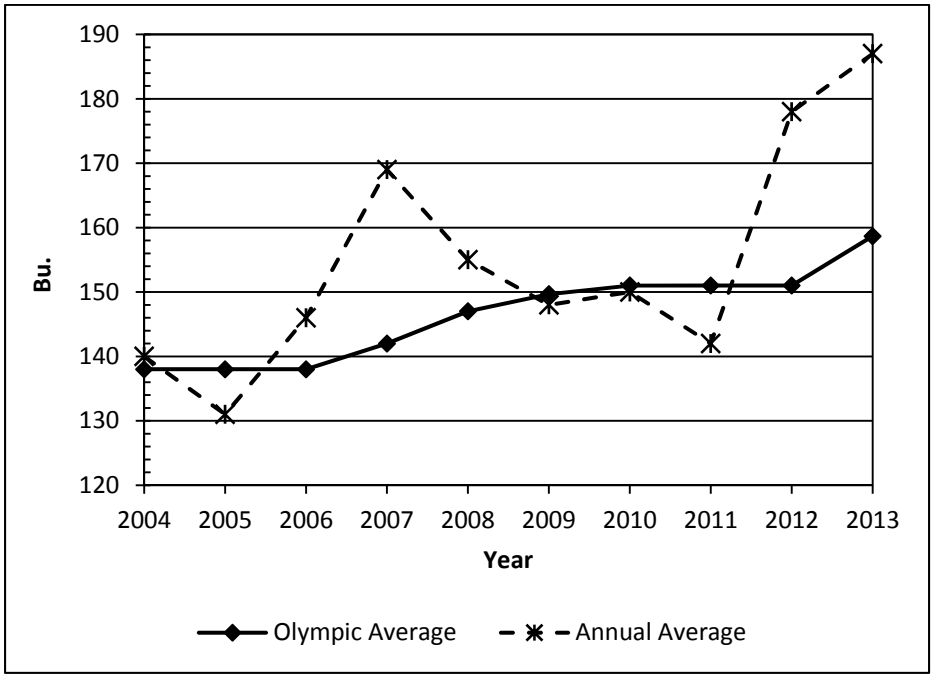


Figure 2. Arkansas Corn Yields, Annual and 5-Year Olympic Average, 2004-2013

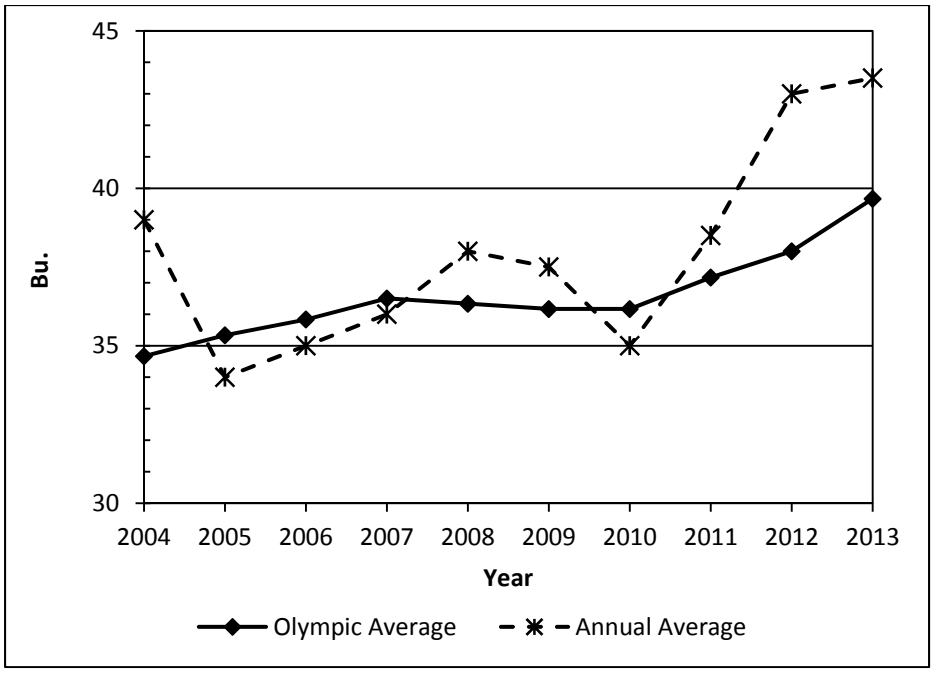


Figure 3. Arkansas Soybean Yields, Annual and 5-Year Olympic Average, 2004-2013

