

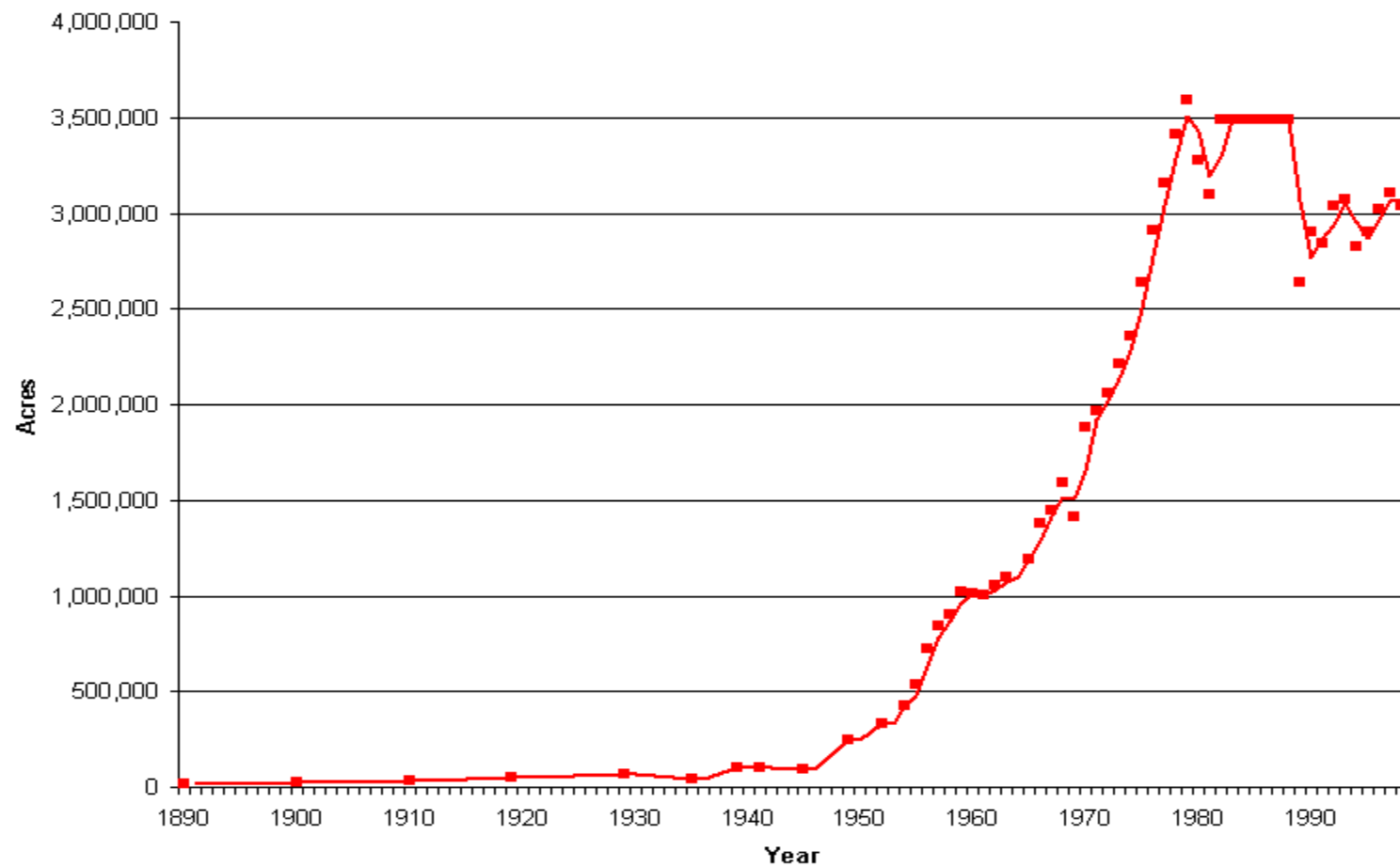
Kansas Irrigation Systems and Cropping Trends

Definition: Irrigation systems are the mechanisms that allow water to be diverted from its original place of storage and applied to agricultural fields for the purpose of supplementing water available for growing crops and enhancing crop yields. Irrigation is attractive to many agricultural producers in that water can be applied to crops when the natural precipitation totals are below normal levels or are untimely. In addition, irrigation allows high-value crops to be produced in areas of the state where it would be very challenging to grow them under natural precipitation levels.

