Unifying and Dynamic Resource," that was meant to explain, in lay language, some of the recent exciting advances in several fields of mathematics. But it is written in what is a sort of layperson's lapidary style.

For example, the opening section, entitled "D-Modules," begins by defining the three broad general areas of mathematics and then starts discussing D-modules themselves in paragraph two: "Algebraic geometry has been one of the most lively areas of research in algebra during recent decades. It is the study of geometric objects that are the loci of points satisfying polynomial equations in two or more variables, such as the familiar cones from classical geometry." From there, the author quickly moves to define Lie groups. "A continuous symmetry group such as the latter example is called a Lie group. Lie groups can also be viewed as certain groups of matrices with their usual matrix multiplication."

This pamphlet, the mathematicians hope, will open the eyes of policy-makers to exciting and important advances in mathematics. ■ GINA KOLATA

EPA Approves Second Genetic Test

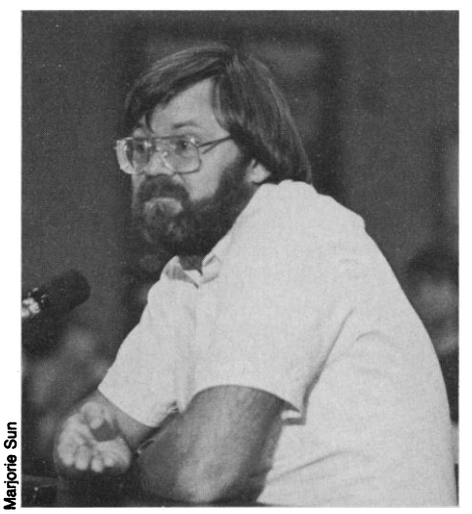
The Environmental Protection Agency recently approved a second experiment that will involve a field test of genetically engineered microbes designed to prevent frost formation on plants. However, local opposition to the test is brewing.

On 13 May, EPA granted permits to University of California researchers Steven Lindow and Nickolas Panopoulos to test altered strains of *Pseudomonas syringae* on potatoes at two sites at the school's research farm in Tulelake, Calilfornia, near the Oregon border. The bacteria normally secrete a protein that initiates the formation of ice crystals, but, in the modified strain, scientists have deleted the gene that codes for the protein. The permit allows the researchers to begin testing immediately and to conduct experiments over a 3-year period.

The test has some community support, but might eventually be blocked. The same day EPA gave the go-ahead to Lindow, the Siskiyou County board of supervisors voted not to delay the experiment, said board chairman George Thackeray in a telephone interview. But the two test sites are located in different counties and the other county board has not yet acted. It is expected to take up the matter shortly. In the meantime, a petition calling for a delay of the test has 460 signatures, said Eva Edgar, a local organizer.

Local opposition is a factor that has delayed a similar experiment downstate in Monterey county. Last November, EPA gave permission to Advanced Genetic Sciences to test altered *Pseudomonas* on strawberry plants outdoors. The county board voted to delay the test. Then EPA suspended the company's permits before the test began. The agency discovered that, prior to approval, the company had injected the modified *Pseudomonas* into test trees that were located outdoors on the company's rooftop in Oakland, California, in violation of EPA rules.

In approving the university scientists' experiment, EPA inspected the lab notebooks of Lindow and co-workers and inspected the test sites at Tulelake, two things that the agency did not do in its review of Advanced Genetic Sciences' proposal.



Marjorie Sun

Steven Lindow: *waiting for 2 years to conduct a field test of genetically altered microbes.*

Lindow has been waiting for federal approval for nearly 2 years. Environmental activist Jeremy Rifkin blocked approval in 1984 by suing the National Institutes of Health, which initially reviewed the test proposal. Earlier this month, however, NIH and Rifkin settled the matter out of court, agreeing that EPA is the proper authorizing agency, and the federal court dismissed the case.

In a separate, but related matter, EPA said on 13 May that it will defer a decision regarding a plan by Monsanto Company to conduct a field test of other altered *Pseudomonas* strains. EPA wants more data on the test organisms. Monsanto changed common soil bacteria to secrete a toxin that is lethal to cutworm, which attacks the roots of corn plants. ■ MARJORIE SUN

DOD Declines to Consider Impact of Nuclear Winter

In a move that aroused some anger on Capitol Hill, the Department of Defense recently declined for the second year in a row to address the policy implications of a potential climatic phenomenon known as "nuclear winter." Its latest report on the subject, released on 13 May, states that "the uncertainties are still much too great even to begin" to assess the potential strategic consequences of extreme darkness and cold brought about by fires in a major nuclear war.

Late last year, Congress ordered the Pentagon to produce a report on these topics by 1 March, largely out of concern that they were inadequately addressed in the Pentagon's first "nuclear winter" report (*Science*, 15 March 1985, p. 1320). Discovery of the climatic phenomenon a few years ago led to speculation that it would render civil defense useless; that it might incapacitate key items of military equipment, such as satellites and airborne command posts; and that it might turn a "first strike" into a suicidal act, through the worldwide distribution of dust, soot, toxic gases, and fallout.

The gist of the Pentagon's 5-page response, which missed a congressional deadline by a month and a half, is that none of these matters can be considered until the scientific basis for a "nuclear winter" is firmly established. A cover letter by deputy secretary of defense William Taft, IV, predicts that this will take "years of research," and says that in any event, "the case at issue, i.e. whether possible climatic effects make a difference, depends critically" on what the Soviets think. "Because we will probably never be confident of knowing the Soviets' real views," he adds, "we must continue to provide against the possibility that predicted climatic effects would have little impact on [their] behavior in an extreme crisis situation." In short, he believes that the Pentagon must continue along its present course.

Taft's letter takes brief notice of the two major scientific studies of "nuclear winter" that appeared in the past year. One, performed by the Royal Society of Canada, determined that the threat of nuclear winter is credible and recommended prompt study of the potential consequences for military policy. Another, performed by a committee of the International Council of Scientific Unions, pointed out that climatic perturbations could be significant far from the nuclear detonations. But Taft adds that "more recent results" which have "not yet been fully subjected to peer review" indicate that