

What went **WRONG** with the
RIGHT herbicide?



WILBUR-ELLIS
AGRIBUSINESS

Kevin Hupp
Sales Representative
Pro Markets



PRO MARKETS



PRO MARKETS

LAWN & LANDSCAPE

Now, independent lawn and landscape operations can get the disease and pest control that's right for their needs, topped off with water feature, application aid and hydro-seeding products.

NURSERY & GREENHOUSE

We've got you covered with water, building, and container sanitization, irrigation system additives that control moss and algae, plus a complete line of inputs to address recommendations based on assessments, sampling and analysis.

VEGETATION MANAGEMENT

Wilbur-Ellis is here to help vegetation managers find the best product combination to control weeds along roads, highways and rail systems.

PRO MARKETS

GOLF

Achieve and maintain the greenest course around with management programs for diseases, weeds and insects, plus tailored soil and water recommendations, rounded out with Wilbur-Ellis aquatic enhancements.

SPORTS TURF

Get on top of your game with broad spectrum and resistance management programs for disease, weeds and insects. Then rule the field with professional consultations for local and professional sports turf managers, plus annual training seminars for you and your staff.

FORESTRY

If you're looking for ways to improve your forestry management, it's time to work with Wilbur-Ellis. We can provide anything from general recommendations to specific site reviews, training seminars and more.

.



PRO MARKETS

GOLF

Achieve and maintain the greenest course around with management programs for diseases, weeds and insects, plus tailored soil and water recommendations, rounded out with Wilbur-Ellis aquatic enhancements.

SPORTS TURF

Get on top of your game with broad spectrum and resistance management programs for disease, weeds and insects. Then rule the field with professional consultations for local and professional sports turf managers, plus annual training seminars for you and your staff.

FORESTRY

If you're looking for ways to improve your forestry management, it's time to work with Wilbur-Ellis. We can provide anything from general recommendations to specific site reviews, training seminars and more.

.



ACTIVES

ADJUVANTS

NUTRITION

ORGANIC

PRO MARKETS

SEED
TECHNOLOGY





LINK Items



ADJUVANTS

 SURFACTANT - BLEND	 OIL - PURE	 WATER QUALITY - NON-AMS	 DRIFT REDUCTION TECHNOLOGY	 ADVANCED WATER TECHNOLOGY	 UTILITY
 SURFACTANT - NIS	 OIL - BLEND	 WATER QUALITY - AMS	 WATER QUALITY - AMADS		
 SURFACTANT - BLEND ANTERO-EA®	 OIL - PURE COMPETITOR®	 WATER QUALITY - AMADS BRIMSTONE®	 DRIFT REDUCTION TECHNOLOGY CROSSHAIR®	 ADVANCED WATER TECHNOLOGY ADVANTAGE SOIL PENETRANT®	 UTILITY CLIMB®
 SURFACTANT - BLEND ARVON®	 OIL - BLEND GLACIER-EA®	 WATER QUALITY - AMS BRONC®	 DRIFT REDUCTION TECHNOLOGY DGUARD®	 ADVANCED WATER TECHNOLOGY AQUATE® MAX	 UTILITY FTF® DEFOAMER
 SURFACTANT - BLEND ASCENSION®	 OIL - PURE HASTEN-EA®	 WATER QUALITY - AMS BRONC® MAX	 DRIFT REDUCTION TECHNOLOGY IN-PLACE®	 ADVANCED WATER TECHNOLOGY AQUATE® MAX	 UTILITY SSC-11®
 SURFACTANT - BLEND DENALI-EA®	 OIL - BLEND HIGH LOAD®	 WATER QUALITY - AMS BRONC® PLUS DRY		 ADVANCED WATER TECHNOLOGY AQUATE® PRO	 UTILITY STABILITY®
 SURFACTANT - NIS EMBRECE-EA®	 OIL - PURE MOR-ACT® CROP OIL CONCENTRATE	 WATER QUALITY - AMS BRONC® PLUS DRY EDT			 UTILITY TIE DOWN®
 SURFACTANT - NIS INFOLIUM-EA™	 OIL - PURE MOR-ACT® ADJUVANT	 WATER QUALITY - AMS BRONC TRIPLE®			 UTILITY VaporGrip[®]Xtra[®] AGENT
 SURFACTANT - NIS INSIST® 90 PLUS	 OIL - BLEND PENATROL®	 WATER QUALITY - AMS CAYUSE® PLUS			 UTILITY TRI-FOL®
 SURFACTANT - NIS R-11®	 OIL - BLEND RENEGADE-EA®	 WATER QUALITY - AMS CUT-RATE®			 UTILITY VOLIFLEX® DUO
 SURFACTANT - NIS RAINIER-EA®	 OIL - PURE R.O.C.	 WATER QUALITY - AMADS CYNDER®			
 SURFACTANT - NIS SUPER SPREAD® MSO	 OIL - PURE SUPER SPREAD® MSO	 WATER QUALITY - AMS RETRIBUTION™			
 SURFACTANT - BLEND REGUARD®	 OIL - BLEND SYL-TAC-EA®	 WATER QUALITY - NON-AMS SERENITY®			
 SURFACTANT - BLEND SYL-COAT®		 WATER QUALITY - NON-AMS VOLIFLEX®			



PERFECTION Items



HighNoon

Aminopyralid (Milestone) + Florpyrauxifen-Benzyl (Rinskor)

Product Attributes

Flexible Use Sites and Rate

- Use in a Broad Range of Sites:
 - > Rights-Of-Way
 - > Rangeland
 - > Permanent Grass Pastures and Hay Acres
 - > Reserve Program (CRP)
 - Non-Crop Land Areas
- Low Use Rate
 - > Common Use Rate is 16-20 Fluid Ounces Per Acre
 - > Excellent Perennial Grass Safety
- Non-Restricted
 - > Does Not Contain 2,4-D or Dicamba

