

fescue grasses are growing. Asulox will not normally hurt fescue.

We attempt to control Kudzu along our roadsides and will enter into agreements with private property owners to treat roadsides adjacent to their property if they will agree to treat their own. We have used Krenite with good success as an early fall treatment along with Roundup or the 2,4-D-MCPP-Dicamba mixture as a spring-summer treatment.

Multiflora rose has been designated as a pest in North Carolina. We have used either Roundup, Banvel, or Krenite in an effort to control this pest. All three appear to be effective.

The use of herbicides and growth regulators, as listed here, seems absolutely necessary to provide the North Carolina Department of Transportation with the tools to control vegetation along our roadsides and maintain the aesthetics of our highway system. We are very proud of our strides in recent years in the use of chemical products to control roadside vegetation, and we are proud that some parties have indicated that our program is as progressive as any that can be found in the United States.

FLORIDA'S ROADSIDE VEGETATION MANAGEMENT PROGRAM

Bill G. Morris and J.A. Lewis

Florida's Department of Transportation has long recognized the benefits to be derived from a sound vegetation management program. Florida has a combination of rural and urban conditions with nearly 12 000 miles of state-maintained roadway spread over an area of 60 000 miles². The state is irregular in shape and is fronted by the Atlantic Ocean and the Gulf of Mexico. This geographic area, coupled with varied terrain, rainfall, temperature, and growing seasons, results in a variety of vegetation management programs.

Management of our roadsides begins at the design phase. We maintain a close working relationship with the department's design staff and support ongoing vegetation research that is performed in-house and with the university system where repetitious vegetation problems are best solved.

Generally roadside maintenance is categorized as either maintained or nonmaintained. Maintained areas receive routine and as-needed applications of fertilizer, mowing, and herbicides. Nonmaintained limits are allowed to regenerate and/or are supplemented with native tree species. Period fertility is accomplished by using a high-analysis (24-6-8) 50 percent water insoluble nitrogen source. Although this program contributes to a more dense, stable turf, it does not contribute to additional mowing requirements. Various size mowers are used on roadside applications. Frequencies vary depending on location and attending land use.

The department has developed a comprehensive manual on chemical weed and grass control that includes details of herbicide materials, plant identification, calibration programs, special considerations, equipment, and so forth. It provides detail and specifies desired treatment limits, nozzle configurations, and related application pressures and speeds.

A five-day classroom and field training program is held for applicators, and they must exhibit technical competency for certification. We have attempted to minimize the number of materials used in the program and evaluate them on a cost-effective basis. 2,4-D, 2,4-D-Dicamba, Banvel 720, Dalapon, Hexazinone (Velpar), Glyphosate (Roundup), Diquat

(Ortho), and Oryzalin (Surflan) are the mainstays of our current programs. These programs consist of selective weeding, brush and grass control, abatement, aquatic, drainage ditch, and ornamental work. A daily herbicide spray report is maintained by crews. The report provides for the recording of essential information and allows for program performance evaluation.

From an economic standpoint, Florida is seriously questioning mowing needs. A no-mow test area was established in 1977. This resulted in the recognition that a dense and uniform established weed-free bahia or Bermuda turf is acceptable in appearance, therefore, making it possible to virtually stop mowing in certain areas without serious consequence.

It was recognized at the beginning that for the projects to be successful, a well-established turf condition relatively free of competitive tall grasses and broadleaf weeds would be required. This was verified with the discontinuance of mowing. Control of broadleaf weeds has been successful with the use of 2,4-D and 2,4-D-Dicamba; however, control of the tall competitive grasses such as Johnson, vasey, guinea, smut, para, and napier is requiring an alternate program.

At the beginning of this program, no acceptable product or application techniques were available to selectively remove the competitive grasses from the desired bahias and/or Bermudas. We have since experimented with low-rate overspray programs by using Hexazinone (Velpar) and Asulam (Asulox or Johnix). Each of these provided favorable results for particular plant control but neither material has effectively removed all of the undesired grasses.

Our latest approach to the control of these grasses has been the Rope-Wick concept and using the herbicide Glyphosate. The unique factor in this procedure is that the material is applied only to the taller, undesired grasses by using the rope-wicks resulting in essentially no material waste. Control of the undesired grasses coming in contact with the wick is satisfactory.

With the information gathered to date, certain modifications to our management practices are being considered. These include the expansion of the rope-wick concept coupled with a reduction in mowing and expanded selective broadcast programs.

USE OF CHEMICAL TOOLS IN MANAGING VEGETATION

ALONG TEXAS ROADSIDES

Tom Allen

The vegetation management program of Texas has been designed to maintain the integrity of the asphalt surface, prevent or reduce soil erosion, provide safety for the traveling public, achieve maintenance efficiency, and provide beauty. The use of chemicals was demonstrated as the most efficient and economical method of controlling undesirable vegetation. Herbicides are the major chemical tool used along roadways; however, insecticides and plant growth regulators may become important as our knowledge increases.

The chemical vegetation management program was divided as follows.

1. Complete vegetation control (bare ground). The use of a residual herbicide at the proper rate will provide complete vegetation control unless resistant species are present. The number of these species must be considered. This type of vegetation management may be desirable in areas where it can be