

# Agricultural Research

## Unlocking the Secret to Disease-free Cattle

Story on page 7



limit its persistence. Selective breeding may also be used to strengthen its effectiveness. —By **Matt Bosisio, ARS.**

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## Sweetpotatoes Make Good French Fries

Are American consumers ready for sweetpotato french fries? Agricultural Research Service scientist William M. Walter Jr., at Raleigh, North Carolina, thinks they are.

Walter says french-frying the sweetpotato may liberate that root vegetable from its traditional place at the holiday dinner table and put it on restaurant menus, right alongside the more popular white potato.

It's already happened at Wolensky's, a Washington bar and grill that sells 100 to 150 pounds of sweetpotato french fries each week, according to chef Kevin Long.

"We serve them with raspberry vinegar, and they're very popular," Long says.



Chef Kevin Long with a plate of his popular sweet potato french fries. (88BW0820-34)

Walter, a chemist, is optimistic about sweetpotato fries. His studies show that after 1 year of frozen storage, the cooked fries retained their flavor, texture, appearance, and beta carotene, which the body converts to vitamin A.

"Our tests show that storage stability shouldn't be a problem if industry wants to develop sweetpotato french fries," Walter says. "We've had a lot of calls on this research, and sooner or later the product may be widely available. Today only a limited number of restaurants have them on the menu."

How do they taste? "Imagine sweetpotatoes that have a texture somewhat like french fries," he says. "They taste especially good with vinegar, salt, sugar, or other seasoning."

He hopes the study will spur interest in the sweetpotato, *Ipomoea batatas*. Although it's among the leading vegetable crops worldwide, the sweetpotato has been underused in the United States since it was established in Virginia in the mid-17th century.

Most of the attention, of course, has gone to the Irish, or white, potato. In 1987, the United States produced 38.6 billion pounds of white potatoes, compared to 1.2 billion pounds of sweetpotatoes.

"The sweetpotato's underutilization is unfortunate. After carrots, it's one of the best vegetable sources of beta carotene," Walter says. "People can get their necessary vitamin A by eating sweetpotatoes. White potatoes, by comparison, have little or no vitamin A."

The body converts the orange-colored beta carotene into vitamin A, an essential nutrient for vision; growth; development of bones, teeth, and skin; and other functions. The Recommended Dietary Allowance of vitamin A is 4,000 International Units (IU's) for adult women and 5,000 for men.

About 3.5 ounces (100 grams) of raw sweetpotatoes contain about 8,800 IU's of vitamin A. The same amount of raw carrots has about 11,000 IU's.

The study, conducted in collaboration with North Carolina State University food scientists, also showed that sweetpotatoes maintain their texture better if they are slightly dehydrated before freezing. Jewel and Centennial varieties, two main types grown in the southeast, were used in the study.—By Sean Adams, ARS.

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## Nitrogen Losses From Soil Calculated

Concentration of the protective ozone layer in the Earth's upper atmosphere decreased by 2 or 3 percent between 1969 and 1985. Concern that this loss will continue has spurred scientists into learning more about how atmospheric gases react with each other.

Ozone, a 3-atom molecule of oxygen, filters out much of the ultraviolet radiation from the sun. This radiation increases the chances of cataracts and skin cancers. Near ground level, ozone is a major component in smog and aggravates breathing problems.

Commercially manufactured chlorofluorocarbons are alleged to be major culprits in causing the decreasing levels of ozone in the upper atmosphere, but two gases that naturally escape from the soil are also involved.

Just how much of the two—nitric oxide and nitrous oxide—escape and in what proportion is the subject of an Agricultural Research Service study at Fort Collins, Colorado.

Nitrous oxide is an inert gas on the Earth's surface but eventually ends up in the upper atmosphere where it destroys ozone. Concentration of this gas in the atmosphere has increased by 2 to 3 percent every 10 years since 1950.

*Continued on page 6.*