

# Pennsylvania Celebrates 100th Anniversary Of First Soil Survey

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role in agricultural production.

In the soil survey, it is written that Lancaster County "is the most important cigar-filler district in the state and is indeed the largest tobacco-producing county in the United States." It was also recognized as one of the most fertile sections for agriculture in the country.

Back in 1900, the average sized farm in Lancaster County was 80 acres. A barn built in 1900 cost around \$4,000, while a house built of brick or limestone cost \$2,500.

A farmer could expect to pay \$200 to \$300 per acre for a good farm in Lancaster County in 1900. Corn averaged 75 to 80 bushels per acre while wheat yield between 20 and 35 bushels per acre.

Many things changed since then, including the purpose of the soil surveys. The 1900 soil survey was completed to analyze the most ideal soil types for tobacco production. Today soil surveys are used for almost anything imaginable, from storm water management to subdivisions and nutrient management.

According to state soil scientist Edgar White, the soils in all of Pennsylvania's 28 million plus acres have been surveyed. Bedford County was the last county to complete a soil survey in 1998.

Now USDA Natural Resource Conservation Service (NRCS) soil scientists work to update and digitize existing soil surveys. The digitized surveys are available on the computer in Geographic Information Systems and for Precision Farming applications.

"Soil surveys are infinitely more important now than they were even ten years ago," said White. "What always amazes me is the variety of calls we get from people who are trying to use the surveys. There are a lot of state and federal regulations that address soil type."

The soil surveys are used by farmers, engineers, land use planners, subdividers, county commissioners, conservation offices, farmland preservation boards, sewer plant designers, and even college students.

White has worked as a soil scientist for 25 years, working for 14 years in Pennsylvania. He manages the soil survey program for Pennsylvania. Currently 10 soil scientists work throughout Pennsylvania to update and digitize the soil sur-

veys. Their next goal is to make the soil surveys available over the Internet.

"We need more soil scientists than we currently have. But we don't have the money to fund them," said White. "At the peak of completing soil surveys back in the late 1970s, we had as many as 45 soil scientists working on the surveys."

Many of those scientists were funded by the state, which cut the funding in 1980 when most of the counties were surveyed at least once.

For a county the size of Lancaster County, it would take 12 staff years to complete the soil survey. The process begins with the soil scientists going out and walking every mile of the county to dig and collect soil samples.

Once the soil samples are tested and identified, the information is entered into an aerial map that shows the landscape of the county. Aerial maps came into use in the 1940s. They allowed soil scientists to see exactly where they are in the county.

After all soil samples are taken, the information is entered into a report, which includes general information about the county, along with specific information about each soil.

Soil information includes engineering index properties, physical and chemical properties, and other features. The make up of the soil is also broken down in the book.

During the last soil survey of Lancaster County, five soil scientists worked on the project, which took them about three years to complete. This was the fourth revision of the original soil survey taken in 1900.

The 1985 survey was taken for land planning, limitations to land use, improvements to overcome limitations, and the impact of selected land uses. It included 89 map units and 35 soil series.

The soil surveys are funded by a cooperative agreement the USDA NRCS has with several groups, including Penn State, Pennsylvania Department of Agriculture, Pennsylvania Department of Environmental Protection, the Association of Conservation Districts, and the State Conservation Commission.

According to White, soil surveys will continue to become more useful as soil scientists continue to collect more and more data. "We try to monitor what people are using the data

for and then tailor the soil surveys to provide that information," said White.

"People are putting new demands on the information," he said. "So we have to collect more data to answer new questions."

For example, pesticide leaching has a lot to do with the amount of organic matter in the soil. The original soil survey of Lancaster County included some data about the organic matter content. But newer surveys include better, more specific information on the soil's organic matter.

So far updates and digitization for 40 of Pennsylvania's 67 counties have been completed or are in the process of being completed. Since there isn't enough funding available to update all of the counties at the same time, White said that the NRCS sets priorities for updating soil surveys.

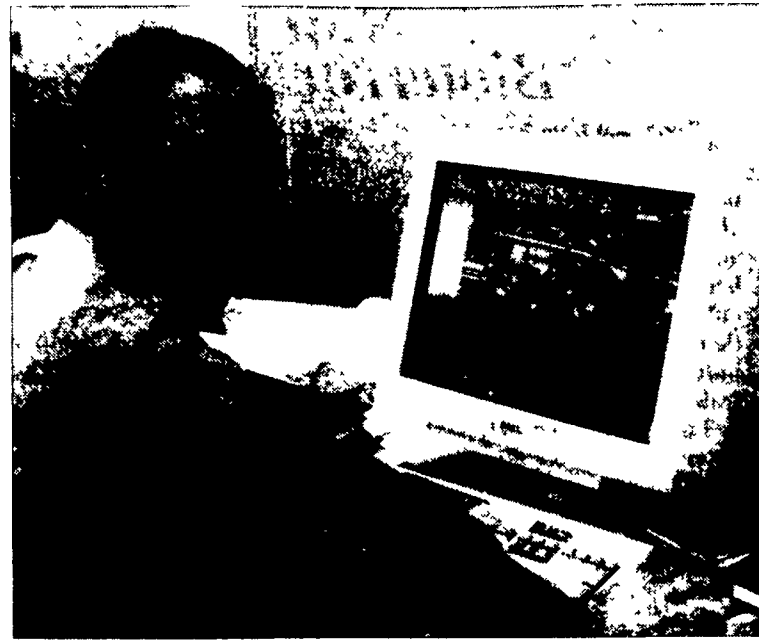
"We set priorities based on the age of the existing survey and the need for a new survey," said White. "Then we look for counties that are willing to help fund the update and digitization process."

