Book Review

Breeding Pest-Resistant Trees

By H. D. Gerhold, E. J. Schreiner, R. E. McDermott, and J. A. Winieski, (Pergamon Press, 44-01 21st Street, Long Island City, New York, 11101), 1966. 505 pp., $24.00.

This is a classic in a subject rarely covered so thoroughly by top workers in the field of tree disease prevention by the use of genetics. It is an exhaustive report on the problem as it exists today and how it might be solved in the future through selective breeding. The book is edited by Henry D. Gerhold (PhD) and Robert E. McDermott (PhD) from the School of Forest Resources, Pennsylvania State University, Ernst J. Schreiner (PhD), Northeastern Forest Experiment Station, Durham, North Carolina, and John A. Winieski (MS), Pennsylvania Dept. of Forests and Waters, Harrisburg, Pennsylvania, with over a hundred other participants from various other countries.

The book covers the proceedings of a NATO and NSF Advanced Study Institute on Genetic Improvement for Disease and Insect Resistance of Forest Trees held at the Pennsylvania State University, University Park, Pa., Aug. 30 to Sept. 11, 1964. Although intended more for the professional arborist, the book contains good background material for anyone interested in trees.

Subjects covered included research activities relative to tree disease being conducted throughout the world, advances in the basic knowledge of disease and insect resistance of trees, the approaches and methods for genetic improvement in pest resistance of trees, and future needs for such programs.

It becomes obvious that the science of disease prevention in trees by selective breeding is pretty much in the same stage as it is with humans. There is little danger that the "tree doctor" will soon be out of work.

Prescription Forests Now Feasible

Desirable forests might well be regenerated on a "prescription" basis. Selected varieties of seedling trees would be planted and fertilized. So says a Pennsylvania State University scientist, Dr. Robert D. Shipman, associate professor of silviculture. A basic objective, he believes, is renewing wood products, wildlife, and recreational resources by establishment of vigorous, desirable species of trees capable of rapid development.

The need today is to convert submarginal forests to faster growing trees than generally exist, trees that mature rapidly and are of value to the forest products industries. At present about 73 percent of commercial forest land in Pennsylvania is covered with slow-growing, pole-sized hardwood timber that is often of low quality.

The Penn State scientist believes rundown forests can be

(Continued on page 34)

Prescription Forests

(from page 23)

converted to new stands of more valuable trees by using pelleted herbicides around the undesirable trees. In his experiments, pelleted herbicides have killed "weed" trees without damaging newly planted seedlings.

Such undesirable species as white, red, and black oaks have been easily killed with the herbicide, fenuron. Others including hickory, dogwood, and ironwood are best controlled with granular dicamba or picloram.

The best practice, Dr. Shipman says, is to plant trees that will not be eaten by deer and rodents, are adapted to the site, and are valuable to the industry. He reports excellent results with Japanese larch, which in some cases grew more than 40 inches during the first year.

In an early attempt to convert forests to desirable trees, Dr. Shipman and associates planted two-year-old red and white pine seedlings among low-quality oaks and hickories. Undesirable hardwoods in the area were killed with pelleted herbicides scattered on the surface. However, deer and rodent damage to the seedling trees was severe. To reduce this type loss, the area was replanted with Japanese larch which is a species not preferred by deer or rodents. Dry, pelleted fenuron and granular dicamba herbicides were then applied to the soil surface by both grid and band methods, and at various concentrations.

First year results showed excellent seedling survival and growth with simultaneous killing of the competing hardwoods. Animal and herbicide damage to the seedling trees was slight.

Most pelleted and granular herbicides are nonvaporous and are low in toxicity to man, animals, and wildlife. When used according to the manufacturer's recommendations, they leave only slight soil and plant residues. And they are capable of being "tailored" to specific soil and plant cover conditions. Dr. Shipman worries however, that care should be taken to keep these herbicides from washing down onto crop lands.