Highnoon

Aminopyralid (Milestone) + Florpyrauxifen-Benzyl (Rinskor)

Improved Forage Quality and Quantity

- Controls Broadleaves and Annual Grasses
- Controls a Broader Spectrum of Weeds than Milestone® Herbicide with Very Similar Safety on Desirable Species
- One Jug Controls Over 140 Weeds

Peace of Mind

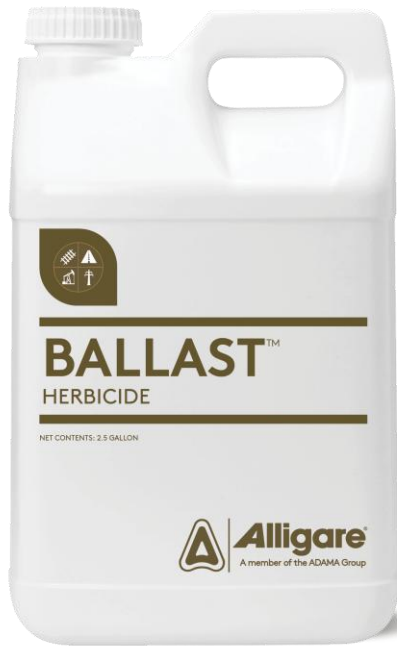
- No Grazing Restrictions for Any Class of Livestock
- Flexible Reseeding Options with Broadcast or Drill
- Non-Volatile
- Low Odor
- Safe on Grass

MAINLINETM



- Liquid Formulation
- Low use Rates
- 2 Modes of Action – ALS + PPO Inhibitors
- FLUMIOXAZIN 2 LB/GAL, IMAZAPYR 1 LB/GAL
- Pre + Post emergent control
- Resistance Management
- Can be applied around sensitive vegetation
- Broader spectrum than competitive products
- Extended “soft” bare-ground control
- 149 Species on Label

BALLAST™



- Liquid Formulation
- 2 Modes of Action – ALS + PPO Inhibitors
- IMAZAPYR 2.75 LB/GAL / FLUMIOXAZIN 1 LB/GAL
- Resistance Management
- Pre + Post emergent control
- Broader spectrum than competitive products
- Works well as a stand-alone product
- Extended “hard” bare-ground control
- 174 Species on Label

What do you have?

Identifying what pest or pesky plant you have is the beginning

➤ Is it a Grass?

Botanically, any plant of the Gramineae family. Grasses are characterized by narrow leaves with parallel veins; by leaves composed of blade, sheath, and ligule; by jointed stems and fibrous roots; and by inconspicuous flowers usually arranged in spikelets.





What do you have?

- Is it a Broadleaf?
- Botanically classified as dicotyledons. Plants have two cotyledon leaves in the seedling stage; true leaves are mostly broad and have netlike veins.

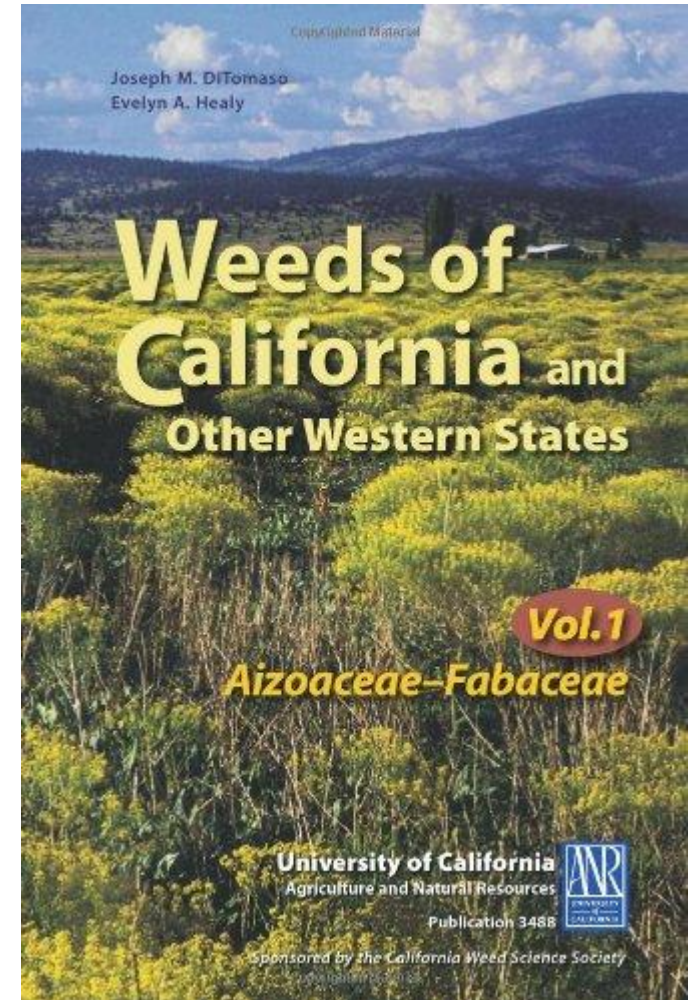


What do you have?

- Is it a woody plant/brush?
- Plants that develop woody tissue.

What do you have?

Weeds of California and other
Western States (Vol 1 & 2)
Weeds are broken out in families



YOU HAVE RESOURCES?

- Extension office
- Noxious Weed Control Board
- Plant ID software/Apps
- Wilbur-Ellis

Know your weed family

- In most cases, an active ingredient works on the weeds in the same family.

Where is it?

Location where you plan to treat is very important.

Is it near water?



Where is it?

Is it in Lawn/Turf?