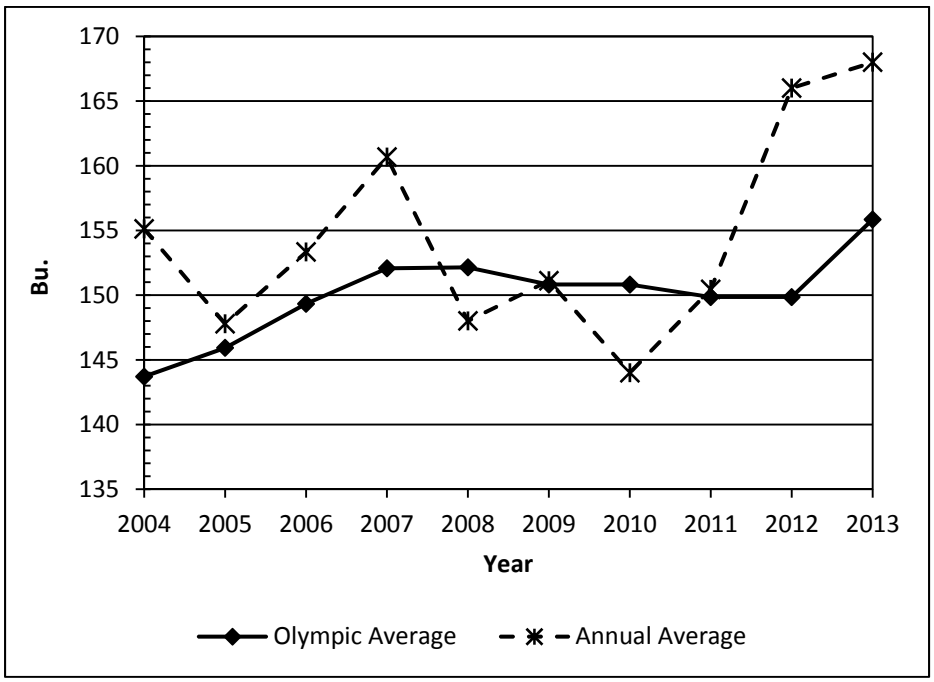


Figure 4. Arkansas Rice Yields, Annual and 5-Year Olympic Average, 2004-2013

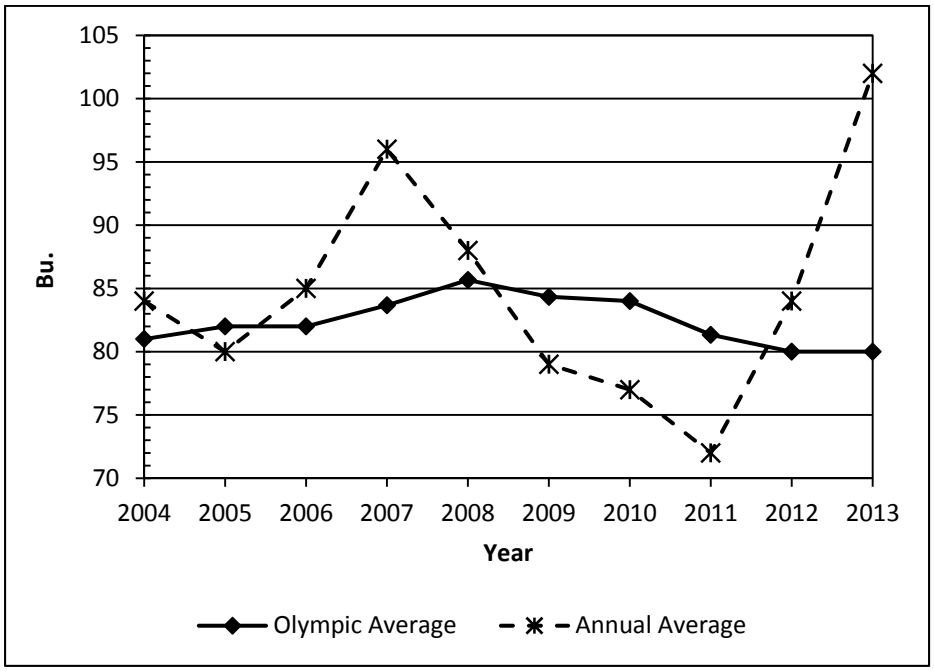


Figure 5. Arkansas Grain Sorghum Yields, Annual and 5-Year Olympic Average, 2004-2013

