

Do the right thing! Common mistakes in wildland weed applications and how to correct them

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and

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Southern California

Mention of brand names does
not imply endorsement of any
product, and is used for
informational purposes only

Weeds are everywhere

We manage landscapes to:

- Reduce/eliminate effects of weed invasions
- Improve aesthetics
- Maintain function
- Restore habitat



What Does Chris Do?

- Conduct research on best practices for weed management and habitat restoration in Southern California
- Provide education to land managers on natural resources management
- Assist land managers on their projects by providing science-based advice
- Work with stakeholders on early detection and rapid response weed projects



What Does LeeAnne Do?

- Deputy Agricultural Commissioner El Dorado and Alpine Counties
- Regulate Pesticide Use in Both Counties
- Inspection and Enforcement of California Laws and Regulations
- Respond to Complaints about Pesticide Use
- Educate Applicators and the Public about Pesticide Laws
- Overseen by the California Dept. of Pesticide Regulation
- Manage the County Noxious Weed Program
- Chair 3 Weed Management Area Groups



So Many Herbicides?

- There are lots of laws and regulations regarding herbicide uses
- There are many different settings where we apply herbicides
- How do we keep ourselves safe and follow the laws?
- LeeAnne, you know I travel all over Southern California, I see so many different herbicide applicators, things done correctly and other not so well
- I should tell you about some of the things I've seen...



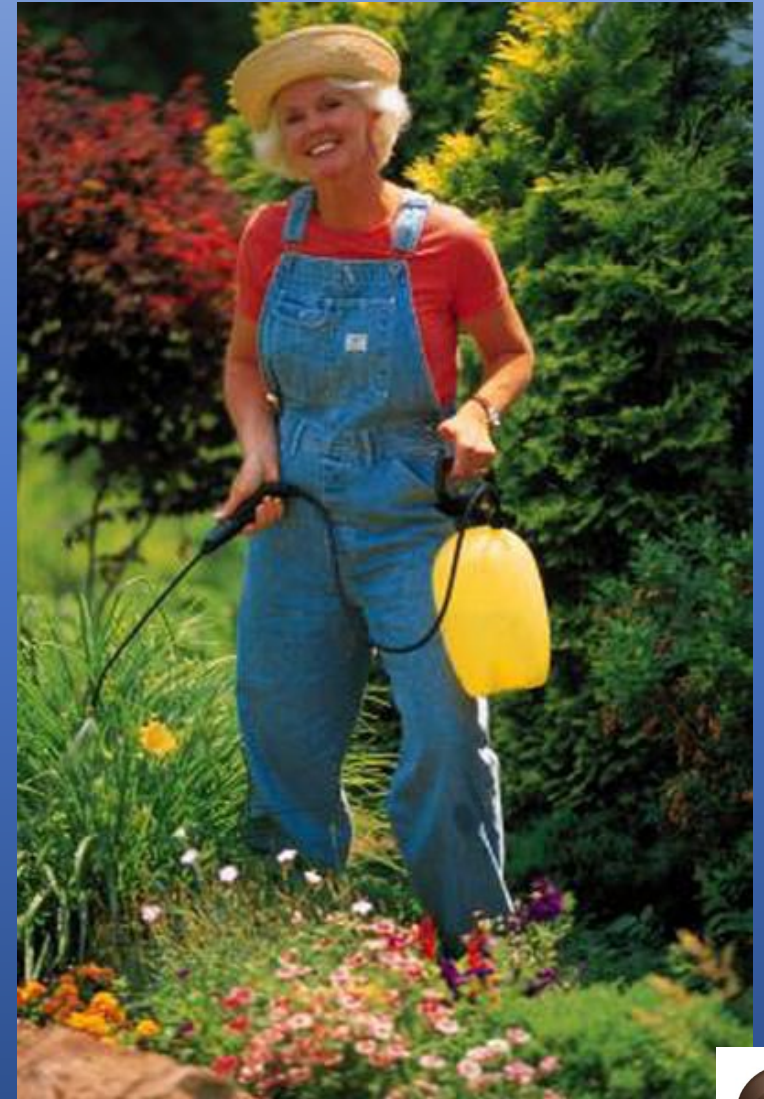
California

- There are a lot of difficult places in California where we control weeds



Visiting my family

- LeeAnne, I was visiting my family and it was such a great time to be out in the garden
- I saw my grandma spraying glyphosate in the yard to kill her dandelions
- I told her she wasn't spraying correctly, but she didn't want to hear it from me



Everyone has to follow the label

- Everyone, no matter whether they are an employee or not, has to follow the label, it's literally on the label
- There are some differences in California regulations for non-employees (i.e. homeowners or volunteers) and professionals engaged in pesticide handling or working in treated areas

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product can only be used in accordance with the Directions for Use on this label or in separately published [REDACTED]

[REDACTED] Supplemental Labeling. Supplemental Labeling may be found on the internet at www.agrian.com, www.cdms.net or www.greenbook.net or obtained by contacting your Authorized [REDACTED] Retailer or [REDACTED] Company representative.