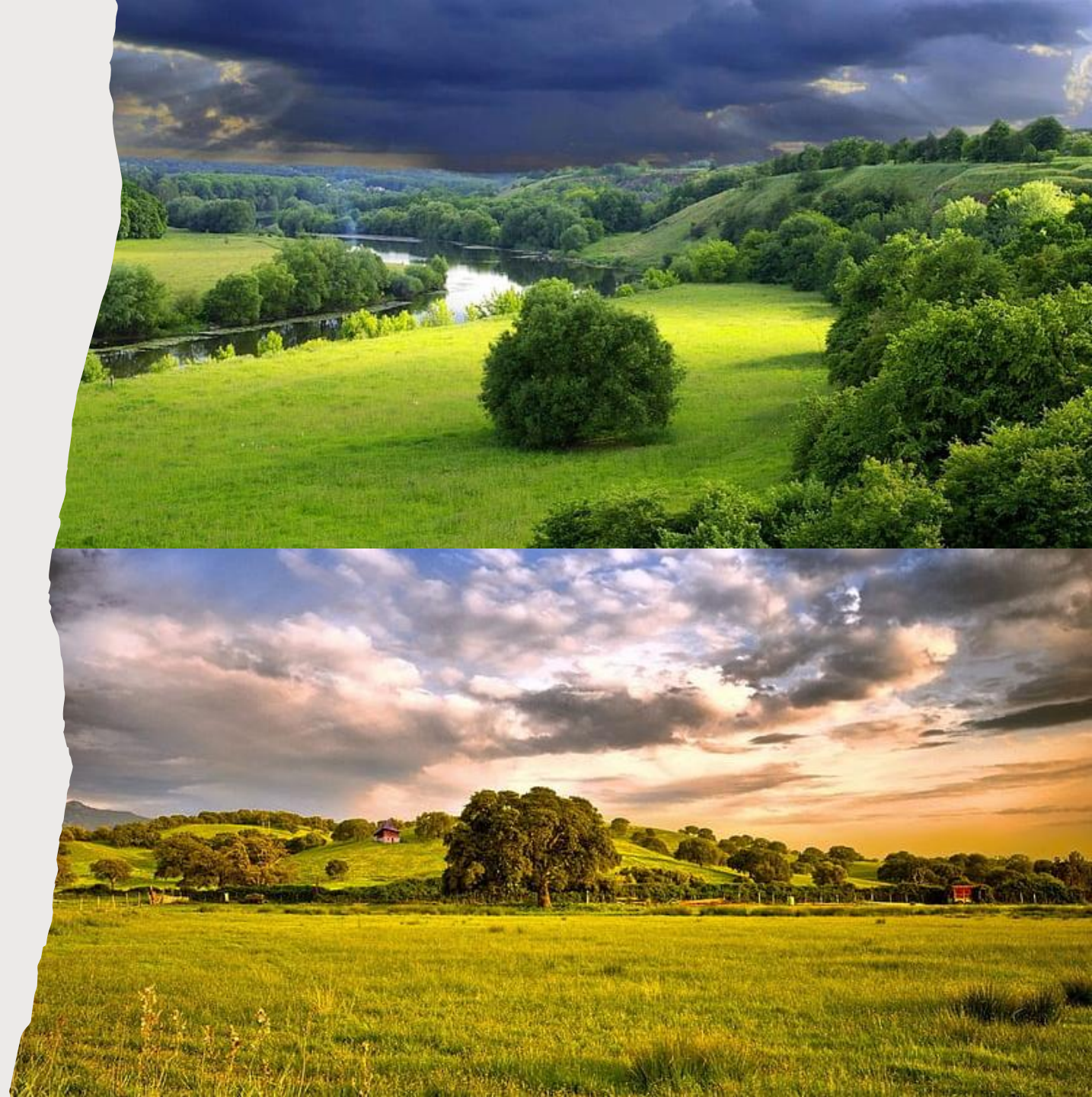
Where is it?

Is it in a parking lot?



Where is it?

- It is in Range/Pasture?



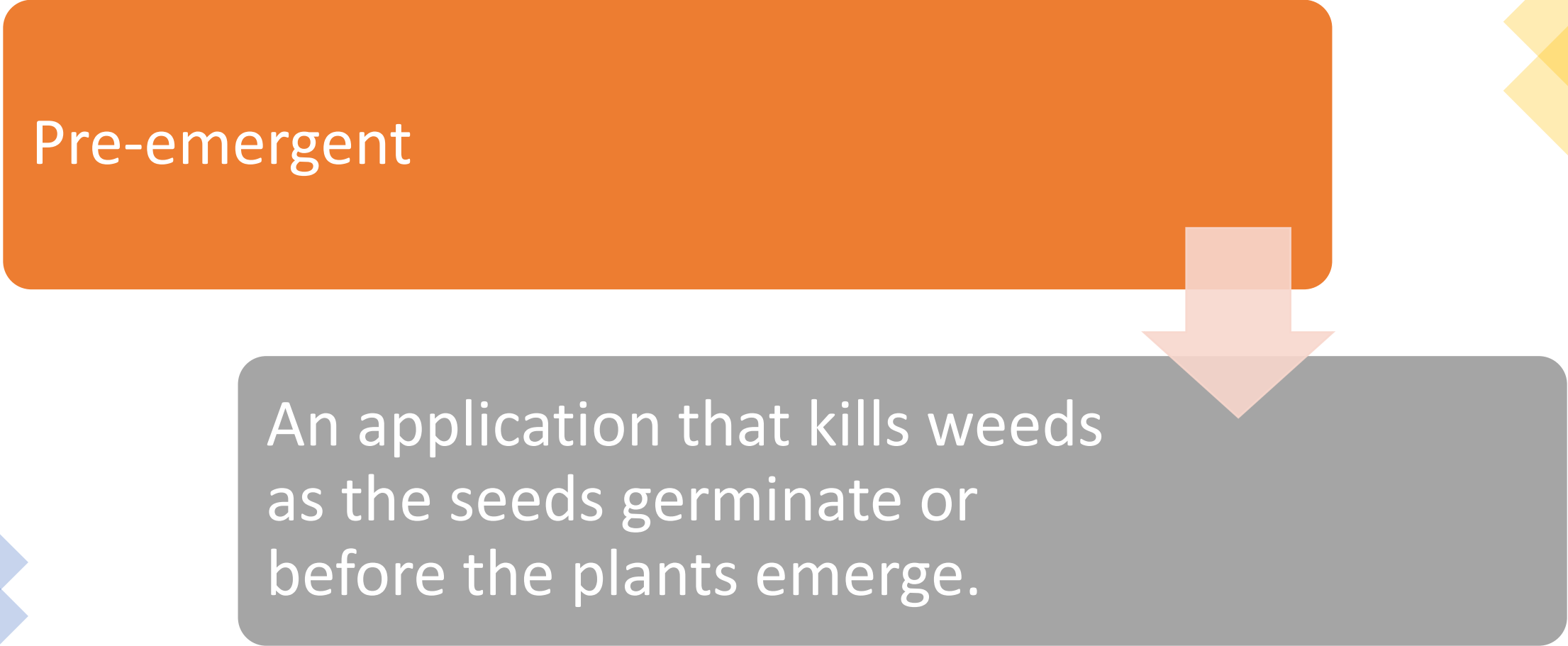
Where is it?