Pelleted and granular chemicals need no costly equipment for applying. They can be used effectively to eradicate undesirable brush and trees in fields and forests, to improve watershed and wildlife habitats, to control brush along highway and utility rights-of-way, and in forage and pasture renovation.

Bermudagrass Kill Good On Highway Shoulders

Bermudagrass control on asphalt highway shoulders is feasible. Dr. Wayne G. McCully, Texas A&M University Range Science Department, has found any one of four chemicals to be effective. He has successfully used sodium TCA, Polyborchlorate, dalapon, and Borascu.

Sodium TCA is most often used, since Dr. McCully has found it effective for both prevention and control. The other three chemicals are recommended only in presurfacing as a prevention.

Bermudagrass is a problem on asphalt shoulders because it grows in cracks, creating seams and opening the asphalt-sealed shoulder to moisture. During cold periods the water freezes and the resulting expansion and contraction breaks up the asphalt base.

Once grass becomes a problem, sodium TCA sprayed on the shoulder will kill runners and sprouting seeds. Best time for application is spring, followed by a second treatment 30 days later. Effective application rate in the Texas tests proved to be 200 pounds of sodium TCA per acre.

Any of the four chemicals are effective as a control. Dr. McCully recommends that they be used just ahead of the prime coat during the asphalt paving process.

Dr. McCully's research was done cooperatively with the Texas Highway Department, Texas Transportation Institute at A&M, Texas Agricultural Experiment Station, and the U.S. Bureau of Public Roads.

Trimmings

Anyone For Lunch. Marsh grass, paper and algae may help solve the world food problem according to Agricultural Engineer Kenneth A. Harkness at The Ohio State University, Columbus. He says it's time we stopped thinking of agriculture only as corn, soybeans, beef and pork. For example, he says that 100 pounds of newspaper can theoretically yield 24 pounds of food protein, about the same as that in 135 pounds of hamburger. A plot of alfalfa fed to beef yields 80 pounds of food protein. If extracted directly from the plant, the same alfalfa would yield 2500 pounds or 30 times as much protein. Harkness says an essential link in making use of unusual plants may involve microorganisms, bacteria and fungi, to convert them into protein sources. And don't be concerned about eating microorganisms such as fungi and bacteria. Bread, cheese and beer are full of them. So, keep faith. We may find a better use for wood chips and turf clippings.

* * *

There Are Days. *Mrs. Samuel Awers came home to find her Milwaukee lawn being ripped apart by a hard-working bulldozer. "I almost dropped," she said. But Michael Conway of D-B Wrecking Co., who assigned his men to dig up a lawn on North 71st St., says his firm is replacing the turf.*

* * *

New Biological-Chemical Era. Without weed killers today, farm operators, sod growers and landscape contractors would be forced to move 600 billion tons of dirt by tillage each year. No longer are weed killers just disaster control agents, according to Dr. M. T. Goebel, Du Pont scientist. They are now essential tools of production.

* * *

Creeping Red Fescue. *We're happy to report full clearance for the Chewings Fescue and Creeping Red Fescue Commission, housed on the sixth floor of the Weatherly Building, Portland, Ore. Finding that they are simply another commodity commission fully authorized by the Oregon legislature should ease the minds of the good Oregon citizens.*

They'll be happy to find that "creeping red" does not connote anything which can be construed as subversive, that Chewings was named after Sir Thomas Chewings, a New Zealander who developed the strain. And that no one has any idea how the name "creeping red" came to be. Also, that creeping red fescue is more likely to be found in highly developed strains known as Pennlawn red, which again isn't red, or Rainier, or Illahee. Furthermore, Oregon has become a major producer and supplier of fescue turf seed. Seed is now a $6 million plus crop for the state with more than 30,000 acres being grown.

* * *

Tree Spraying Continues. Shorewood and West Milwaukee, Wis., are spraying with DDT to prevent Dutch elm disease. With a loss rate of only 1.7% last year, town trustees voted to spray despite fear of harm to wildlife.