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University of Arkansas System

Trends for Arkansas Field Crop Yields, 2003-2012

AG-1289

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May 2013

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Trends for Arkansas Field Crop Yields, 2003-2012

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 2003-2012.

Annual Yields for Field Crops

State annual average yields for major Arkansas field crops during 2003-2012 are presented in Figure 1 through Figure 6. Data are from the National Agricultural Statistics Service (USDA, NASS 2013). 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 2012 is the average of yields in 2008 (1012 lbs./ac.), 2010 (1045 lbs./ac.), and 2011 (929 lbs./ac.). Yields in 2009 (818 lbs./ac.) and 2012 (1083 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 cotton yield is declining after 2007. Cotton has large yield increases from 2003 until 2007. Maximum cotton yield occurred in 2004 with an increasing trend continuing for three additional years. There is a subsequent leveling of yield with a low of 818 lbs./ac. in 2009. Yield for 2009 is not included for calculating Olympic average yield in any year. Figure 2 shows corn with an increasing trend that is leveling since 2010. The highest corn yield is in 2012. Soybean yields in Figure 3 have an increasing trend for the entire 2003-2012 period. Olympic average yields return to an increasing trend in recent years after four years of no increase. Rice yields in Figure 4 have a steady increase from 2003-2007. Olympic average rice yields are declining for the most recent five years. Grain sorghum yields in Figure 5 achieve a maximum in 2007. Annual average yields decline in each year during 2008-2011. The lowest annual yield for 2003-2012 occurs in 2011. In Figure 6, the highest wheat yield is in 2006 and the lowest yield is in 2007. The Olympic average yield indicates a slight overall decrease for the 2003-2012 periods.