- Is it in a Bareground site?
- Is it in a R-O-W?



Herbicide Selection

Pre-emergent



An application that kills weeds as the seeds germinate or before the plants emerge.

Post emergent

Treatments made after plants emerge above the soil surface.



Contact

An herbicide that is phytotoxic by contact with plant tissue rather than as a result of translocation. Only that portion of a plant contacted is directly affected. Young seedlings are killed, but perennials may recover because of the uninjured parts below ground.





Selective

A chemical that is more toxic to some plant species than to others (may be a function of dosage or mode of application).

Non-Selective

Chemicals or formulations that destroy or prevent plant life in general without regard to species.



Dry Flowable

Formulation made of finely ground herbicide particles compressed into granular particles that can be suspended readily in water for application.



Flowable

Formulation made of finely ground herbicide particles that are suspended in a liquid, which is then diluted with water for application.



Water Soluble

Water soluble formulations of herbicides mix thoroughly with water and stay in solution even without agitation. They do not separate and settle out in their containers, even if stored for long periods of time.





Emulsifiable

A concentrated herbicide formulation containing organic solvents and adjuvants to facilitate **emulsification** with water.

Emulsification is the process of dispersing two or more **immiscible** liquids together to form a semi-stable mixture.

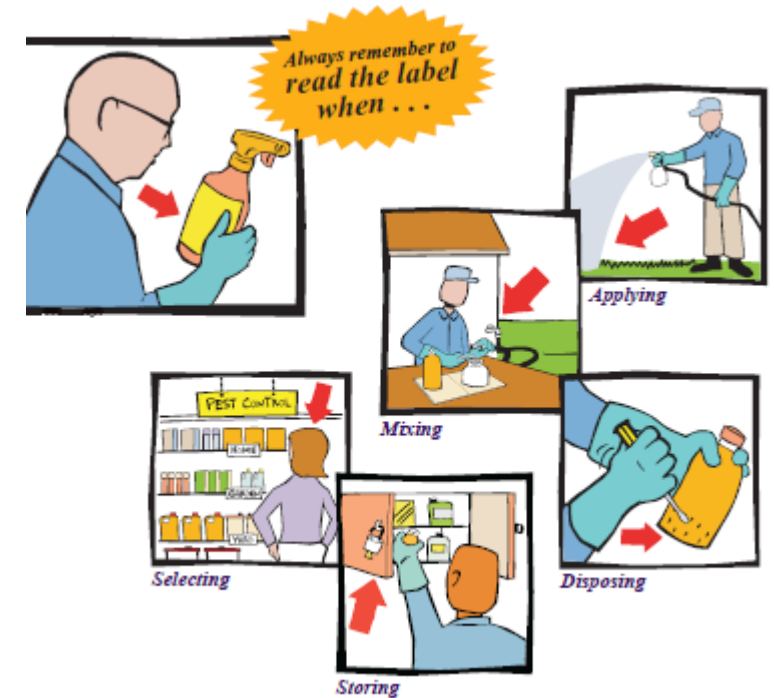
Immiscible liquids are those which won't mix to give a single phase. **Oil and water** are examples of immiscible liquids - one floats on top of the other.



THE LABEL

Why are labels important?

Labels are legal documents providing directions on how to mix, apply, store, and dispose of a pesticide product. This means using a pesticide in a manner inconsistent with its labeling is a violation of federal law. The label is the manufacturer's main way to give the user information about the product

