

The OIH also aids each workshop in setting up a quality assurance program, which monitors on-the-job performance.

Perhaps the term "sheltered workshop" should be defined. This unit is an agency formed to assist the handicapped by providing a training program and paying a wage to the person undergoing this training. The workshop is certified by the Department of Labor to pay wages based on the prevailing wage but also by the person's ability to produce. For instance, if the prevailing wage is \$3.50 per hour and the client is able to work at a rate of 50 percent of what is considered a normal production, then he is paid \$1.75 per hour.

Historically, sheltered workshops provide part-time, make-work type projects that generally do not pay the client enough money to live on. Most clients are on welfare rolls and are highly dependent on state subsidy. The ODOT has found that many of the type of projects being provided by the workshops do not stimulate the client to increase his productive capacities, whereas meaningful work, such as the janitorial-type rest area projects, gives the client a challenge. Once they begin work at one of the rest areas, their productivity rate increases, allowing them to be paid more money and, in many cases, they no longer must depend on welfare. In fact, several of the rest-area caretaker clients trained and employed through this program were offered jobs in the private sector and went on to productive and successful ventures in private industry.

Currently, the handicapped are maintaining roadside rest areas, ODOT district office buildings, and will soon be involved in the maintenance of ODOT garages and outposts. The rest area program involves the following two types of contracts:

1. The first type does not involve any state caretakers and OIH contracts for the total maintenance of the rest area complex. This includes building and picnic facilities, lawn care, litter control, snow removal, and sewage treatment plant monitoring.
2. The second type of contract is set up to augment existing state forces and provide a higher level of service by expanding coverage. This kind of contract is usually confined to building janitorial maintenance.

Regardless of the season or the type of contract, all of the new roadside rest areas will be maintained every day of the week, 52 weeks a year. Expanding from that original rest area, the ODOT now has a total of 81 rest areas under contract with the OIH at the annual cost of \$3.5 million. To date, the ODOT has been satisfied with the OIH maintenance contract. The handicapped clients are highly motivated and have expressed a real desire to prove their competence.

The ODOT feels another factor contributing to the success of the program is the high degree of professionalism shown by the OIH staff. The Wood County pilot project was similar to any new idea--initial problems were encountered however, the OIH met these problems head-on, without offering excuses. The OIH did not and still does not suggest that the ODOT should overlook any situation because of the client's handicap, and the motto, "Keep ODOT Happy" has been adopted and adhered to throughout the growing program.

Over 1,100 disabled citizens, including disabled veterans and the mentally retarded are now employed in ODOT programs. This number will increase as the ODOT nears completion of the Roadside Rest Modernization program. Both the ODOT and the OIH plan to continue working together in providing a much-needed service to Ohioans. The ODOT is proud to have contributed a part in employing Ohio's handicapped adults.

Plant Growth Regulator Application Timing Research

J. M. DiPaola, W.B. Gilbert and W.M. Lewis

North Carolina State University

It has been evident for some time to many professionals that the effectiveness of plant growth regulators is dependent on the date of application. Studies at North Carolina State University (NCSU) have documented these date of application effects for several growth regulators. Applications of growth regulators, which provide excellent (90% or more) suppression of tall fescue seedheads when applied in the spring, result in less than 60 percent suppression following fall treatment dates. Plant growth regulator applications during the winter have resulted in less than 70 percent suppression of tall fescue seedhead. In fact, the timing of growth regulator applications during the spring has been found to be critical if tall fescue seedhead suppression is to be maximized.

During 1984, Escort® (metsulfuron methyl) applied on March 30 was nearly twice as effective in suppressing tall fescue seedheads as an April 12 application. Treatment with Shortstop® (EPTC) gave good seedhead control of tall fescue when applied on April 12, 1985. However, the experimental regulator, ACP1900, was more effective when applied on March 27, 1985 than when treatments were applied on April 12.

