

## **Managing Herbicide Resistance in Turf and Landscape Sites**

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### **What does managing herbicide resistance have in common with fighter aircraft?**

- Something better may come along and make you obsolete
- What you think is a superior defense program may have some inherent weaknesses that can cost you Big \$\$\$ or worse.....

### **The goal of any production system is efficiency resulting in sustainable profit**

- The performance of any tool is determined by how it is used
- Crop protection products can be your best friend or your worst enemy, depending upon how you use them.
- Operator resources (tools) are finite
  - Too much input \$\$\$ will reduce profit \$
  - New tools are expensive to produce

### **First steps in managing weeds**

- Know your enemy (weeds) and what they need to thrive
  - Annual vs. Perennial,
  - cool season vs. warm season,
  - propagation strengths-weaknesses
- Understand what tools/weapons are available to manage
  - Cultural
  - Chemical
    - Pre-emergent vs post

### **Know your tools and how to use them.**

- Efficiency is the result of effective planning.
- Think ahead before you plant,
  - + What are problematic weeds indigenous to the area.
    - Check with local extension or pest control advisors
  - + Read and understand the labels of any crop protection tools before using them.
    - Know your tools and how to use them.
  - + Make sure the necessary tools are available—communicate with your supplier

### **Know your tools and what their strengths and limitations are.**

- Contact activity vs. Systemic
- Residual-how long does it really last?
- Weed activity spectrum
- Rainfast or not?

- Worker safety, REI, PHI
- Read the labels and do your homework first.

### **Know your tools and when to use them.**

- What should you start with and what should you use next?
  - + Product selection and plan of attack.
  - + Alternation is necessary for resistance mgt. and weed shifts
  - + Alternation is required depending on the target weeds

### **Does the product fit?**

- Site
- Growth stage
- Weed

### **Understanding resistance**

- Resistance does not arise from pesticide exposure
- Repeated, uninterrupted use of a pesticide selects a population that is tolerant.
  - + similar to backcrossing plants to bring out a phenotypic trait
- Natural tolerance or physical barriers (waxy cuticles, hairy leaves/stems) can impede herbicide efficacy---weed shifts.
- Repeated use of the same chemistry year after year will result in weed shifts and can select for a resistant population.

### **Every Crop/Site use is different and the management of weeds for each crop is different**

- There are no silver bullets
- Each chemistry has its strengths and weaknesses
- Use each according to the label and in rotation with other chemistries with differing MOA.

### **Chemical Control Efficiency**

- **COVERAGE**
- High Enough Rate
- **COVERAGE**
- Proper Timing
- **COVERAGE**
- Preventive Program
- **COVERAGE**
- Resistance Management
- **COVERAGE**

### **References:**

Better Plants Pest Management Guide 2010, BASF Corporation.  
Freehand product label, BASF Corporation