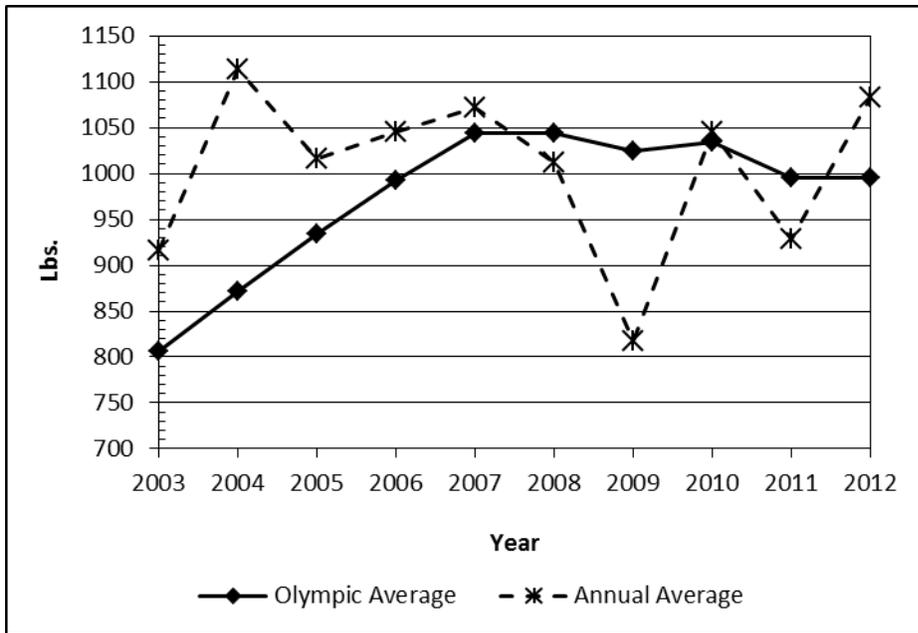


Figure 1. Arkansas Cotton Yields, Annual and 5-Year Olympic Average, 2003-2012

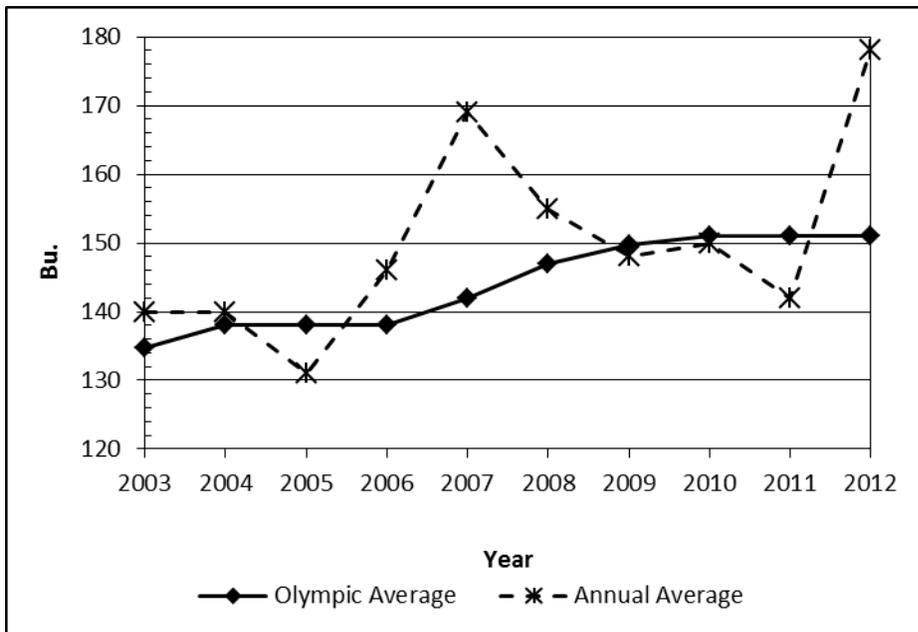


Figure 2. Arkansas Corn Yields, Annual and 5-Year Olympic Average, 2003-2012

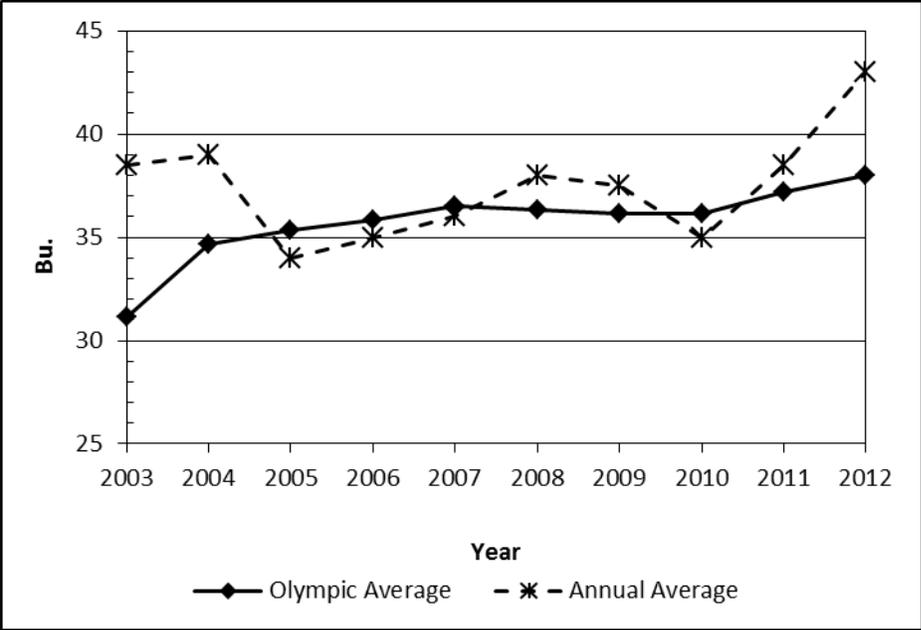