The previous examples amply demonstrate that growth regulator activity varies with the time of year and, most likely, with the stage of development of that plant. Field-growth regulator application programs have been traditionally scheduled on a calendar date basis. It seems clear from the previous

TABLE 1. Growing Degree Days Accumulated During 1982 Through 1985 for Dates of MH Application Which Resulted in at Least 90% Tall Fescue Seedhead Suppression.

Year	Minimum	Maximum
-----GDD-----		
1982	48	480
1983	338	677
1984	163	461
1985	294	721
Mean	211	585

GDD = Growing degree days accumulated beginning March 1 of each year using a base temperature of 40 degree fahrenheit

examples that the calendar date is an inaccurate reflection of the developmental stage of the grass seedhead. In spring of 1982, studies at NCSU were initiated to monitor the development of tall fescue seedheads and determine how seedhead suppression was affected by the inflorescence developmental stage.

Applications of plant growth regulators (e.g., Maleic hydrazide, Limit®, Embark®) were made between March and May during the springs of 1982-1985. Tall fescue plants were sampled weekly to measure inflorescence length and other morphological characteristics. Plots were also evaluated for turf quality and stand density changes following various dates of application.

Correlations between seedhead length and growth regulator seedhead suppression activity were highly significant. Inflorescence length was found to be inversely related to the seedhead suppression activity of maleic hydrazide, amdochlor, and mefluidide. Increased seedhead size at the time of application is accompanied by reduced likelihood that growth regulator treatment will suppress inflorescence development. Increases in the length of tall fescue seedheads during the early spring are small. The development of the seedhead during this period is largely that of cell division rather than elongation.

Excellent suppression of tall fescue seedheads was obtained using maleic hydrazide at 4-lb ai/acre applied between the initiation of inflorescence development and the point of rapid elongation of seedhead in late April and early May. Evaluations from 1982 through 1985 have shown that the rapid elongation phase of tall fescue seedhead development begins about 2 weeks before the emergence of the seedhead. Thus, the use of seedhead length as an indicator of potential growth regulator suppression activity would require dissection of the plant. Such monitoring of seedhead length would be (a) difficult to implement in the field, (b) time consuming, and (c) impractical for large areas.

More recently, the relationship between seedhead length, seedhead suppression and growing degree-days (GDD) is being examined as a possible practical approach to defining the activity periods of plant growth regulators. Thus far, a GDD, defined as the degree days accumulated beginning March 1 using a base

temperature of 40 degree fahrenheit, has been significantly correlated with the suppression activity of maleic hydrazide, amdochlor, and mefluidide. Tall fescue seedhead suppression during 1982 through 1985 exceeded 90 percent when maleic hydrazide application was made after a mean GDD accumulation of 211, but before a mean GDD of 585 (Table 1).

At present GDD analysis appears to be a practical approach to identifying growth regulator application windows for acceptable seedhead suppression of tall fescue. Advisories of GDD status would be possible for many locations from local meteorological data.

The Toxicology of Herbicides

by T. J. Hernandez, President
Hernandez Beautification
& Vegetation Management Co.

The Roadside industry operates in a "glass bowl" in that a right-of-way is bordered by thousands of people. All road maintenance activities including herbicide applications are witnessed by passersby as well as residents. Most manufacturers of herbicides as well as users have a poor image in this country because they have been the object of considerable publicity, most of it bad. The public, as well as the press, perceives many herbicides as poisons because they associate herbicides with dioxin, arsenic, paraquat, and so forth. This negative public attitude is naturally carried over to the users and manufacturers of these herbicides.

There is positive documentation that the use of herbicides presents the least risk of any other method of vegetation management. Consider the risks associated with riding mowing machines on roadsides with heavy vehicles traveling at high speeds a few feet away; people falling off rotary machines on steep slopes; mower blades striking glass bottles, rocks, and so forth and the hazard to crews using chain saws to remove brush or swing blades to cut herbaceous weeds. Then, there is the problem with resprouting and the whole process of cutting being required several times during a growing season. Herbicides, on the other hand, destroy roots as well as leaves and stems and most have a residual period, which reduces the need for retreatment.