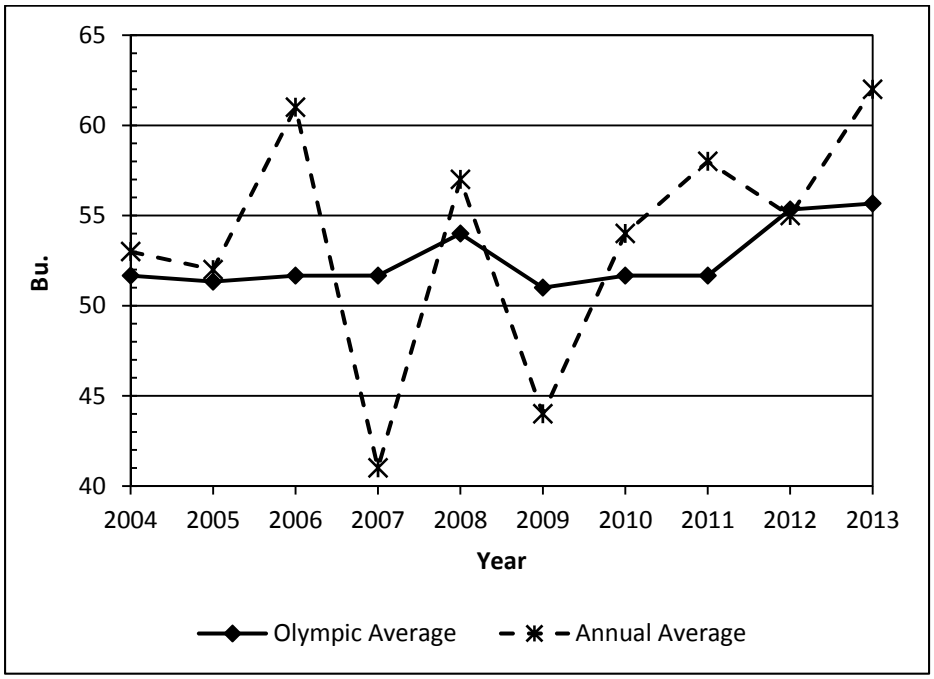


Figure 6. Arkansas Winter Wheat Yields, Annual and 5-Year Olympic Average, 2004-2013

Comparing Trends in Arkansas and U.S. Yields

Appendix 1 compares Olympic average fields for Arkansas and the aggregate of other U.S. producing states (USDA, NASS 2014). Arkansas cotton yields in Appendix 1A follow trends similar to other U.S. yields. Since 2010, Arkansas cotton yields average 228 lbs./acre, or 29%, more than other U.S. yields. Corn yields in Appendix 1B show the difference between U.S. and Arkansas yields decreasing from 2007-2012, and the Arkansas Olympic average surpasses the U.S. average in 2013 by 6 bu.\ac. Since 2010, Arkansas soybean yields in Appendix 1C average 5 bu./acre, or 12%, less than other U.S. yields. Appendix 1D shows that the difference between Arkansas and other U.S. rice yields increasing from 2008-2012. An increase in Arkansas Olympic average in 2013 narrows the difference with the U.S. average to 8 bu./acre, or 5%, less than other U.S. rice yields since 2010. Arkansas grain sorghum yields in Appendix 1E average 16 bu./acre more than other U.S. yields since 2010. Appendix 1F has winter wheat yields that are 8 bu./acre greater in Arkansas than other U.S. states since 2010.