What can you do and what are you required to do?

- First, and always, always, always read the label!
- “It is a violation of Federal law to use this product in a manner inconsistent with its labeling”
 - You have to follow all label instructions
- Every pesticide product has to have this statement on the label



Labeling

- But how do you know what is “inconsistent” with the label?
- You have to read the label!
- You literally have to read it, its on the label!!



Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Labeling



- “Read all directions for use carefully before applying”
- “Read the entire label before using this product”
- **And not just plain old reading, labels may say “carefully” or “the entire label”!**



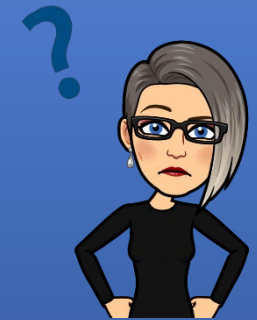
Trouble Understanding the Label?

- LeeAnne, sometimes I work with individuals who do not speak English as a first language, what should they do to ensure they follow the label directions?



Trouble Understanding the Label?

- Some herbicide products have herbicide labels that are in English and Spanish
- Other products may have label instructions to have a translator read the label directions to the applicator
- All handlers must follow the label directions



El herbicida profesional de postemergencia de amplio espectro completo para el control de malezas industriales, de césped y ornamentales.

The complete broad-spectrum postemergence professional herbicide for industrial, turf and ornamental weed control.

Trouble Understanding the Label?

6702. Employer-Employee Responsibilities.

- (a) **The employer shall comply with each regulation** in this subchapter which is applicable to the employer's action or conduct.
- (b) The employer:
 - (1) is responsible for knowing about applicable safe use requirements specified in regulations and on the pesticide product labeling;
 - (2) **shall inform the employee, in a language the employee understands, of the specific pesticide being used, pesticide safety hazards, the personal protective equipment and other equipment to be used, work procedures to be followed, and pesticide safety regulations applicable to all activities they may perform;**
 - (3) **shall assure safe work practices**, including all applicable regulations and pesticide product labeling requirements, are complied with;
 - (4) has the duty to provide a safe work place for employees and require employees to follow safe work practices; and
 - (5) **shall assure** that employees handle and use pesticides in accordance with the requirements of law, regulations, and pesticide product labeling requirements.
- (c) **Employees shall utilize** the personal protective equipment and other safety equipment required by pesticide product labeling or specified in this subchapter that has been provided by the employer at the work site in a condition that will provide the safety or protection intended by the equipment.

Sometimes We Want to Look Good



Or It's Really Sunny Out

- LeeAnne, in Southern California in the spring and summer, the weather is amazing, its also bright outside
- I see herbicide applicators wearing sunglasses
- Some even tell me these are safety sunglasses
- I think they are not the right kind of safety glasses, what can you tell me?



Protective Eyewear



- 6738.2
- Whenever protective eyewear is required, and the labeling does not identify a specific type, one of the following types of eyewear or eye protective devices bearing evidence of compliance with American National Standard for Occupational and Education Personal Eye and Face Protection Devices ANSI Z87.1 - 2010 must be worn:
 - (1) Safety glasses that provide front, brow, and temple protection.
 - (2) Goggles.
 - (3) Face shield.
- (b) If the pesticide labeling identifies a specific type of protective eyewear, that specified eyewear or more protective eyewear, must be worn.

Protective Eyewear

- Can wear safety sunglasses, goggles or face shield
- They must be ANSI Z87.1 -2010 rated
- Must provide brow, temple and eye protection



Close, but not ANSI Z87.1





Organic Herbicides



Organic Herbicides

- LeeAnne, I'm sure you've heard there are a lot of organizations requiring the use of organic herbicides on their lands
- Sometimes I go out and see people spraying organic herbicides and pay less attention to safety since its “organic”



Organic Herbicides

ORGANIC



- Chris, any product that claims to control pests is a pesticide
- If an organic herbicides claims to control weeds it is a pesticide
- If a product is intended to control weeds it is a pesticide
- CA CCR sec. 6000 Pesticide – “...any substance or product **that the user intends to be used** for the pesticidal poison purposes specified in Sections 12753 and 12758 of the Food and Agricultural Code.”



