It is sometimes wise to prune a tree at the time it is replanted. A good rule of thumb is to trim enough of the branches to balance the loss of roots resulting from the replanting.

There is an excellent discussion in the Year Book of Agriculture for 1949 entitled "Trees." The chapter title is "Keeping Shade Trees Healthy." The main points of the discussion are to select adapted trees, plant them in good soil and then follow this planting with a program of soil maintenance, pruning, watering and treating as needed for insects and disease. This discussion also contains information concerning the amount of fertilizer needed and methods for applying it in tree and shrub maintenance.

This is a very brief discussion of a very important subject. There is much information that can be gained from professional nurserymen and horticulturists. Such a program is of very great importance in complete golf course maintenance.

TABLE 1: Recommended Minimum Ball Diameters for Different Sizes of Shrubs and Trees

Shrubs and Small Trees		Larger Trees	
Height of plant Feet	Diameter of ball Inches	Tree diameter 1 foot above ground Inches	Diameter of ball Inches
1½ — 2	11	1¼ — 1½	18
2 — 3	12	1½ — 1¾	20
3 — 4	14	1¾ — 2	22
4 — 5	16	2 — 2½	24
5 — 6	18	2½ — 3	28
6 — 7	20	3 — 3½	33
7 — 8	22	3½ — 4	38
8 — 9	24	4 — 4½	43
9 — 10	26	4½ — 5	48
10 — 12	29	5 — 5½	53
12 — 14	32	5½ — 6	58
14 — 16	36	6 — 7	65

SAFETY WITH PESTICIDES

By HAROLD E. HELDRETH

Agricultural Representative, National Safety Council

IT is now generally recognized that insect control is essential to profitable agriculture. There are hundreds of thousands of species of insects and several thousand of them are injurious to man, plants and other animals. In the war against insects, man has developed many new weapons in the form of pesticides. Some of these are hazardous to man as well as insects. However, there is no pesticide which cannot be used with safety when properly handled.

Among the hazards involved in the use of agricultural chemicals and pesticides are: The excessive exposure of workers who manufacture, formulate, or apply materials; accidental exposure of children; and the exposure of the general public in the event that residues on food should ever be allowed to approach the toxic level.

Much has been written about the toxicity of pesticides and the hazards, real and imaginary, that may be associated with their use. However, entomologists and toxicologists seem to be in general agreement that where proper precautionary measures are observed, no pesticide in use today is so toxic as to make its safe use impractical. This problem is not a new one. But, with a greatly expanded use of pesticides, it has assumed greater significance.

In spite of the volumes of educational material telling how chemicals can be safely handled (warning labels and literature distributed by chemical manufacturers and packagers, and federal, state and local agencies); in spite of regulations by State Bureaus of Chemistry and State Division of Industrial Safety, some tragic accidents happen each year.

Before attempting to enumerate and

evaluate the various hazards inherent in the use of economic poisons, we must recognize and understand a few basic principles. First, we must recognize that practically all insecticides have toxic properties and are, at least to some extent, toxic to warm-blooded animals, including humans. If they did not have these properties, they probably would not control insects and, therefore, would not be effective as insecticides.

Proper Respect Needed

The fact that most pesticides are toxic to man and animals does not necessarily mean that they cannot be used with safety.

Always wash thoroughly after using toxic chemicals. Cultivate a proper respect for the substance

If we develop a proper respect for the toxic properties of a substance, it may be used with greater safety than that of a much less toxic substance which is handled carelessly.

Since World War II, so many new pesticides, trade names and new applications have appeared on the market that it becomes impossible to consider all of the problems of safety with chemicals in this discussion. Therefore, let us consider just one important phase of safety with these materials—*labels*.

Laws governing the manufacture and distribution of pesticides require that dangerous chemicals' labels contain (1) the familiar skull and crossbones insignia, (2) the word "poison" in red letters and (3) a statement of antidote. "Warning Labels," a booklet by the Manufacturing Chemists' Association, sets up a uniform procedure for labeling hazardous chemicals. To indicate the degree of hazard presented, one of three signal words is used. In order of increasing hazard the words are "Caution!", "Warning!", "Danger!". Following the signal word is a statement of the hazards involved and a description of precaution which should be read before using the chemicals.

Read and Understand

Give attention to the label on the package. Read it! Understandt it! The information is for your protection. In addition to your protection, the label will sometimes also tell you the best method of application.

Careful reading, understanding and applying the information on pesticide containers is the most essential step in agricultural chemical safety. Following are six points in illustrating the importance of understanding labels.

(1) Know The Essential Parts Of The Label.

Information on the label contains instructions on recommended solutions for different pests and diseases, rates of application, precautions in its use.

The label is checked by government regulations for the enforcement of the Federal Insecticide, Fungicide and Rodenticide Act. These regulations are constantly being strengthened by more specific, clarified labeling requirements.