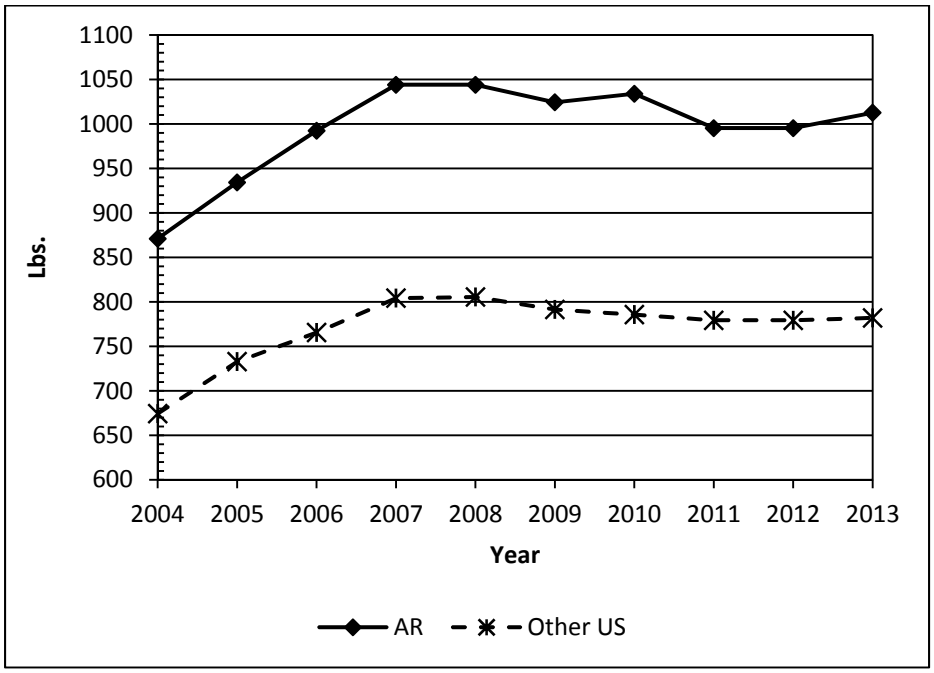
Summary

The foundation of agricultural productivity is sustained increases in crop yields. All Arkansas field crops consisting of cotton, corn, soybeans, rice, grain sorghum, and wheat demonstrate increasing yield trends, and each crop achieved a historical high yield in 2013. Average yields in Arkansas are greater than other U.S. field crop yields for cotton, corn, grain sorghum, and wheat. Average yields for soybeans and rice are less than other U.S. yields.

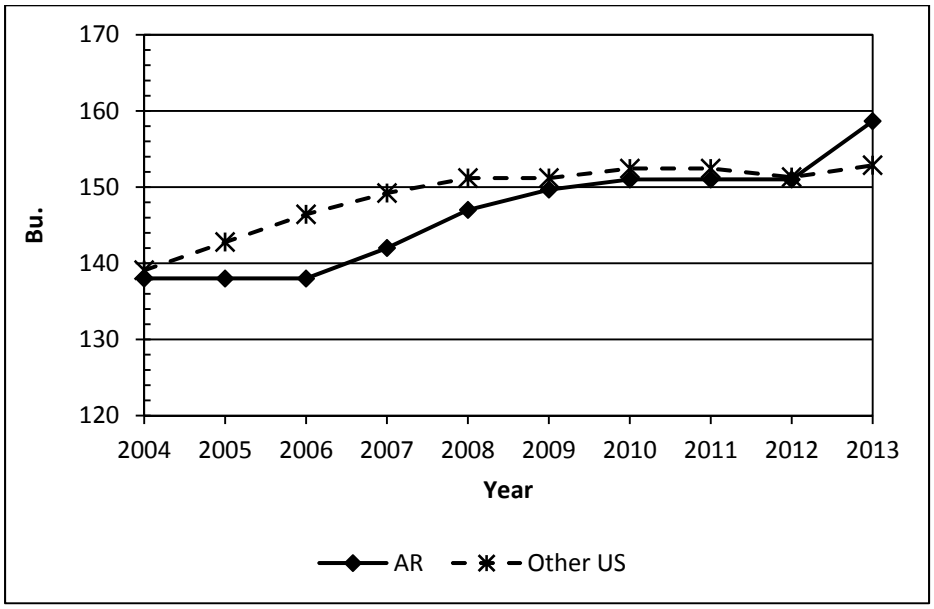
Reference

U.S. Department of Agriculture-National Agricultural Statistics Service (NASS). Internet site: http://www.nass.usda.gov/ (Accessed February 18, 2014).