Organic Herbicide Registration

- LeeAnne, not all organic herbicides have an EPA registration number is there anything I need to do differently?

WEED ZAP®

A Non-Selective Herbicide For Annual Grasses And Weeds

This product ingredients are exempt from registration with the Federal EPA under section 25 (b) of FIFRA. **WEED ZAP** has not been registered with the Environmental Protection Agency. JH Biotech, Inc. represents that this product qualifies for exemption from registration under the Federal Insecticide, Fungicide and Rodenticide Act.

International & United States Patents Pending

SUPPRESS®

HERBICIDE EC

EPA Reg. No. 51517-9
EPA Est. No. 51517-CA-1

Manufactured by:
 **Westbridge**
Agricultural Products
1260 Avenida Chelsea
Vista, CA 92081 USA
(800) 876-2767



Monthly Pesticide Use Reporting

- If the organic herbicides has an EPA or CA registration number, it must be reported in monthly use reports

STATE OF CALIFORNIA
DPR-PML-025 (REV. 08/15)
Page 1 of 2

PESTICIDE USE REPORT

DEPARTMENT OF PESTICIDE REGULATION

☐ PRE-PLANT
(IF APPLICABLE)

1 COUNTY NO.	2 SECTION	3 TOWNSHIP	4 RANGE	5 BASE & MERIDIAN <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> H	6 APP. METHOD <input type="checkbox"/> GROUND <input type="checkbox"/> AIR <input type="checkbox"/> FUME <input type="checkbox"/> OTHER	7 PERMITTEE/PROPERTY OPERATOR	8 APPLICATOR NAME AND ADDRESS		
9 OPERATOR ID/PERMIT NUMBER			10 SITE IDENTIFICATION NUMBER		11 TOTAL PLANTED ACRES/UNITS				
12 LOCATION					13 BLOCK ID (IF APPLICABLE)		14		
15 DATE/TIME APPLIED		16 ACRES/UNITS TREATED		17 COMMODITY/SITE TREATED					
18 CHEM NO.	19 MANUFACTURER/NAME OF PRODUCTS APPLIED			20 EPA/CALIF. REGISTRATION NUMBER FROM LABEL		21 TOTAL PRODUCT USED		22 RATE	23 DILU
						<input type="checkbox"/> LB. <input type="checkbox"/> OZ. <input type="checkbox"/> PT. <input type="checkbox"/> QT. <input type="checkbox"/> GA.			
						<input type="checkbox"/> LB. <input type="checkbox"/> OZ. <input type="checkbox"/> PT. <input type="checkbox"/> QT. <input type="checkbox"/> GA.			

17
EPA/CALIF. REGISTRATION NUMBER FROM LABEL
20

Organic Herbicides

- LeeAnne, some people think that organic products are safer for the applicator to apply because they are organic
- I tell people to read the label because organic products may not be the same as synthetic products



Organics and Safety

- The term organic (per gov't regulations) relates to the origin of the chemical and how it is manufactured
- In general, USDA “organic” products comes from natural sources and/or have not been synthesized
- Organic herbicides can have Caution, Warning or Danger labels
- Signal word determines acute toxicity, it is not related to organic certification
- For example, organic Danger products can cause more acute harm than synthetic Caution products



Safety

- The term organic does not directly relate to risk or safety



Active Ingredients by Wt.	
Acetic Acid.....	20.0%*
Other Ingredients.....	80.0%
Total.....	100%
*Equivalent to 200 grain vinegar by filtration	