Figure 3. Arkansas Soybean Yields, Annual and 5-Year Olympic Average, 2003-2012

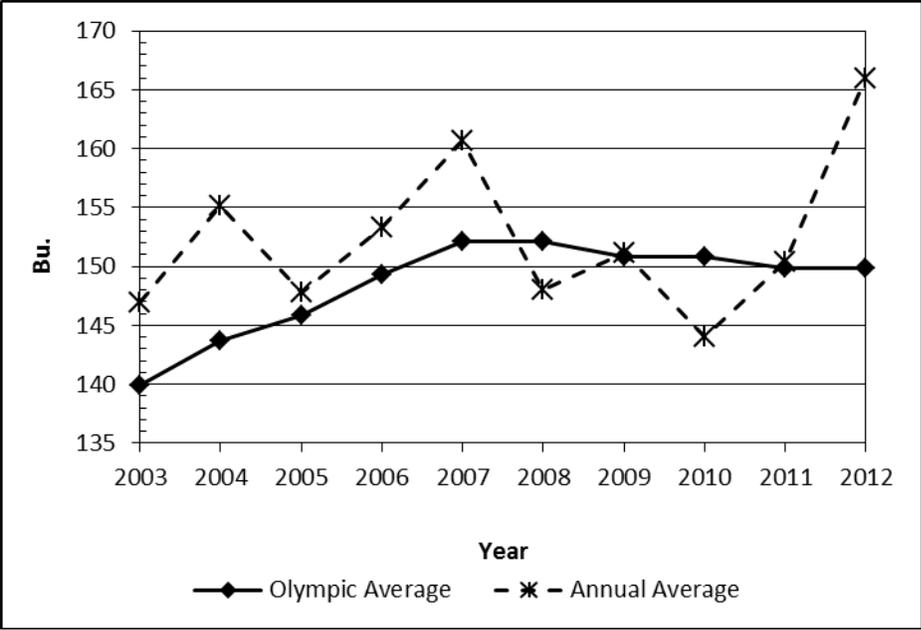


Figure 4. Arkansas Rice Yields, Annual and 5-Year Olympic Average, 2003-2012

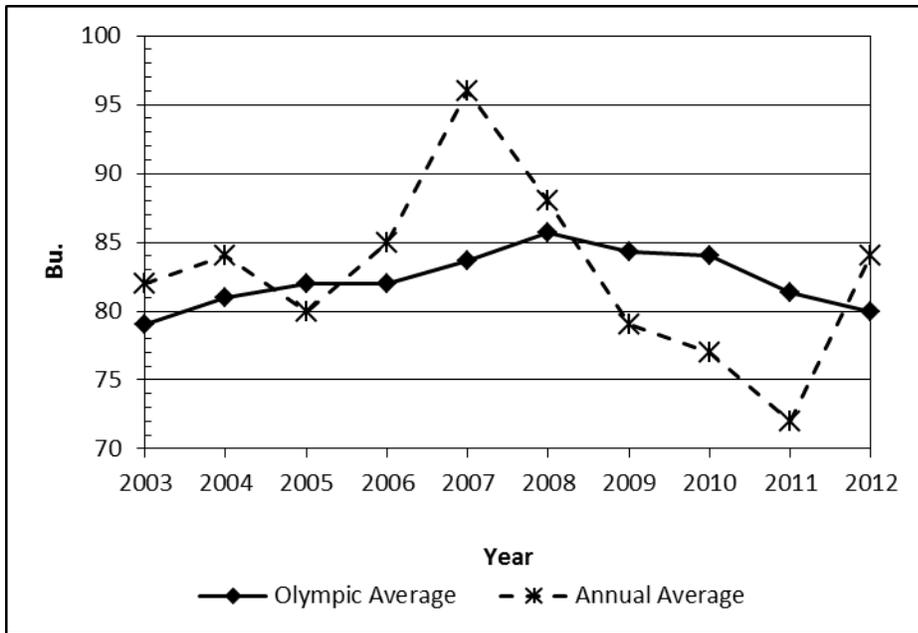


Figure 5. Arkansas Grain Sorghum Yields, Annual and 5-Year Olympic Average, 2003-2012