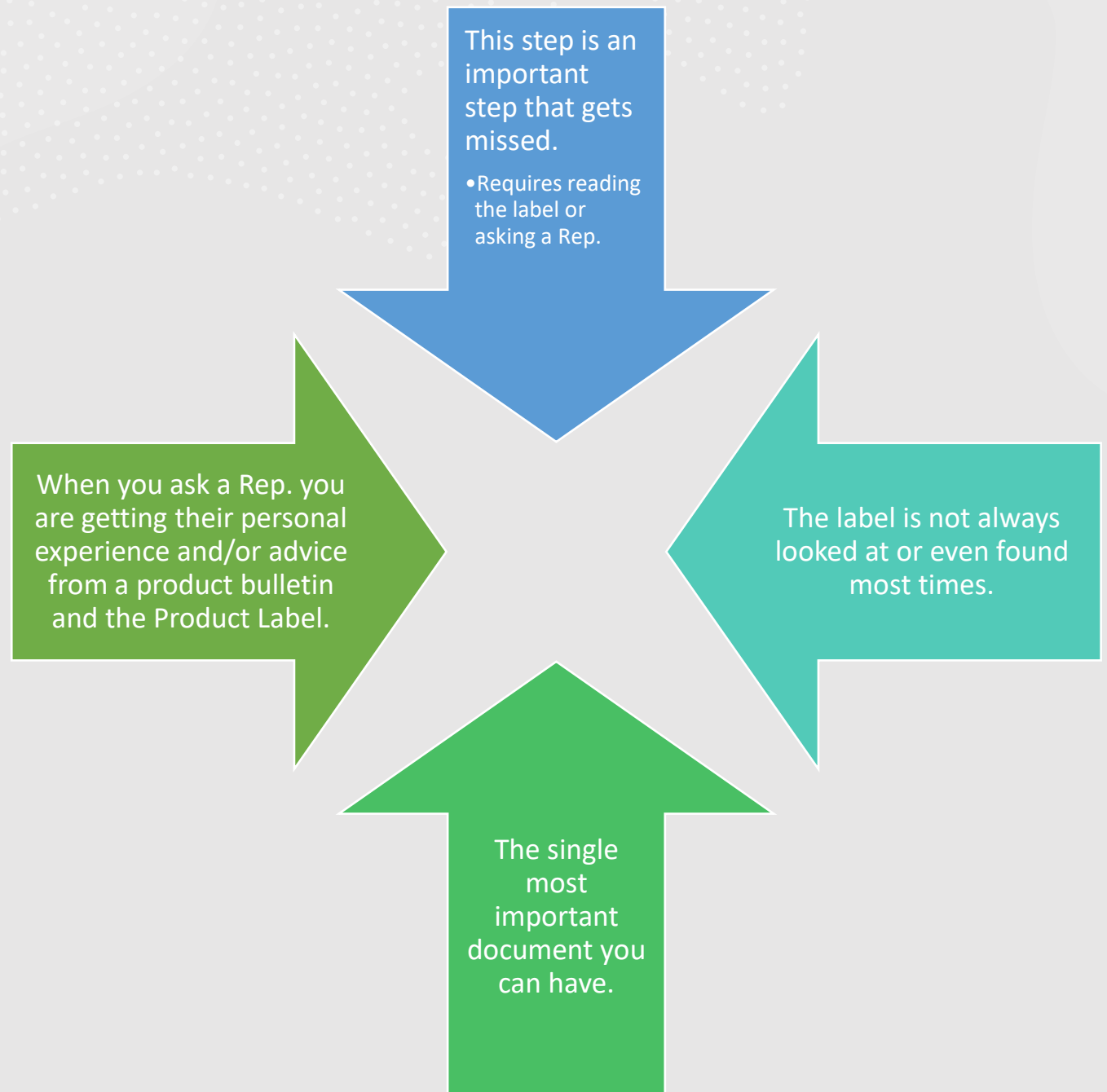


Where to find Labels

www.cdms.net

www.agrian.com

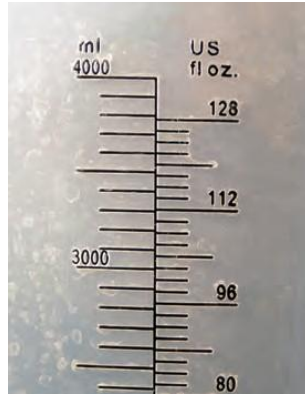
How Much Do I Use?



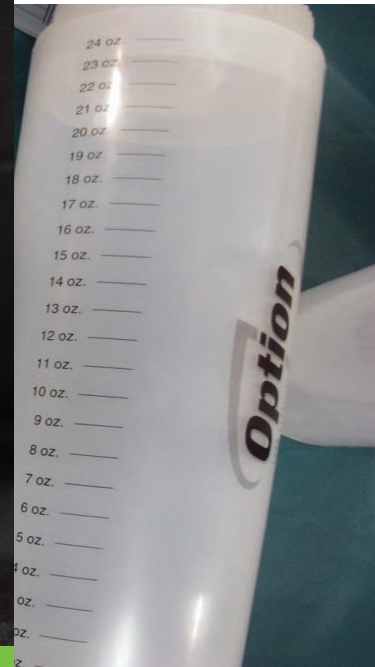


- Liquid containers
- Dry granular containers
- **Before you measure, make sure you know whether a measuring device is meant for fluid ounces or dry ounces .** If it is for liquid ounces, the measuring device should clearly say liquid ounces, fluid ounces, fl. oz., or liq. oz. Many measuring tubes look similar, so be sure that you identify which ones measure fluid ounces and which ones measure dry ounces.

Proper measuring devices



(Above) A container that measures fluid ounces. (Right) One tube measures fluid ounces, the other dry weight. (Left) Make sure the container measures dry ounces if it is not labeled as fluid ounces.



Proper measuring devices

The most accurate and consistent way to measure dry flowables is to weigh them on a scale .

The combinations of normal product density variance, user technique variance, and general measurement accuracy, could, in worst cases approach 15 to 20 percent. Manufacturers often suggest weighing out products when more precise measurements are required.



Proper measuring devices

- Select a scale that allows you to tare (zero) out the weight of the container (a plastic cup in the photo above left) in which the dry materials are placed. In this example, the plastic container was weighed. With the push of the “tare” or zero button, the weight reads zero. By adding the material after you tare the device, you will get a reading that does not include the weight of the container.
- Follow the scale manufacturer’s instructions to check and adjust the balance calibrations, as needed. It is also a good practice to check the scale’s accuracy using a known weight standard.