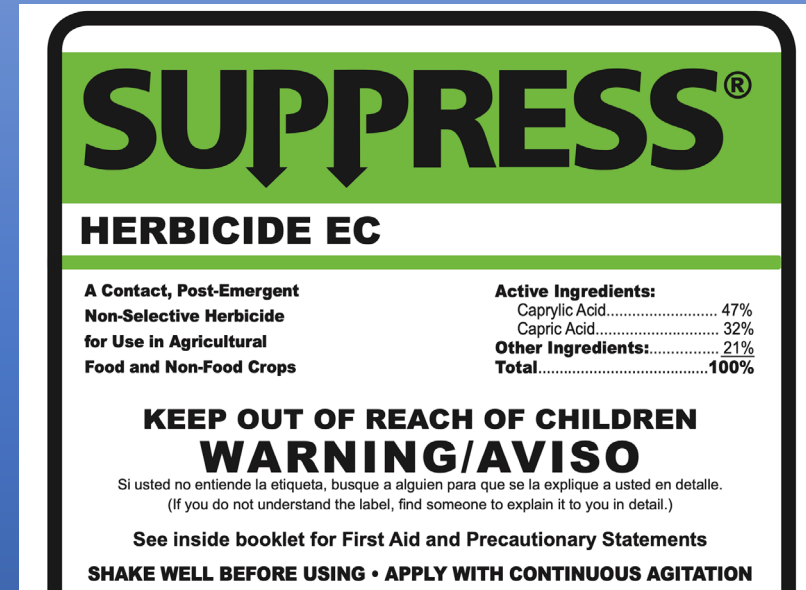
DANGER: Corrosive - causes irreversible eye damage. Wear goggles or face shield when handling. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. In case of contact, immediately flush eyes or skin with plenty of water.

PERSONAL PROTECTION EQUIPMENT (PPE): Applicators and other handlers must wear appropriate protective eyewear, such as face shield or goggles, and face mask (with MSHA/NIOSH approval number prefix such as N-95, R-95, or P-95), long sleeved shirt and long pants, waterproof gloves and shoes plus socks.



Safety

- The term organic does not directly relate to risk or safety



PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS
WARNING: Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Avoid contact with skin and clothing. Wear protective eyewear such as goggles, face shield, or safety glasses. Wash thoroughly with soap and water after hand and before eating,



Safety

- If you are trying to use an organic herbicide that has the same or lower acute toxicity than glyphosate (signal word: Caution), then there are only a few options on the market
- For example:
- Organic - Avenger, Fireworxx, Home Plate, Weed Zap, GreenMatch EX, Fiesta, corn gluten, and a few others
- Synthetic – Milestone, Telar, Transline, Capstone, Oust, Esplanade, Habitat/Polaris, Pathfinder II, Fusillade DX, Poast, Landmark XP, Method, Escort, Garlon 4 Ultra, Gallery, many glyphosate products ...



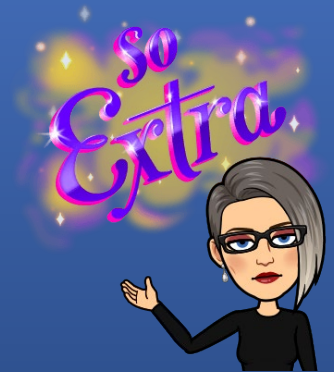
Organic Herbicides

- LeeAnne, Many organic herbicides have a signal word of Warning and a few even have a Danger signal word
- What do applicators need to know when spraying organic herbicides and how can they be safe and not run into problems?



Organic Herbicides

- Warning and Danger labelled pesticides (including organic) require applicators to wear coveralls
- 6738.1 “(e) Employees wear coveralls whenever they handle pesticides with the signal word "DANGER" or "WARNING" except when using fumigants unless the pesticide product labeling expressly requires the use of coveralls



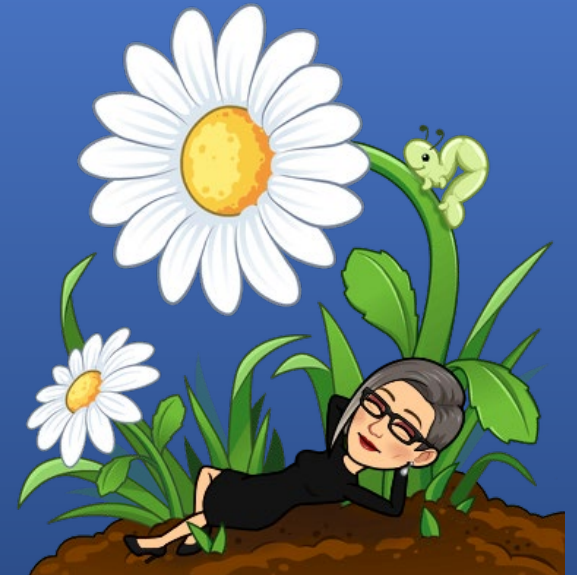
Coveralls?

- LeeAnne, if we spray any herbicide with a Warning or Danger signal word, including an organic herbicide what is a coverall?



