

Best Management Practices for Effective Herbicide Resistance Management



Description:

Herbicide resistance is quickly becoming a major concern for the modern day turfgrass manager. Within a targeted weed population, various levels of susceptibility to herbicide applications occur. Individual weeds with reduced susceptibility or resistance to the herbicide application may survive the treatment. These go on to reproduce. Over time and after repeated herbicide treatments, these tolerant/resistant biotypes and their offspring thrive, leading to resistant weed populations and herbicide failure.



* Illustration courtesy of Weed Science Society of America

Causes of Herbicide Resistance:

Herbicide resistance occurs as a result of continual use of herbicides containing the same Mechanism of Action (MOA) and implementing weed management programs with little to no rotational practices. Applying herbicides below label recommended rates will make resistance more likely. Over time, these contributing factors naturally select out biotypes allowing resistant populations to rapidly multiply and spread. As the resistant population begins to spread, herbicide applications become increasingly less effective.

The photo on the right is of resistant crabgrass seeds.

*photo courtesy of Dr. P. McCullough, UGA



Why Resistance Cannot be Overlooked:

Herbicide resistance will increase weed control costs affecting their operation's bottom line. Not only is there an increase in cost of control, but options for control begin to dwindle as herbicide resistance grows. New MOAs are becoming increasingly harder to discover and bring to market. The last new MOA that was introduced to our industry occurred back in the 1980's when the hydroxyphenylpyruvate dioxygenase (HPPD) mechanism of action was discovered. It is crucial that turfgrass managers implement an effective weed management strategy to maximize currently available technology.

Developing an Effective Resistance Management Program:

Effective resistance management begins with sound agronomic practices and proper product stewardship utilizing the following tools.

- **Sound Agronomics** – Herbicide resistance management starts with sound agronomic practices. Implementing proper nutrient management, irrigation and cultural practices for the desirable turf can greatly reduce weed competition. These practices should be the basic building block for any resistance management program
- **Herbicide Rotation** – Singular MOA herbicides are no longer enough to stem resistance development in hard to control weeds. Diversification must become part of the program. Multiple MOAs should be at the core of a 'starts clean, stays clean' approach to effective weed control. Products such as **Echelon®**, **Dismiss South®** and **Solitare®** from FMC which contain dual MOAs, will boost your control while reducing the potential for resistance development.
- **Product Stewardship** – Always read and follow label directions. Applying an herbicide according to label directions and at label rates is a vital part of resistance management. Following label directions provides optimal weed control when properly applied. Disregarding label directions can speed up resistance, reduce control and cause undesirable turfgrass responses.
- **Scouting** – Every acre must be evaluated to craft a year-long diversified weed control plan. A popular practice in crop production, scouting after herbicide applications should routinely be done. Scouting can identify potentially herbicide resistant weeds and gauge how effective your herbicide applications actually are.

It is essential for today's turfgrass manager to incorporate an effective resistance weed management program. Failure to do so will not only cost the applicator time and money, but it can also greatly reduce options for future effective weed control.

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