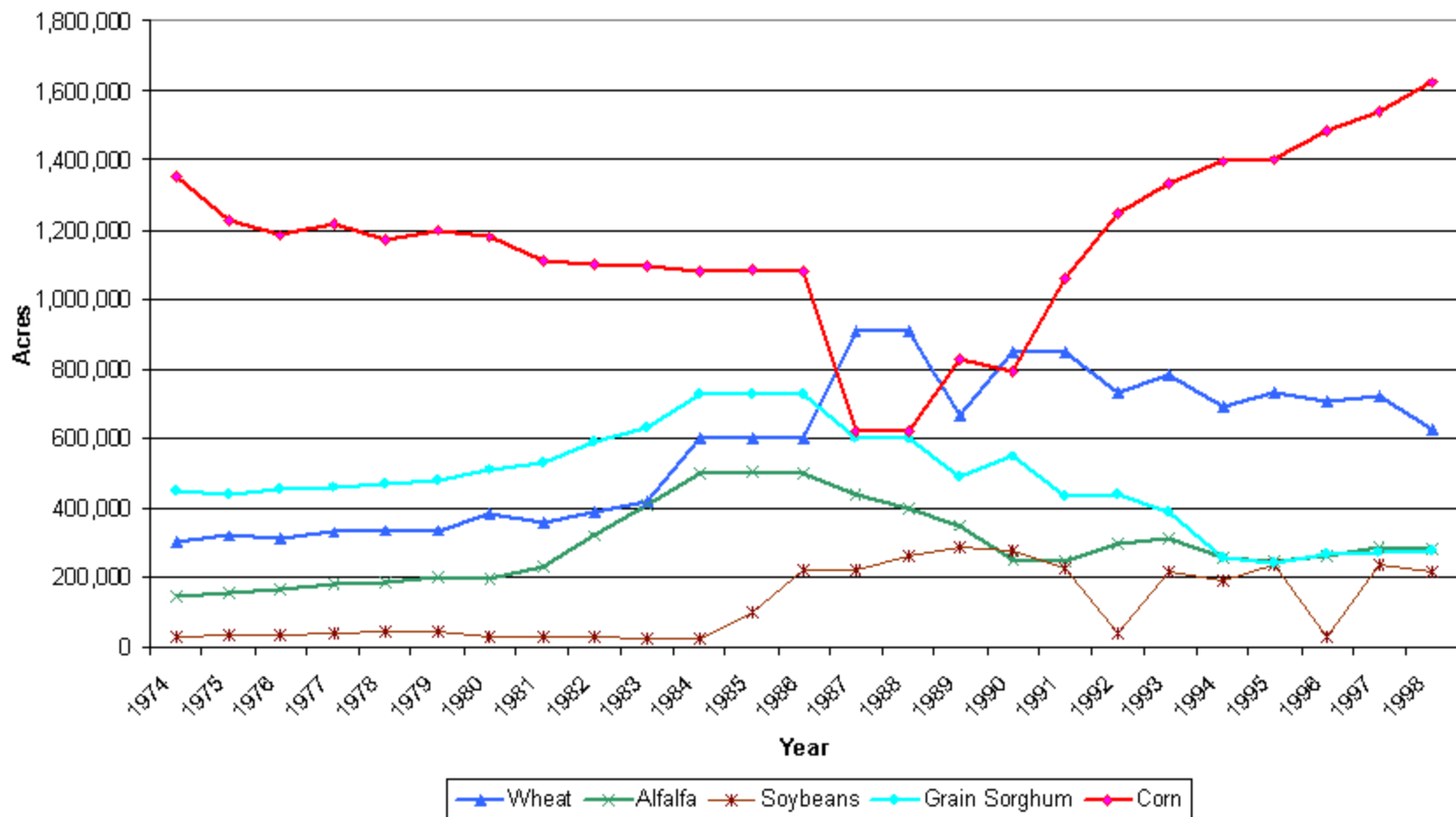
Relevance to understanding water resources: Irrigation represents by far the largest use of water in the state. Trends in irrigation systems and cropping patterns provide indications about the evolution and development of irrigation in the state and about what is being produced with the water used. With the development of center pivot sprinkler systems in the 1960s, irrigation in Kansas expanded considerably. Agricultural fields containing sandy soils or greater topographic relief that were previously unirrigable under older gravity flow systems could now be irrigated.

