

Method Of Screening Chemicals For Herbicidal And/Or Synergistic Potential

SANDRA HAYES BOURQUE

Instructor, Biology
University of Southwestern Louisiana
Lafayette, Louisiana

The research team of the University of Southwestern Louisiana is devoting a considerable amount of its time to screen various chemicals for their herbicidal potential. The screening method used by the team was often subjected to questioning for its practicality. It is obvious that there are several methods in use; they all have, however, a common denominator, namely, to find the optimum—in our instance, the lowest still effective dosage of the chemical. The U.S.L. research team adopted the following procedure.

Two sets of experimental plants of uniform size and in an equal stage of development are placed in two containers of sizes conforming to those of the experimental plants. For example, we normally use 2,000 or 4,000 cc beakers for alligatorweed and 500 cc cylinders or 1,000 cc plastic bags fitted into cylinders for submerged aquatic plants. The containers are filled with water; 500 ppm of the chemical is added to the first beaker and 5 ppm to the second beaker. In the case of a negative reaction, the chemical will be shelved. In the case of a positive reaction, the gap is closed by lowering the concentration to 250, 100, 50, and 25 ppm respectively, or until positive reaction is still

obtainable. If, for example, the reaction at 100 ppm is positive and at 50 ppm negative, a concentration of 75 ppm will be used. If positive results are obtained at 5 ppm, the concentration is decreased first by 2.5, and then by 1 ppm or until negative results occur. It is important to determine the exact dosage since it happens at several instances that the effectiveness of the herbicide decreases with the lowering of the concentration up to a certain point only and then increases again despite the continuous lowering of the dosage. If a chemical is not effective by itself regardless of concentration, it may be effective with another at a surprisingly low rate. We never exclude the possibility of synergism; as a matter of fact, our most promising field applications are based on the synergistic action of more than one chemical.

The screening of chemicals cannot be classified as a purely mechanical procedure. The whole of a plant-control program depends on its findings, may the results be positive or negative. It is the strong belief of our research team that conclusive results may be obtained only if every angle of every variable will be meticulously investigated with dedication and patience.