The manufacturer bases his reputation on the information included on the label. It's got to be right!

There should be three precautionary points on every label. These are: (a) the dangers involved, (b) instructions for first aid treatment, and (c) the note for physicians, which should include the antidote.

Every label should be carefully read and fully understood, it is there for your protection. Be sure that all pesticides are placed on a high shelf out of reach of young children.

(2) User's Responsibility.

The user should fully understand and be able to explain to his workers the dangers involved, protective clothing necessary, antidote, first aid treatment and proper methods of handling pesticides.

Supervisors should contact a local doctor well in advance of work season to make sure he understands what the proper antidote is for the pesticide.

(3) Know The Reasons For The Particular Cautions Noted On Package.

Just reading is not enough. Understand it. Each chemical carries its own particular danger.

Know which hazard is greatest—by the dermal (skin) or oral (mouth) route.

Labels will note some of the symptoms of poisoning and will tell you what to do in case of contact or exposure. Typical symptoms to watch for are: headache, weakness, sweating, nausea.

Select the chemical which is most effective and which can be used with safety.

(4) Follow Instructions To The Letter.

Make sure you understand instructions. Never use pesticides for anything not recommended by the company.

(5) Education.

Through an educational program, County Agricultural Agents, vocational agriculture teachers and other local leaders can assist in eliminating dangerous conditions and practices in handling, storing and using pesticides. The educational program might well be designed to make pesticide users "label conscious." Here are a few things *you* can do:

Hold a demonstration, using sample company labels. Use enlarged pictures and go over every point on the label.

Demonstrations and stunts can be used to good advantage in illustrating the importance of the information on labels.

Write and distribute news stories and circulars on the importance of understanding instructions on labels. Don't stress dangers—stress importance of following instructions.

Show slides and movies on agricultural chemicals' safety.

Place posters on local stores.

(6) Community Approach.

From the community standpoint, there is a mature and an immature approach to the use of agricultural chemicals. Maturity may be measured by the degree to which citizens are aware of the different factors influencing the community and the degree to which they cooperate for the mutual good.

In the mature, basically agricultural community, the necessity for using agricultural

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New England Golf Ass'n.	Boston, Mass.
Watson Distributing Co.	Houston, Texas
Western Pennsylvania Golf Association	Pittsburgh, Pa.

chemicals is accepted, as is the potential danger which some of these materials bring to those who use them. Partly because this problem of hazard to the worker has been met forthrightly, the safety record in the community is good. Each user takes direct personal responsibility for the chemicals to be used on his property—the amounts, methods, and timing of application. Neighbors should be advised when chemicals are to be applied and they should recognize the necessity for their use.

In the continuing war against insects, man, with the aid of science, is holding insects to a draw. The development of pesticides has been, and is, an important part of this fight. The toxic properties necessary to pest control abilities of insecticides are, in varying degrees, toxic to man also. Recognition of this fact is the first step in using pesticides with safety. The other steps are found *in the label.*

TURFGRASS COURSE AT PENN STATE UNIVERSITY

A Trufgrass Management Winter Course has been added to the list of offerings by the College of Agriculture, The Pennsylvania State University.

The course will provide the necessary skills and knowledge to supervise and manage golf courses, municipal and industrial parks and lawns, athletic fields and playgrounds, cemeteries, highway roadsides, estates and airfields.

The program consists of four eight-week terms of instruction on the campus of the University. During this period intensive classroom and laboratory training is provided in the identification, establishment, and maintenance of the grasses used in the various climatic areas of the United States and Canada. This will be supplemented with courses on soils and fertilizers; identification, production, and maintenance of trees, shrubs and other horticultural materials; the installation and use of irrigation and drainage equipment; principles of tractor and machinery operation and care; the keeping of business records; and elements of design and landscaping. The student also will have an opportunity to see and study the very extensive research program on turfgrass problems conducted by the Agricultural Experiment Station at the University.

A full season of practical on-the-job training is recommended for the summer period between the second and third terms. Individuals now employed in turfgrass work may return to their positions for this period if they so desire.

The dates of the various terms are as follows: first term, November 4, 1957 to January 11, 1958; second term, February 3, 1958 to March 29, 1958; on-the-job training, April 15, 1958 to October 15, 1958 (approximate); third term, November 3, 1958 to January 14, 1959; fourth term, February 2, 1959 to March 27, 1959.

High school graduates, 16 years of age or older, are eligible for enrollment. The usual mathematics, science, and English college entrance requirements are not necessary for admission. The high school graduation requirement is waived for those who demonstrate maturity, purposeful interest, and have had prior experience in turfgrass management.

Further information and application blanks can be secured from the Director of Short Courses, College of Agriculture, The Pennsylvania State University, University Park, Pa.