Coveralls?

- 6000 – “**Coverall**” means a one- or two-piece garment of closely woven fabric or equivalent that covers the entire body, except the head, hands, and feet, and must be provided by the employer as personal protective equipment. Coverall differs from, and should not be confused with, work clothing that can be required to be provided by the employee.



Work Clothing?

- 6000 – “**Work clothing**” means garments such as long-sleeved shirts, short-sleeved shirts, long pants, short pants, shoes, and socks. Work clothing is not considered personal protective equipment although pesticide product labeling or regulations may require specific work clothing during some activities. Work clothing differs from and should not be confused with a coverall. While coveralls shall be provided by the employer, work clothing can be required to be provided by the employee. Short sleeved shirts and short pants are considered acceptable work clothing only under conditions expressly permitted by pesticide product labeling.

Coveralls

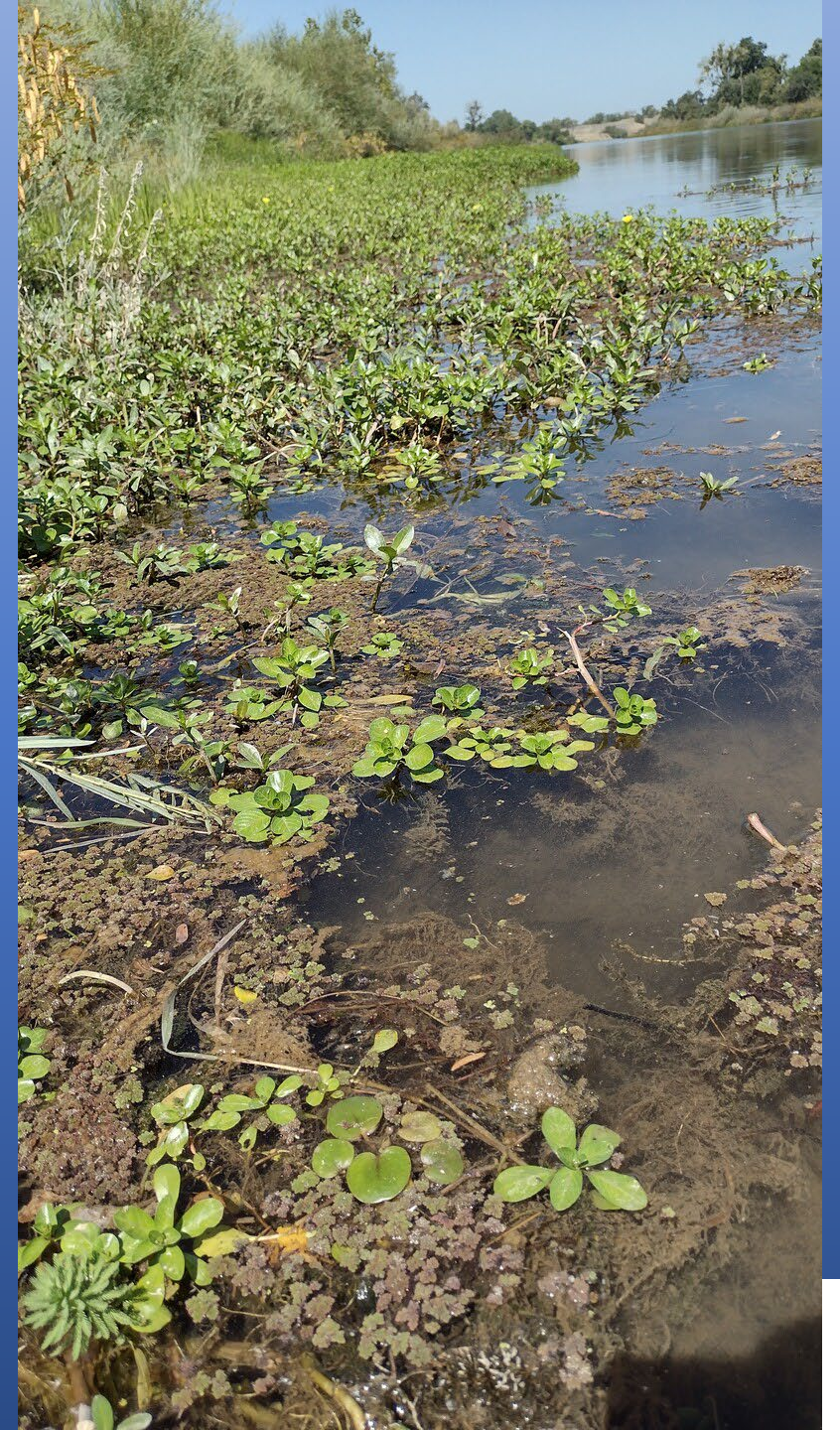


Looks like work clothes

Common Urban and Wildland Herbicides



Rachel K.



