



United States Department of Agriculture

FY 2016 Annual Report on Technology Transfer

The collage consists of four distinct images. The top-left image shows two researchers in orange safety vests; one is examining a tree trunk while the other takes notes. The top-right image is a line graph titled 'Corn Acres United States' showing 'Planted' (blue line) and 'Harvested' (red line) acres from 1996 to 2016. The bottom-left image shows two close-up views of a reddish-brown tick. The bottom-right image shows a black and white cow standing in a field of yellow wildflowers.

Year	Planted	Harvested
1996	79	72
1997	79	72
1998	79	72
1999	77	71
2000	79	72
2001	75	69
2002	78	69
2003	78	71
2004	81	74
2005	80	71
2006	93	86
2007	86	78
2008	86	79
2009	88	81
2010	92	84
2011	96	87
2012	95	87
2013	90	83
2014	87	81
2015	94	86
2016	94	86

Clay Center, Nebraska, in collaboration with an industry partner, demonstrated that supplementation of sow gestation diets with 20 grams (.7 ounces) of glucosamine per day during the last third of pregnancy increased litter size by more than 1 piglet per litter born alive. The increase in litter size did not reduce average birth weights or preweaning survival. Routine supplementation of sow diets with glucosamine would contribute to improved reproductive efficiency in sow herds and improved profitability of swine production.

Expanded national genomic evaluation service for dairy cattle.

Dramatic increases in the effectiveness of genetic selection in dairy cattle have been accomplished through genomic analyses, but the process is ongoing and many more traits could be added. Control of the dairy cattle national database and responsibility for routine delivery of genetic evaluations was transferred from ARS in Beltsville, MD, to the Council on Dairy Cattle Breeding. A copy of the CDCB database is maintained at ARS to allow expanded research on genetic evaluation development and methodology, and CDCB employees interact with ARS on a daily basis. The arrangement allows CDCB to continue expanding data collection and services to the dairy industry, while ARS staff focuses on research. Projects completed jointly by ARS and CDCB include exchange of Holstein bull genotypes with Switzerland (March 2016) and Japan (May 2016); genomic prediction of breed composition (June 2016); and expansion of genomic evaluations to Guernseys as a fifth dairy cattle breed (April 2016) in cooperation with the United Kingdom and the Isle of Guernsey. The collaboration between ARS and the dairy industry has produced a world-leading genomic prediction system and a vast database that producers in about 50 countries now use routinely to accelerate genetic progress and select parents who can produce healthier, more productive dairy cattle.