Making a Slurry

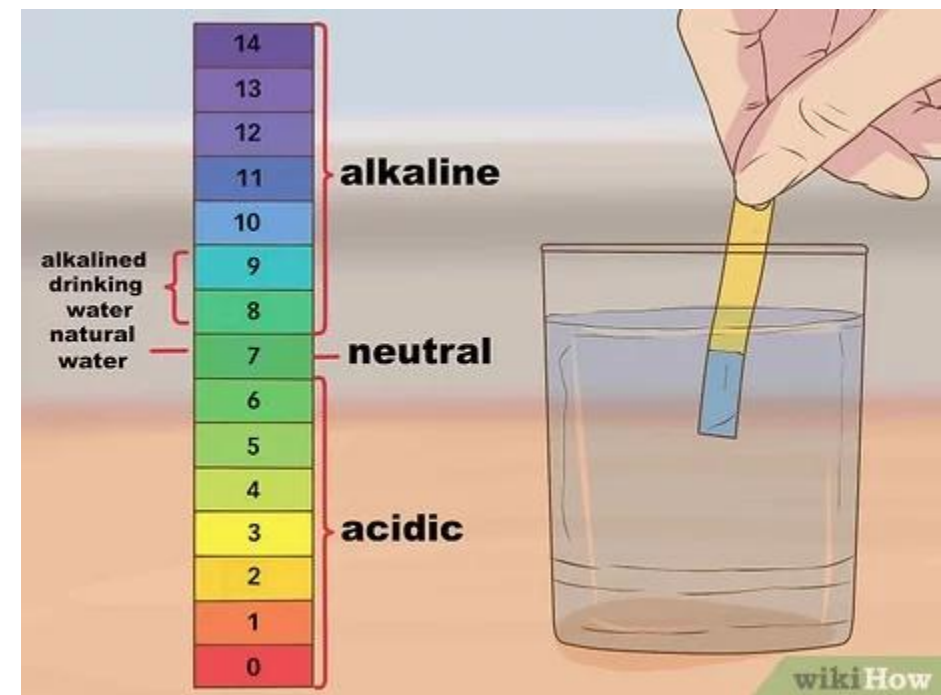
Without agitation, product will settle at the bottom of the tank.

As a result, solution taken from the bottom of the tank will have a much higher concentration of the product than solution taken from the top of the tank. This can lead to inconsistent results and unwanted damage.



DOES WATER MATTER?

- **pH**
 - Above 5 pH (most water is above a 7 pH)
 - Payload, Lock Down, Flumigard, Piper EZ need to buffer water down
- **Hardness (above 100 ppm)**
 - A lot of our water is Hard add water conditioners to water first
 - Glyphosate or Glufosinate





WATER QUALITY - AMS
BRONC[®]
MAX

BRONC[®] MAX Water Conditioning Agent is specially formulated to be used with many post emergence type herbicides, which perform best when mixed with ammonium sulfate.

3.68 lbs of Ammonium Sulfate per Gallon



WATER QUALITY - AMS

BRONC[®]
MAX

FEATURES

- Enhanced sequestering to block mineral tie-up of herbicides
- Reduces pH of spray solution to enhance uptake
- Low use rates for easy handling and mixing
- Approved for aquatic use
- NPE free



WATER QUALITY - AMADS

BRIMSTONE®

BRIMSTONE® is an effective water quality alternative to AMS (Ammonium Sulfate) + Surfactant for glyphosate and glyphosate tank mixes, providing faster penetration for quicker burn down.

BRIMSTONE is used for aerial and ground applications.
Use with: glyphosate and tank mixes.

3pt/100gal has the same functionality as 8.5 lbs. of AMS.





- **BRIMSTONE® is a special formulation of buffers, activators, and water conditioners designed to enhance the degree and speed of herbicide performance.**
- **BRIMSTONE can improve both pesticide spray application and pesticide efficacy.**
- **BRIMSTONE can eliminate the antagonistic effects of hard water on herbicide efficacy.**
- **BRIMSTONE is designed primarily to be applied with herbicides which utilize glyphosate as the active ingredient.**
- **BRIMSTONE will adjust solutions to a low pH and tie up metal ions which can deactivate glyphosate and other sensitive pesticides.**

CALIBRATION

WHY?

The two primary reasons to calibrate application equipment are:

- 1) to ensure that the correct amount of pesticide is applied.
- 2) to determine the amount of pesticide and water needed to correctly apply the pesticide to the desired area.



CALIBRATION

- Applying either too much or too little herbicide can cause problems.
- Using more herbicide than the label recommends is expensive, potentially toxic to fish, wasteful, and illegal.
- Applying too little herbicide may result in poor vegetation control.
- Repeat treatments can be costly and may be prohibited by label restrictions.

\$\$\$



CALIBRATION

- To ensure your application machinery is uniformly applying the correct amount of product over a given area.
- Obtain the positive outcome of a pesticide as specified on the product label
- Cost effective

CALIBRATION

- To be able to perform repeat successful procedures and minimize expenses
- To diagnose problems with failure in product performance, crop injury or faulty equipment



CALIBRATION

- To be able to document legal doses applied when using “**Restricted Use Pesticides**” (Important under current and increasing scrutiny by state regulatory agencies)
- We are in the public’s eye more than ever.



CALIBRATION

- Calibration takes the guesswork out of how much spray solution to mix up. Add enough chemical and water to treat an area based on the acreage.
- Efficiency improves. You are saving time and money when you are not having to refill a sprayer to complete your job because you failed to mix up the proper amount initially. You do not have chemical remaining in the tank because you mixed up too much solution. Landscape professionals are not in the business to lose money. Public agencies are accountable to the taxpayer and should be working as efficiently as possible.
- You minimize costly consequences of over application (wasting expensive product or causing crop injury). Reduce repeat applications because you used too low a rate.



