

killing toxin called Bt. Many activists and some scientists have argued that the health and ecological risks of these plants haven't been adequately assessed (*Science*, 26 November 1999, p. 1662). On the flip side, a number of scientists have voiced concerns about overregulation. A coalition of 11 scientific societies has been lobbying the Environmental Protection Agency (EPA) to scrap a 1994 proposed rule that regulates transgenic "pesticidal plants," arguing that it is unscientific to regulate the process, genetic engineering, as that could encompass features as innocuous as pest-repelling hairs on a plant's leaves (*Science*, 9 April 1999, p. 249). Instead, the societies argued that EPA should regulate the plant's products, such as expressed proteins that might be toxic.

The academy panel, chaired by Perry Adkisson, an entomologist and chancellor emeritus at Texas A&M University in College Station, was formed a year ago partly to address scientists' concerns about the EPA rule. Looking only at what it termed "transgenic pest-protected plants," the panel endorsed their use, saying they could help to reduce the amount of chemical insecticides applied. The panel also dismissed health concerns: "The committee is not aware of any evidence that foods on the market today are unsafe to eat as a result of genetic modification." But it urged more research on, for instance, the flow of genes from crops to weedy relatives, long-term ecological effects of transgenic crops, and potential health effects, monitored through long-term animal feeding studies.

As for EPA's proposed regulations, the panel came down firmly on the side of keeping—indeed strengthening—them. It recommended scrapping two EPA exemptions that assume certain plants are safe: those made by adding viral coat proteins (because the virus could spread to weeds), and those made by inserting a gene from a plant similar enough to interbreed. And it suggested that regulatory agencies add a few requirements—for example, tests for protein allergenicity—and share their data with the public.

The panel's report is "schizophrenic," says R. James Cook, a plant scientist at Washington State University in Pullman and spokesperson for the 11 scientific societies. Cook wonders why the panel endorses a different type of regulation for transgenic crops while concluding that they are not inherently more risky than traditional crops. The answer is simple and pragmatic, says panelist Fred Gould, an entomologist at North Carolina State University in Raleigh: "If you got rid of that rule, public confidence would be down the toilet."

Even so, public confidence could still use some shoring up. Although the Biotechnology Industry Organization (BIO) was delighted with the report—it issued a press release

proclaiming that transgenic foods "are thoroughly tested and safe"—many activists weren't. Before the report was released, protesters gathered in front of the academy with Representative Dennis Kucinich (D-OH). He urged the academy to "scrap the study" because the panel was "tainted by pervasive conflicts of interest," including the departure of the study's original director, Michael Phillips, last July for a job with BIO. The academy concedes that two panel members—an attorney and an industry consultant—did have conflicts of interest, but, according to executive officer William Colglazier, "we felt their regulatory expertise was needed." An internal investigation determined that the report was not biased by Phillips's involvement, he says. The one activist on the panel, ecologist Rebecca Goldberg of Environmental Defense, concurs. "Obviously, I think the panel had enough to offer that I stuck with it." —JOCELYN KAISER

ARCHAEOLOGY

'Pre-Clovis' Site Fights For Recognition

One of the fiercest battles in paleoanthropology concerns the peopling of the Americas: Were the first Americans so-called Clovis hunters who crossed from Asia about 12,000 years ago, or did others get here first, perhaps

crossing the Pacific or the Atlantic? At the annual meeting of the Society for American Archaeology, held last week in Philadelphia, a team of researchers presented evidence that humans camped many times on a site in Virginia dated to 18,000 years ago. Distinctive stone tools, found at a site called Cactus Hill, lie below artifacts typical of the Clovis people, who take their name from an 11,500-year-old site in Clovis, New Mexico. Many researchers are wary of the dates, but others say the results are a strike against the Clovis-first theory. "It's step one of accepting it as pre-Clovis," says Dennis Stanford of the Smithsonian Institution's National Museum of Natural History.

At one level in the Virginia site—a large, sandy hill some 70 kilometers south of Richmond—the team found classic Clovis blades dated to about 10,000 years ago, says Joseph McAvoy of Nottoway River Survey, a private archaeological consulting firm. Some 15 centimeters below, they uncovered subtriangular

projectile points that were clearly not like Clovis artifacts. Radiocarbon dates from associated charcoal suggested that the tools were 5000 years older than the Clovis points above, as documented in an extensive 1997 report. But many archaeologists worried that the unusual artifacts might have fallen from above and been mixed in the sand by plant roots or burrowing animals.

McAvoy marshaled an interdisciplinary team of 15 researchers to find out. Lucinda McWeeney of Yale University's Peabody Museum of Natural History found a much higher concentration of silica remains from plants at tool-bearing levels. She says that's consistent with the idea that people were camping and bringing in plant materials, although others point out that this may be due to ecological succession. She also noticed matching peaks of phosphates, perhaps from urine or excrement.

Meanwhile, Daniel Bush and James Feathers of the University of Washington, Seattle, dated the sand samples with a process called optically stimulated luminescence, which measures the time elapsed since grains were exposed to light. This backed up the radiocarbon dates. Moreover, five samples showed virtually no vertical mixing of grains, McAvoy adds. "There's still some uncertainty about the absolute age of the pre-Clovis deposits, but the relative sequence looks very good," says David Meltzer of Southern

Methodist University in Dallas.

Meltzer and others caution that the artifacts may not be the same age as nearby 18,000-year-old charcoal, because particles are often transported inside sand deposits. The team did get a wide range of radiocarbon dates—both pre- and post-Clovis—on charcoal

associated with the pre-Clovis tools. McAvoy's team dismisses the younger dates as due to contamination. But others aren't so sure. "If there's no consistent pattern [in the dates], then there may be a problem with mixing" of charcoal from different levels, Meltzer says.

Still, the fact that the tools are roughly similar to those of another possible pre-Clovis site in Pennsylvania, called Meadowcroft, is good news. "These are not isolated things that we can't make sense of," Meltzer says. "The point forms bear some resemblance to each other. We're starting to see commonalities, and that's heartening."

—ERIK STOKSTAD



How old? Humans may have camped here at Cactus Hill as many as 18,000 years ago.