Discussion: Although evidence of irrigation in Kansas has been identified as beginning around 1650 by the Taos Indians along Beaver Creek in what is now Scott County State Park, the first major efforts toward large-scale irrigation development in the state began in the 1880s with the construction of canals to divert surface water from the Arkansas River (Erhart, 1969). With surface water diversions into the canals proving to be inefficient and unreliable, the future of large-scale irrigation in Kansas came to be dependent on the development of pumping plants using groundwater as the source of water. With the passage of the Water Appropriation Act in 1945 and the Groundwater Management District (GMD) Act of 1972, rapid expansion of irrigated acres occurred throughout the 1970s and 1980s, as is shown in the Graph of Irrigated Acres in Kansas 1890 to 1998. The majority of the irrigated acres in the state fall within the boundaries of the GMDs.

While many different crops are irrigated in Kansas, the five most commonly irrigated crops are corn, wheat, grain sorghum, alfalfa, and soybeans. These crops account for over 97 percent of all the irrigated crop acreage. Corn production alone accounts for more than 50 percent of all the irrigated land. During the early 1980s, the distribution of irrigated acreage for corn, wheat and grain sorghum was similar, with wheat often dominating. Continued improvements in the yield potential of corn in terms of both total production and yield response per inch of applied irrigation water have made corn dominant today. These yearly trends can be seen in the Graph of Major Irrigated Crop Acreage Trends in Kansas, 1974-1998. Center pivot systems became the dominant irrigation system during the 1990s. In 1974, only 28 percent of the land was irrigated by sprinkler systems (all types), but by 1997 almost 70 percent of the land was irrigated by sprinkler systems (which were almost exclusively center pivots).



Irrigated Acreage in Kansas, 1890 to 1998



Major Irrigated Crops Acreage Trends in Kansas, 1974

The economic impact of irrigation is considerable. The contribution to the Kansas economy in 1998 from the five major irrigated crops was over \$900 million (Kansas Ag Statistics, 1999) in spite of depressed commodity prices. The irrigated area is less than 14 percent of the total harvested cropland, but irrigation of that area produces over 25 percent of the total harvested crop value for the state. Table 1 shows Kansas farm statistics. The value of production from other irrigated crops is not represented in this table.

Table 1. 1998 Kansas Farm Statistics

Source: 1999 Kansas Farm Facts and 1998 Kansas Irrigation Water Use Report

Total Area Harvested	22,143,500 acres
Irrigated Area	3,123,271 acres
Water Pumped	3,430,047 acre-feet
5 Top Irrigated Crops Value	\$913,399,900
Total Irrigated and Dryland Field Crop Value	\$3,594,319,000

Data Sources and Methods:

Information for this section was taken from the following references:

Division of Water Resources, 1992. 1992 Kansas Irrigation Water Use. Kansas Department of Agriculture, Division of Water Resources, Topeka, Kansas.

Erhart, A. 1969. "A page out if Irrigation History: Early Kansas Irrigation", Irrigation Age, February 1969. Pg 20-CNI through 20-CN4.

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Muilenburg, G., F.W. Smith and L.Brander, 1975. From Desert to Breadbasket. A centennial publication of the Agricultural Experiment Station, Kansas State University. Dec. 1975.

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Qualifications: Values listed in this section reflect the state of Kansas as a whole and are not limited to the High Plains Region, although the majority of the irrigated acreage is found within the High Plains region of the state.

See also: Water Usage