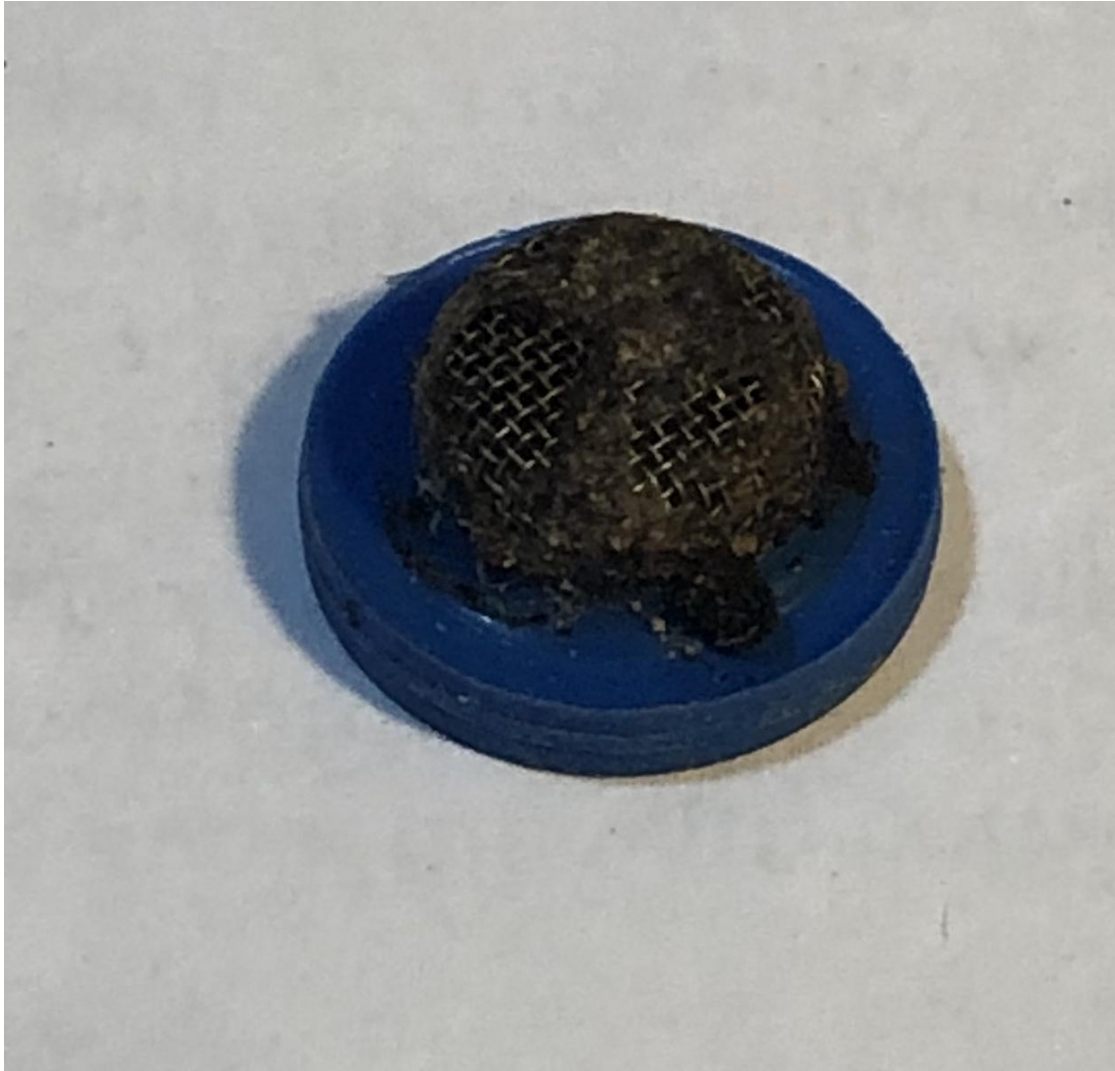
CALIBRATE EVERYTHING YOU SPRAY.....

Vikocoolant spray is a form of cryotherapy used in sports medicine, athletic training and rehabilitation environments and is widely used in the world .