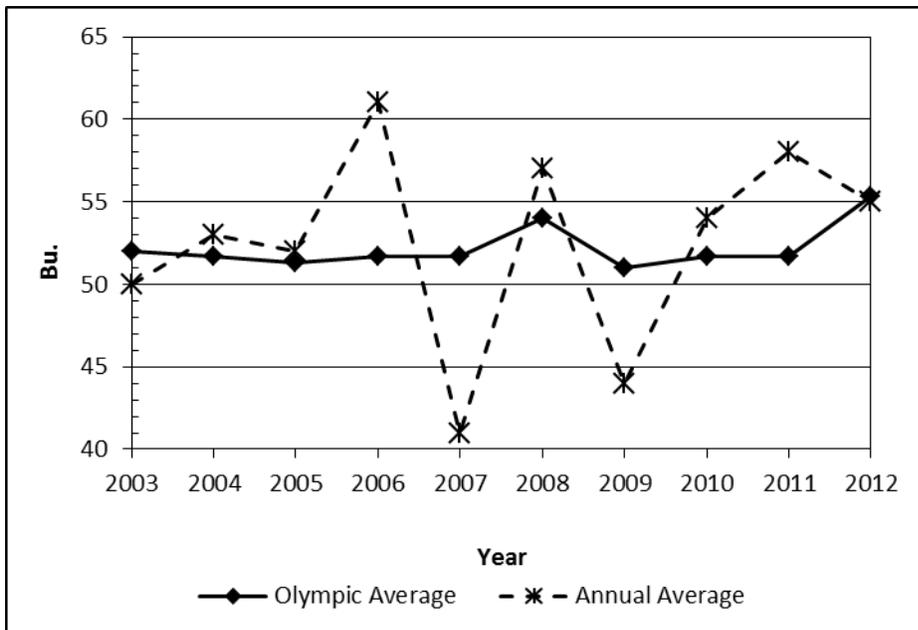


Figure 6. Arkansas Winter Wheat Yields, Annual and 5-Year Olympic Average, 2003-2012

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 2013). Arkansas cotton yields in Appendix 1A follow trends similar to other U.S. yields. Since 2009, Arkansas cotton yields average 229 lbs./acre, or 29%, more than other U.S. yields. Corn yields in Appendix 1B show that the difference between U.S. and Arkansas yields is decreasing in recent years with an average corn yield, since 2009, for Arkansas that is 1 bu./acre less than the U.S. other states average. Since 2009, Arkansas soybean yields in Appendix 1C average 6 bu./acre, or 13%, less than other U.S. yields. Appendix 1D shows that the difference between Arkansas and other U.S. rice yields is increasing. Since 2009, Arkansas rice averages 8 bu./acre, or 5%, less than other U.S. yields. Arkansas grain sorghum yields in Appendix 1E average 16 bu./acre more than other U.S. yields since 2009. Appendix 1F has winter wheat yields that are 7 bu./acre greater in Arkansas than other U.S. states since 2009.