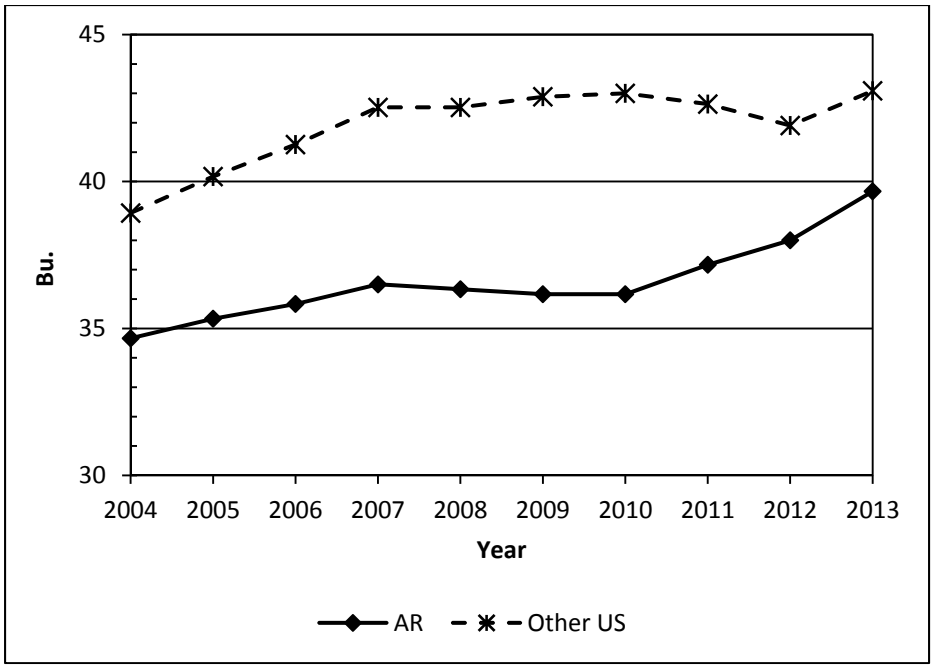
Appendix 1



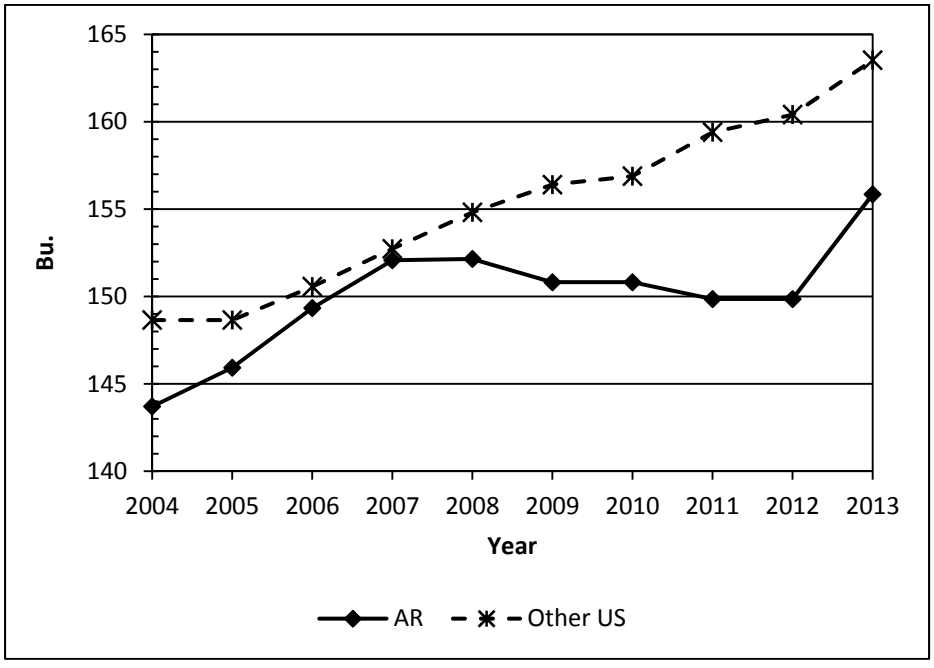
Appendix 1A. Arkansas and Other U.S. 5-Year Olympic Cotton Yields, 2004-2013