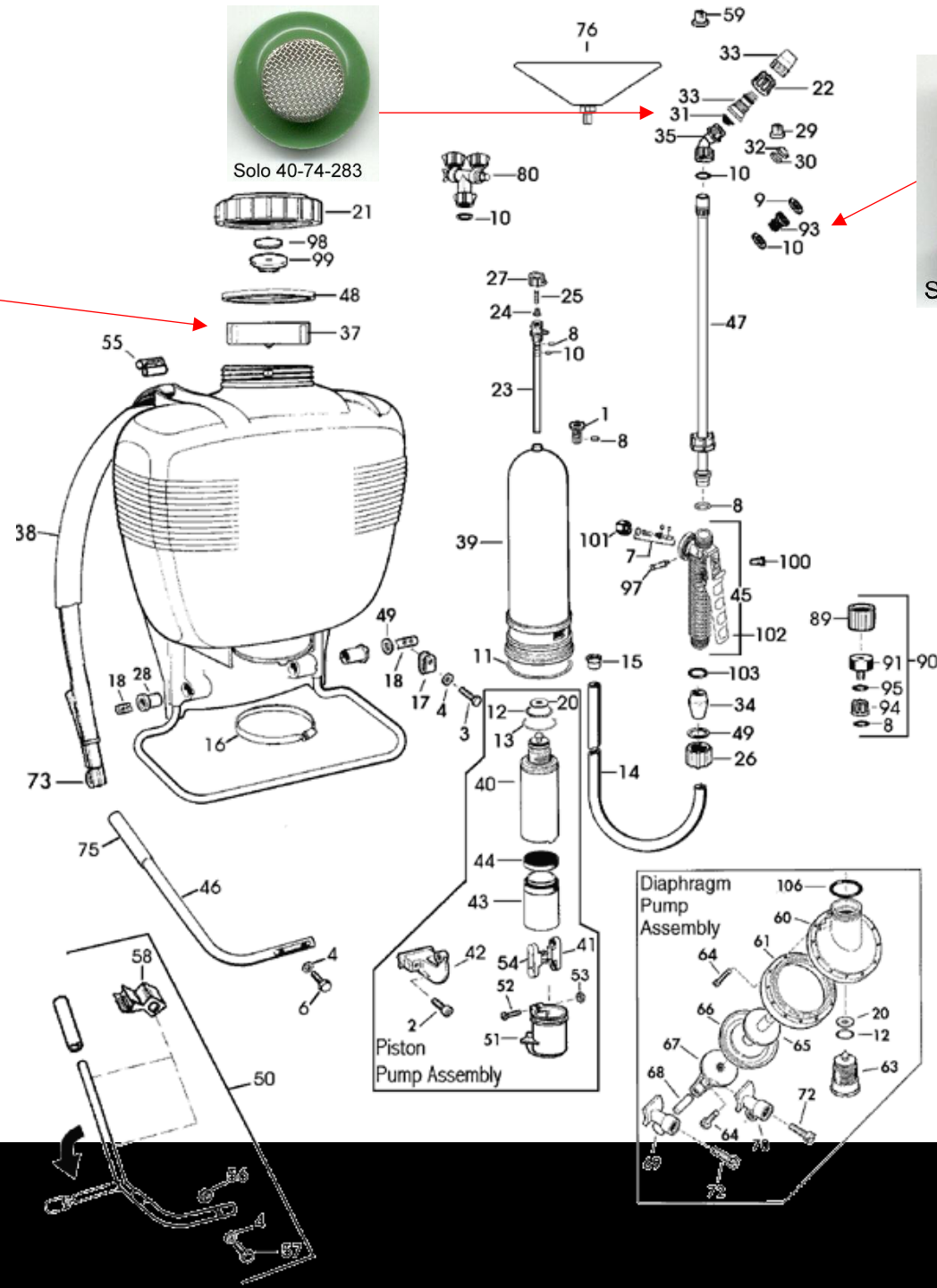


WELL, ALMOST EVERYTHING!!

CALIBRATION FINDS PROBLEMS







WHAT HAPPENED?

PRODUCT DIDN'T WORK!



NOPE!!



Spraying Mindset



- Have you ever thought that a good spray job is the result of the level of interest you had during that time?
- Have you ever noticed you weren't into spraying or just spaced out while spraying?
- Is it possible that herbicide treatments are not a result of anything we have talked about, but rather a result of a lack of interest?

Spraying Mindset



People have 2 mindsets about their abilities.

Fixed Mindset
Growth Mindset



Those with a **Fixed Mindset** believe that their talents and abilities are simply fixed. They have a certain amount and that's that. In this mindset athletes may become so concerned with being and looking talented that they never fulfill their potential.

Spraying Mindset

- People with a **Growth Mindset**, on the other hand, think of talents and abilities as things they can develop—as potentials that come to fruition through effort, practice, and instruction. They don't believe that everyone has the same potential or that anyone can be LORRETTA, but they understand that even LORRETTA wouldn't be LORRETTA without years of passion and dedicated learning. In the growth mindset, talent is something you build on and develop, not something you simply display to the world and try to coast to success on.





Spraying Mindset



INTEREST AFFECTS MINDSET



Interest is a psychological state of engagement, experienced in the moment, and also a predisposition to engage repeatedly with particular ideas, events, or objects over time.

Spraying Mindset

- **What Interest Can Do For Us**
- Interest is at once a cognitive state and an affective state, sometimes called a “knowledge emotion.” The feelings that characterize interest are overwhelmingly positive: a sense of being energized and invigorated, captivated and enthralled.





Spraying Mindset

Interest effectively turbocharges our thinking. When we're interested in what we're learning, we pay closer attention; we process the information more efficiently; we employ more effective learning strategies, such as engaging in critical thinking, and making connections between old and new knowledge.



When we're interested in a task, we work harder and persist longer, bringing more of our self-regulatory skills into play.



Spraying Mindset

How does this relate to applying herbicides?

Being in the right mindset “Growth Mindset” allows you the ability to take in what I have talked about today and digest the information in a way that you can positively use to grow your successes in the field.

Being “Interested” in correctly choosing, mixing and applying herbicide mixtures allows you to see the successful benefits of the chemistries you chose to combat the invasive weeds you target



Foot Rot Disease



Attack of Earthworms!



**That moment you realize you grabbed the
wrong spray...**



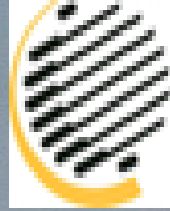
Groundskeeper accidentally sprayed weed killer instead of fertilizer on a school's football field

BUT THE DANDELIONS ARE GONE!

AND...

**SO WAS THE INTEREST IN
READING THE LABEL OF THE
PRODUCT**





WILBUR-ELLIS
AGRIBUSINESS

Kevin Hupp
Sales Representative
Pro Markets

Wilbur-Ellis Company
12001 E. Empire Ave
Spokane Valley WA, USA
T 509.928.4512 / TF 800.727.9186
C 509.350-3624 / F 509.924.0565
kevin.hupp@wilburellis.com