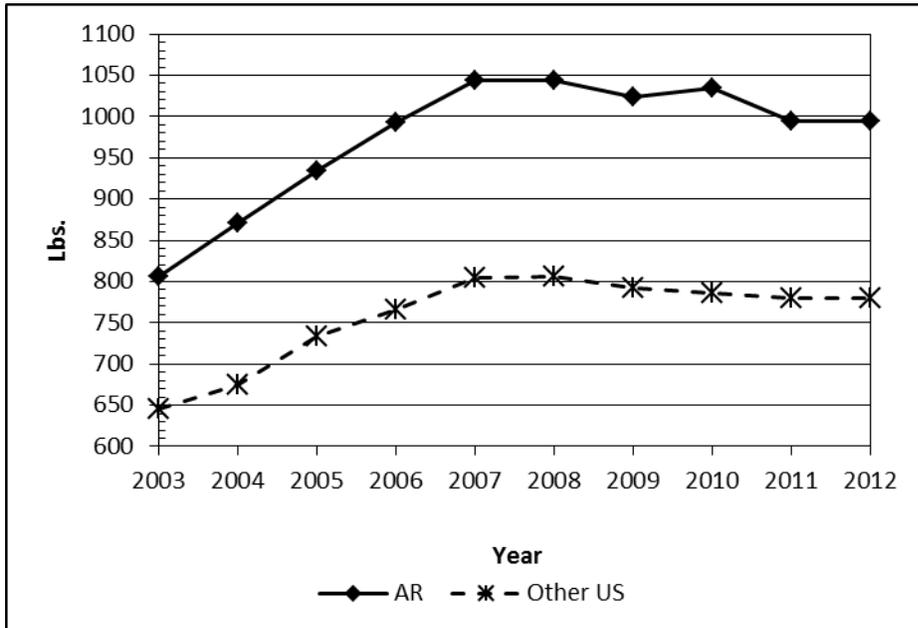
Summary

The foundation of agricultural productivity is sustained increases in crop yields. Arkansas yield trends in recent years have ceased to increase for cotton, corn, rice, and grain sorghum. Yield trends in Arkansas generally follow trends in other U.S. states. Exceptions are soybean and rice yields. Yield increases for U.S. soybeans are leveling, while Arkansas yields are maintaining an increasing trend. Arkansas rice has declining yields since 2007, but yields in other U.S. rice producing states are increasing.

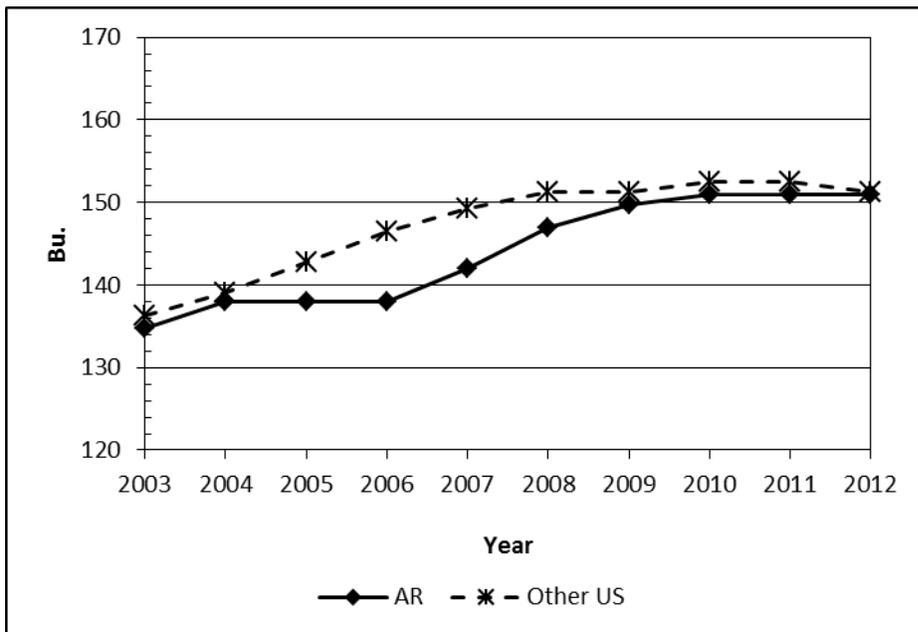
Reference

U.S. Department of Agriculture-National Agricultural Statistics Service (NASS). Internet site: <http://www.nass.usda.gov/> (Accessed April 25, 2013).

