Mechanization of Farming: Frank Sadorus and Changes in Agriculture
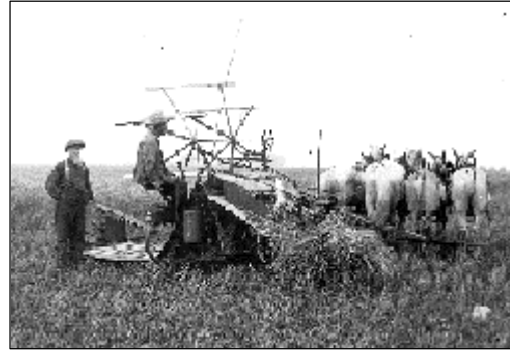
Timeline:
1880 - Frank Sadorus born

1884-1890 - Horse drawn combine used in Pacific coast areas

1885 - George Eastman marketed first box camera

1889-1919 - Period of farm prosperity

1890 - Most of the basic potential of agricultural machinery dependent on horsepower had been discovered

1890's - Agriculture became increasingly mechanized and commercialized

1900-1920 - Urban influences on rural life intensified 1907 - Frank Sadorus begins taking photographs (he is 27)

1908 - Henry Ford manufactured the first Model-T automobile - President Roosevelt's Country Life Commission was established and focused attention on the problems of farm wives and the difficulty of keeping children on the farm

1910-1915 - Big open-geared tractors came into use in areas of extensive farming

1911 - GWB, Frank's father, died

1912 - Frank Sadorus took his last photographs (he is 32)

1917 - United States declared war on Germany and enters World War I - Sadorus family farm was sold - Frank Sadorus was committed to an institution

1920's - Agricultural surpluses became the chief agricultural issue

1920-1940 - Gradual increase in farm production resulted from expanded use of mechanized power

1934 - Agricultural Adjustment Act

Farmers and the Land:

Decade	% of Labor Force = Farmers	Average # Acres	Overall Economic Cycle
1880	49%	134	business expansion
1890	43%	136	widespread bankruptcies and depression
1900	38%	147	return of prosperity / Panic of 1907
1910	31%	138	prosperity and war boom
1920	27%	148	sharp postwar recession / speculative boom
1930	21%	157	Great Depression Change of Farming

Technology and Its Influence:
1850 - About 80 labor hours were required to produce 100 bushels of corn (2 1/2 acres) by hand planting and with a walking plow and harrow.

1890 - About 40 labor hours were required to produce 100 bushels of corn (2 1/2 acres) with a two-bottom gangplow, disk and peg-tooth harrow, and a two-row planter.

1930 About 20 labor hours were required to produce 100 bushels of corn (2 1/2 acres) with a two-bottom gang plow, seven-foot tandem disk, harrow, twelve-foot combine, and trucks.

How Does the Math Work? (for students, if you want them to figure it out)

When looking at all these figures, it is easier to make sense of them by looking at the number of people needed in order to produce the same amount of corn each year.

This can be done in a couple of ways:
First Calculation: We know from the information above about the 1850's that it takes 80 hours to farm 2 1/2 acres. How long would it take to farm one acre?

$80 \div 2.5 = ? \div 1$

This ratio shows us that it would take 32 hours to farm one acre in the 1850's. How long would it take to farm one acre in the 1890's? or the 1930's?
(answers: 1890's = 16 hours to farm one acre; 1930's = 8 hours to farm one acre)

The Sadorus family farm was roughly 180 acres.

How many hours would it take to farm 180 acres in the 1850s?
32 hours/acre x 180 acres = 5,760 hours

During the 1890s? 16 hours/acre x 180 acres = 2,880 hours

During the 1930s? 8 hours/acre x 180 acres = 1,440 hours

Alternative Calculation: There is another way to figure out **how many hours** it would take to farm the Sadorus's land. We start with the same information. We know that during all of these time periods, 2 1/2 acres are needed to produce one unit, one hundred bushels of corn.

180 acres ÷ 2.5 acres = 72

In this math equation we broke down the Sadorus's farm into **how many units can be produced**. One unit is 100 bushels of corn. We found that the Sadorus's farm can produce 72 units.

In the 1850s it took about 80 hours to produce one unit. 80 hours x 72 units = 5,760 hours

In the 1890s it took about 40 hours to produce one unit. 40 hours x 72 units = 2,880 hours

In the 1930s it took about 20 hours to produce one unit. 20 hours x 72 units = 1,440 hours

We've already compared how long it would take to farm the Sadorus land during the different time periods. Now we want to find out **how many people it would take to get the work done in the same amount of time**. Because we want to compare these numbers, we want to manipulate them in the same way.

Let's assume that during all three time periods the people working work for ninety days. The number of days in itself is not important - the fact that we use the same number for ALL of our calculations is.

1850s: 5,760 hours of work ÷ 90 days = 64 hours of work a day
1890s: 2,880 hours of work ÷ 90 days = 32 hours of work a day
1930s: 1,440 hours of work ÷ 90 days = 16 hours of work a day

Now, we know that you can't work more than 24 hours a day - most people today don't work more than 9 (except at planting and harvest times). So, in order to get the work done on time, they would have to divide the work among a group of people. Let's say that each person works 8 hours a day.

1850s: 64 hours of work a day ÷ 8 hours work for one person = 8 people working
1890s: 32 hours of work a day ÷ 8 hours work for one person = 4 people working
1930s: 16 hours of work a day ÷ 8 hours work for one person = 2 people working

These numbers can do a lot to help students understand how the changes in agricultural technology affected farmers and their families. Even in the mid-1800s it was essential that the family worked together and stayed together in order to farm the land. As the times changed and there was more and there was more dependence on machinery, fewer people were needed to produce the same amount of crops - and it was no longer economically feasible for families to stay together on the same land.

Do these statements agree with what actually happened with the Sadorus family? Are there other possible reasons for why the family sold their farm? (for example, they couldn't afford to keep up with the technology)

Photography Resources:
Eastman Photography site
Land record search site for Illinois (State Archives)
American Museum of Photography site

Relevant Pictures from Sadorus Collection:

Sadorus Collection # ---- Picture Subject
034 - farm machinery (thresher?)
035 - bailing hay by hand
046 - Phoebe on knees working in the ground
051 - machinery
061 - picking corn by hand
083 - machinery / horses
088 - machinery
361 - manure spreader
415 - very large machine
529 - corn picking wagon
555 - family in fall harvest
422 - bailing hay
431 - farm machinery
557 - farm machinery and horses

Research Assignment:
Students can divide into groups or work individually on a topic to research farm statistics today and report on the average size of farms, the number of farms in Illinois, the types of farms, new methods of farming, new technologies, and the possible causes of bankruptcy or sell off, comparing today to the 1950s or 1970s.

Agriculture Resources:
http://www.ilfb.org/ Illinois Farm Bureau Web site
http://www.fb.com/ American Farm Bureau
http://www.agstats.state.il.us/ Illinois Agricultural Statistics Service Web site. Click on Links for more sources.