If two soil surveys are the same age, then the NRCS will decide which soil survey is updated first based on the need. For example, if one county has a small population and little land use changes, that county would take a lower priority than a county, with a soil survey the same age, which has a large population and a lot of land use changes.

Although White doesn't know of any celebrations currently planned for the 100th anniversary of the first soil survey in Pennsylvania, he does remember last year when Cecil County in Maryland commemorated the 100th anniversary of its participation as one of the first soil surveys completed nationally.

The National Cooperative Soil Survey (NCSS) also celebrated its centennial anniversary last year by opening an "Underground Adventure" exhibit at the Chicago Field Museum of Natural History. That exhibit is expected to attract more than 15 million people over the next 20 years. The NCSS also hosted other exhibits, publications, and town meetings to remind people of the soil survey's importance.

"For 100 years, soils surveys have provided value in letting people know what their soil resources are and how to best



Modern technology allows soil scientist Edgar White to view digitized soil surveys on the computer. White expects that these soil surveys will soon be accessible to everyone over the Internet.



With four soil surveys completed on it in the past 100 years, the last including more than 150 pages and 89 mapping units, Lancaster County's soils have been identified as some of the most fertile soils in the United States.

manage them," said White. "That value will grow even greater as we collect more data and make them more easily accessible to people through the Internet and digitization."

## General Mills and Land O'Lakes Announce Supply Chain Alliance

MINNEAPOLIS, Minn.—Land O'Lakes, Inc. and General Mills, Inc. recently announced that the two companies have formed an innovative supply chain alliance, to engage in joint purchasing and refrigerated distribution activities.

The alliance is expected to generate purchasing synergies and improved customer service for both companies and will utilize new web-based technologies from Nistevo.com, officials of General Mills and Land O'Lakes said.

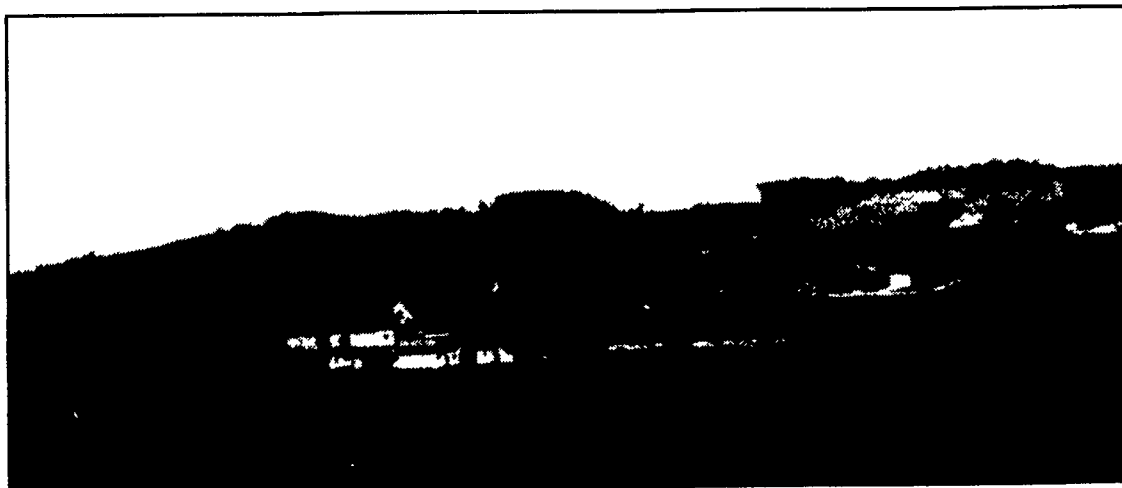
"We are very excited about partnering with Land O'Lakes, and we see significant purchasing savings by combining our companies' efforts," said Randy Darcy, General Mills Senior Vice President, Supply Chain. "In addition, the distribution of our refrigerated products with Land O'Lakes will allow us to improve service and reliability to our customers by reducing the number of customer stops per truck load."

"We have already been able to capitalize on some purchasing efficiencies and expect additional savings opportunities over the next several months," said Chris Policinski, Land O'Lakes Executive Vice President and

Chief Operating Officer for the Dairy Foods Value-added Group. "Now, by pooling our distribution resources, we will improve service and better manage inventories for our customers."

General Mills (<http://www.generalmills.com>) is a leading consumer foods marketer with sales exceeding \$6 billion. In addition to Yoplait and Colombo yogurt, and Lloyd's refrigerated entrees, the company's U.S. businesses include Big G cereals, Betty Crocker mix products, and snack foods such as Fruit Roll-Ups, Pop Secret microwave popcorn, and Chex Mix. The company's expanding international operations include a worldwide cereal joint venture with Nestle and a snacks joint venture in continental Europe with PepsiCo.

Land O'Lakes (<http://www.landolakesinc.com>) is a national farmer-owned food and agricultural cooperative, with sales approaching \$6 billion in all 50 states and more than 50 countries. It is a leading marketer of a full line of dairy-based consumer, foodservice, and food ingredient products across the U.S.



Located in the Hagerstown Loam valley, this farm was included in the first soil survey in Lancaster County completed 100 years ago. Do you know where this farm is and what it looks like today?