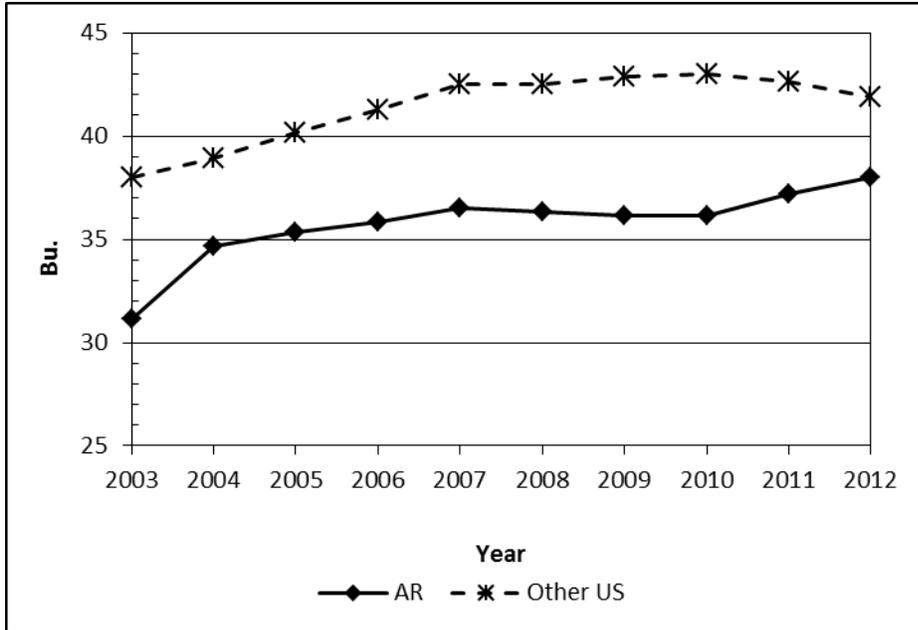
Appendix 1



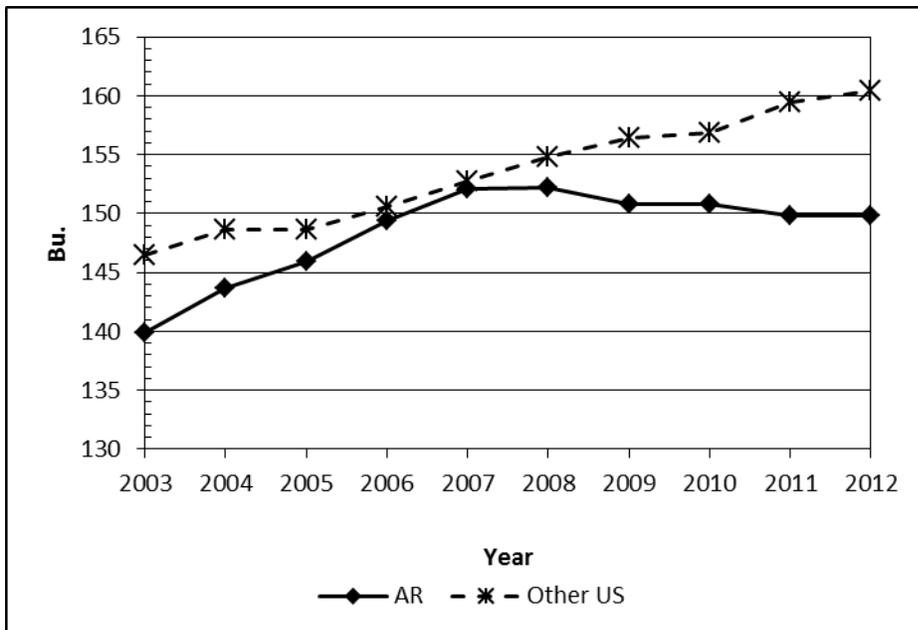
Appendix 1A. Arkansas and Other U.S. 5-Year Olympic Cotton Yields, 2003-2012