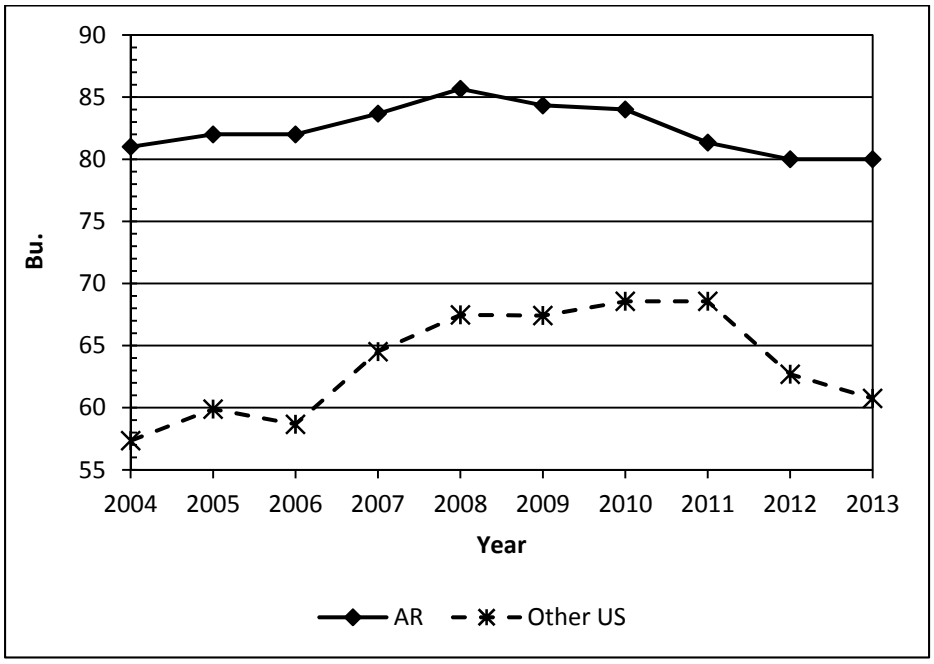
Appendix 1B. Arkansas and Other U.S. 5-Year Olympic Corn Yields, 2004-2013



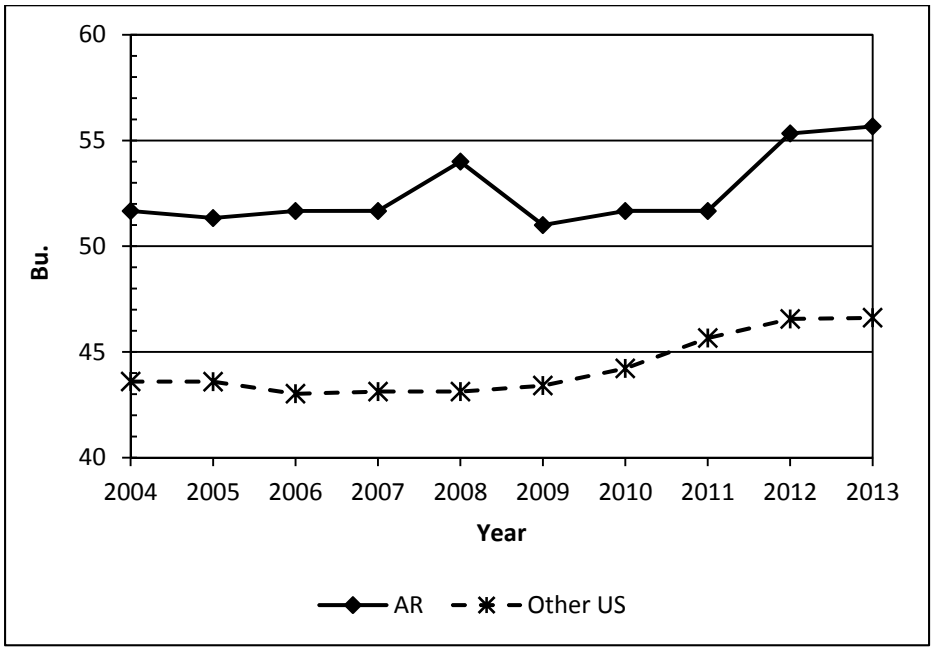
Appendix 1C. Arkansas and Other U.S. 5-Year Olympic Soybean Yields, 2004-2013



Appendix 1D. Arkansas and Other U.S. 5-Year Olympic Rice Yields, 2004-2013



Appendix 1E. Arkansas and Other U.S. 5-Year Olympic Grain Sorghum Yields, 2004-2013



Appendix 1F. Arkansas and Other U.S. 5-Year Olympic Winter Wheat Yields, 2004-2013