Lighting Up Food's Fat Content

Shining invisible light on a beef patty could lead to a safer, cheaper, faster, more environmentally friendly method for figuring out how much saturated fat is in the burger. The Food and Drug Administration regulates chemical methods of fat analysis used in the food industry to control quality and obtain fat values for food labels. Agricultural Research Service scientists are testing a nonchemical alternative called NIR, or near-infrared reflectance spectroscopy. Near-infrared light is just outside the visible part of the light spectrum. Chemical methods can pose disposal problems and can take 2 days to yield results; NIR takes less than 2 minutes and uses no ether or other hazardous chemicals. A computer measures how much of saturated fat's near-infrared light signature is absorbed by a food sample, compared to samples with known fat content. To improve the technology, ARS has entered into a cooperative research and development agreement with Foss North America of Eden Prairie, Minnesota. Foss supplies automated rapid-analysis tools for the food and agriculture industries. ARS and Foss plan to develop similar techniques for chicken, sausage, and pork. *William R. Windham, USDA-ARS Quality Assurance Research Unit, Athens, Georgia; phone (706) 546-3513, e-mail bobw@athens.net.*

Bioimpedance To Estimate Expectant Moms' Water-Weight Gains

A technique for measuring water-weight gain during pregnancy could increase the odds that an expectant mother will deliver a healthy, normal-weight infant. Several factors increase the risk of low-birth-weight infants—less than 5-1/2 pounds. They include inadequate diet, overly vigorous exercise, diuretics, and drug abuse. Such infants have an even greater risk than preemies of health complications. Physicians have long known that moderate water accumulation during pregnancy strongly indicates proper fetal growth. An ARS-led investigation (reported in *Agricultural Research*, September 1994) was likely the first to show that bioimpedance spectroscopy may offer a safe, accurate, inexpensive way for physicians to detect subnormal gains soon enough to help patients take corrective action. Scientists with ARS, University of California at Berkeley, and Xitron Technologies, Inc., San Diego, California, conducted the study. They tested bioimpedance spectroscopy with 10 women before and during pregnancy and after delivery. In the technique, which takes less than 2 minutes, a harmless current is passed between electrodes on the mother's hand and foot. A computer processes the information and prints an estimate of water load, or "total body water." Measurements from the scientists' test correlated significantly with the babies' birth weights. With further study, bioimpedance may augment ultrasound monitoring. *Marta D. Van Loan, USDA-ARS Western Human Nutrition Research Center, San Francisco, California, phone (415) 556-5729, e-mail mvanloan@whnrc.usda.gov.*

Pine Mulch Goes Technicolor

Pine straw mulch—in blue, red, brown, gold, black, and green—could also put more green in farmers' wallets. ARS scientists developed these designer mulches, which are being marketed to gardeners, homeowners, and landscapers. Like other mulches, colored pine straw conserves soil moisture, moderates soil temperature, and helps stifle weeds. Recent studies show the colored mulch doesn't change soil pH. But the environmentally safe dyes greatly slow down the straw's decomposition, compared to uncolored pine straw or conventional wood chips. Colored mulches could generate 30 to 50 percent more profit—$400 to $800 more per acre—for farmers who usually grow pines for pulp and timber. Farmers can harvest pine straw when trees reach 8 years old. But harvesting every year may tax the tree's own growth and its environment. Scientists advise harvesting only from trees with needles over 6 inches, for ease in baling. The best species are longleaf pine—with its foot-long needles—along with loblolly pine and slash pine. *Catalino A. Blanche, USDA-ARS Dale Bumpers Small Farms Research Center, Booneville, Arkansas, phone (501) 675-3834, e-mail cblanche@yell.com.*

CATALINO BLANCHE

Pine needle mulch.