

Forestry Manual Offered By USDA

UNIVERSITY PARK, PA. — Forestry researchers do it. Tree surgeons do it. And, now, almost anyone can diagnose tree injuries with the aid of a new manual.

"Diagnosing Injury to Eastern Forest Trees," published by the U.S. Department of Agriculture-Forest Service, was edited by four Penn State researchers: Drs. John M. Skelly, Donald D. Davis and William Merrill, professors of plant pathology, and Dr. E. Alan Cameron, professor of entomology.

"Today, there is a tendency to blame acid rain for causing injuries and deaths to trees," Skelly said. "While air pollution definitely is

involved in injuring trees, the evidence is not sufficient to indict acid rain at this time.

"The manual is designed to help researchers and other people accurately diagnose tree injuries. This can be difficult because air pollutant-induced injury produces symptoms similar to some disease and insect damage."

The manual, which has 220 color plates, covers air pollution symptoms plus diseases, insects and other stresses brought on by frost, drought and other conditions. The editors were honored for their efforts with a citation and cash award from the USDA-Forest Service.

Merrill said, "Sometimes researchers focus on just one symptom of tree damage and fail to see the whole picture. The manual helps people make a better-informed diagnosis."

Prior to 1985, scientists generally suspected that acid rain was causing injuries to forests, but had conducted relatively few field evaluations to test the theory. In 1985, the National Acid Precipitation Assessment Program of the U.S. Environmental Protection Agency and USDA-Forest Service joined forces to begin studying the problem.

"We know, for example, that ozone is the most widespread air

pollutant in the United States," Skelly said. "The other major pollutants affecting forests are sulfur dioxide and hydrogen fluoride."

Ozone is formed in ground-level air by the action of sunlight on hydrocarbons and oxides of nitrogen that have been emitted by industry and automobile sources.

Sulfur dioxide, which is toxic to vegetation, has been recognized as a danger to plants since the 1800s, the researchers said. It is emitted into the atmosphere when materials containing sulfur, such as fossil fuels, are burned.

Hydrogen fluoride and silicon tetrafluoride, the two most common forms of fluoride, are gases emitted during heating or chemical treatment of fluoride-containing rocks and minerals.

"We believe that these pollutants weaken and stress trees, making them more susceptible to disease and insect infestations that may ultimately kill the trees," Merrill said. "In this same way, acid rain may play a role, not necessarily the primary one, in killing trees."

"Diagnosing Injury to Eastern Forest Trees" is available by contacting Skelly at 108 Buckhout Lab, Penn State, University Park, Pa. 16802.

A German edition of the manual is in press. The manual is part of a U.S.-German cooperative research program on the forest decline problem. Sulfur dioxide and ozone are major pollutants affecting forests throughout the industrialized nations, Skelly noted.

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(Continued from Page E11)


Richard Kriebel					
Hanna	4-11	305	22,211	3.6	819
Dean & Eric McMillen					
Marcy	9-3	305	24,197	3.9	960
Dawn	6-4	305	22,831	3.6	842
Richard G Smith					
Emily	5-0	305	23,433	3.3	793
Renie	4-5	305	21,648	3.7	802
Val	4-4	305	17,053	4.4	754
Ivan M Martin					
68	0-0	305	24,270	3.6	873
38	4-7	305	18,764	4.0	757
48	4-6	305	17,548	4.3	769
Duane L Hertzler					
24	4-1	305	20,143	3.5	708

99	4-0	305	21,849	3.2	709
14	3-2	305	21,013	3.4	717
James F Bolze					
3	9-7	305	22,186	3.2	715
Ed & Wilma McMillen					
Lilian	3-3	305	17,070	4.3	735
Edwin L Sheibley					
Merry	8-2	291	20,252	3.7	753
Buf	4-3	305	19,825	3.9	786
Cedar Lane Farm					
84	5-3	299	23,187	3.1	722
216	5-0	305	22,179	3.2	720
243	5-1	305	19,996	3.9	795
Pine Creek Farm					
Emblm24	7-2	305	25,368	3.4	863
John-Timothy Adair					
47	9-11	305	19,604	3.5	700


Daniel F Stoltzfoos					
Irma	5-1	293	16,506	4.2	708
Fawn	3-5	305	21,941	3.3	724
Dennis K Dum					
Patsy	5-2	305	22,928	3.9	908
Innerst Farm					
64	3-8	305	19,676	4.1	818
JW & CL Achenbach					
Jody	5-9	305	23,301	3.9	926
Robert & Bernice Gabel					
Alda	5-7	305	27,044	2.8	762
Antonto	3-6	256	17,718	4.1	741
MW Smith Farms					
Randy	8-0	305	23,371	3.0	705
Nolene	3-6	299	20,354	3.5	721

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