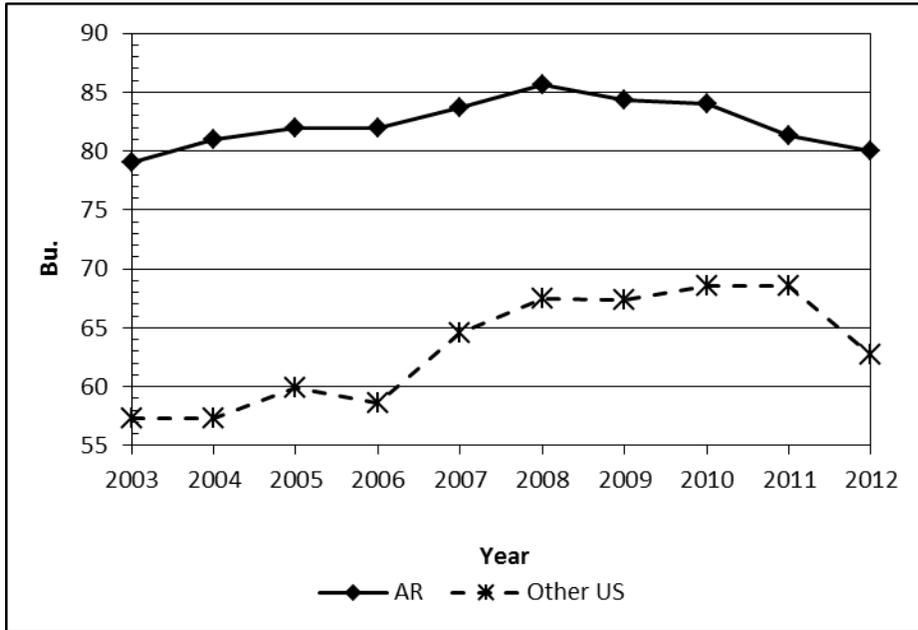
Appendix 1B. Arkansas and Other U.S. 5-Year Olympic Corn Yields, 2003-2012



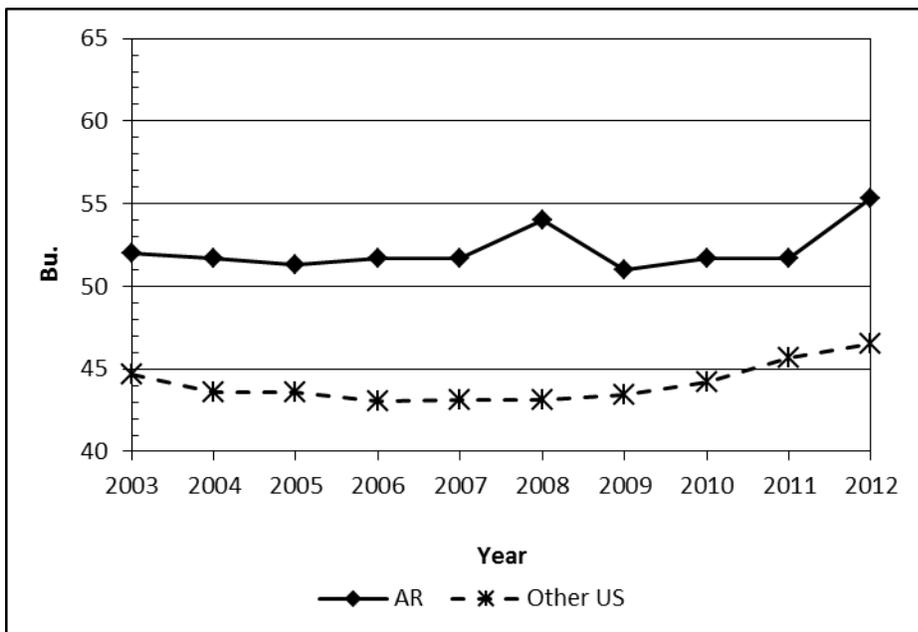
Appendix 1C. Arkansas and Other U.S. 5-Year Olympic Soybean Yields, 2003-2012



Appendix 1D. Arkansas and Other U.S. 5-Year Olympic Rice Yields, 2003-2012



Appendix 1E. Arkansas and Other U.S. 5-Year Olympic Grain Sorghum Yields, 2003-2012



Appendix 1F. Arkansas and Other U.S. 5-Year Olympic Winter Wheat Yields, 2003-2012