HADSS AND POCKET HERB: HERBICIDE DECISION AIDS FOR COTTON

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Abstract

Making weed control decisions is often a challenging process. The broad spectrum of weeds found in many fields, combined with the many herbicides on the market can make choosing a herbicide or tank-mixture for a particular field difficult. Another challenge is attempting to estimate the economic benefit you would receive from controlling the weeds present in a field with a herbicide or tank-mixture.

Computerized herbicide decision aids can be a valuable tool to aid in making weed control decisions. Two such decision aids have been developed at NC-State, HADSS and Pocket HERB. These programs are descendents of the HERB program developed at NC State several years ago. Information required to use these decision aids includes weeds present in the field, their estimated population, soil characteristics, estimated crop yield, and estimated selling price. The programs then use information on the amount the weeds present will compete with the crop, and how well various herbicides control the weeds present to develop a list of herbicides or tank-mixtures that would be appropriate. The treatments can then be ranked based on net economic return, maximum weed control obtained, herbicide cost, and several other factors.

Both Pocket HERB and HADSS use a common database of information on weed control and weed competitiveness with each crop. Both programs provide the exact same recommendation if the same conditions and weeds are input.

A project involving weed scientists from South Carolina, Georgia, Alabama, Mississippi, Louisiana, Tennessee, Arkansas, Oklahoma, and Texas is currently under way to develop the database of information HADSS and Pocket HERB use. Crops involved vary from state to state, but include cotton, soybean, corn, and peanuts.

Pocket HERB has been developed to give extension agents, growers, consultants, and other users a decision aid that can be used "in the field". The software runs on various Windows Pocket PC palmtop computers, such as the HP Jornada, the Compaq Ipaq, or the Casio EM-500. These can weigh as little as 9 oz, and will easily fit into a shirt pocket. Cost ranges from $250-500.

Using Pocket HERB is simple. On the initial screen, you can enter grower and field name (allowing the program to develop a field application history) along with soil moisture level (adequate for growth, or dry) and the approximate weed size. A separate pop-up screen allows you to select conventional or herbicide tolerant varieties. The following screen allows you to enter field size, estimated yield and selling price, crop height, planting date, and soil pH. Where applicable, pull-down menus are utilized to minimize the amount of typing required. The next screen allows you to enter the weeds present. A drop-down box allows you to select the weeds from the weed list. You must also enter an estimate of the population of each weed based on field scouting.

When you run the program, the first screen to appear displays an estimate of yield loss and money lost if you choose not to treat at all. Pocket HERB then displays the first treatment based on net economic return. However, treatments can also be sorted by a number of other factors including maximum weed control and herbicide cost. You can also examine the estimated control for a specific treatment on the weeds present.

HADSS is designed for desktop or laptop computers that use the Windows 95, 98, 2000, or NT operating systems. HADSS requires data inputs that are very similar to Pocket HERB, and provides similar output, including the effect the weeds would have if no treatment was applied, the listing of treatments based on net economic return, and the effect of a specific treatment. Though the treatments are initially sorted based on net economic return, by clicking any column heading, the treatments can be sorted by that factor, for example, by yield loss remaining (maximum weed control). HADSS also allows the user to find what treatments are most effective in controlling a particular weed.

Decision aids do not replace the normal decision-making process you use. They can provide valuable information that you can use as you make weed control decisions, such as estimates of the yield loss a weed could cause, and the economic return from controlling weeds, information that can be difficult to estimate otherwise. They also provide a large database of herbicide efficacy information in an easy to access format.