Robin C.



5 Commonly Used Herbicides in Urban and Natural Areas

- LeeAnne, I notice that land managers all over the state have a short list of their top herbicides for their weed control projects what advice do you have to ensure they follow the laws and regulations?
- Glyphosate
- Triclopyr
- Aminopyralid/clopyralid
- Imazapyr
- Grass-specific herbicides



Glyphosate

- Broad spectrum post emergent herbicide
- Controls annual and perennial grasses, annual forbs, perennial herbs and woody weeds
- Has no to minimal soil activity
- Requires standard amount of PPE
- For non-agricultural settings restricted entry interval is typically after the spray has dried
- Wide variety of use sites for many labels
- Moderate use rates (usually quarts per acre)





Glyphosate

- Chris, One area of concern when using glyphosate products is that the PPE required on the label is not the full suite of PPE often required in California for professional applicators
- The label below is missing eyewear and gloves

Personal Protective Equipment (PPE)

Applicators and other handlers must wear: long-sleeved shirt and long pants, shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If there are no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

6738. Personal Protective Equipment Care.

(a) **The employer shall:**

(1) Provide all personal protective equipment required by pesticide product labeling, regulation, and restricted material permit condition, provide for its daily inspection and cleaning (according to pesticide labeling instructions or, absent any instructions, washed in detergent and hot water), and repair or replace any worn, damaged, or heavily contaminated personal protective equipment.

Leather gloves used to apply only aluminum phosphide or magnesium phosphide pesticides and which have been aerated for 12 hours or more are considered cleaned.

(2) Assure that all clean personal protective equipment, when not in use, is kept separate from personal clothing and in a clean and pesticide-free, specifically designated place.

(3) Assure that personal protective equipment is used correctly for its intended purpose.

(4) Keep and wash potentially contaminated personal protective equipment separately from other clothing or laundry.

(5) Assure that all clean personal protective equipment is either dried thoroughly before being stored or is put in a well-ventilated place to dry.





- Don't do this
Pesticides stored in cab of truck, and also on top of PPE



- Don't do this
Pesticides stored in cab of truck, and also near PPE

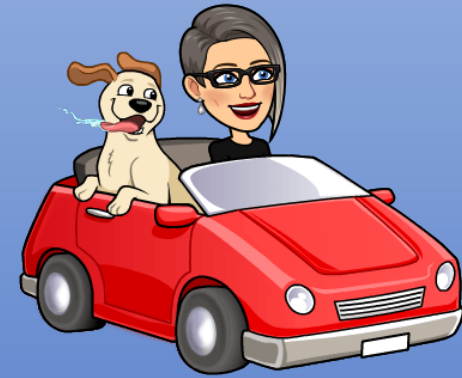
Gloves

Another Issue with storage



- Although not an issue with glyphosate specifically, but storage in general is a problem we see
- Sometimes people try to do the right thing but end up violating another regulation too
- **6670** - “Pesticides, emptied containers or parts thereof, or equipment that holds or has held a pesticide, shall not be stored, handled, emptied, disposed of, or left unattended in such a manner or at any place where they may present a hazard to persons, animals (including bees), food, feed, crops or property”





6682. Transportation.

(a) Pesticides shall not be transported in the same compartment with persons, food or feed.

And

6670 - “Pesticides, emptied containers or parts thereof, or equipment that holds or has held a pesticide, **shall not be stored,** handled, emptied, disposed of, or left unattended in such a manner or **at any place where they may present a hazard to persons, animals (including bees), food, feed, crops or property**”

- In addition, we see people not secure their pesticides to their vehicle
- 6682. Transportation “(b) Pesticide containers shall be secured to vehicles during transportation in a manner that will prevent spillage onto the vehicle or off the vehicle. Paper, cardboard, and similar containers shall be covered when necessary to protect them from moisture.”



5 Commonly Used Herbicides in Urban and Natural Areas

- Triclopyr
- Controls broadleaved plants, but wide spectrum of broadleaf plants
- Good on woody weeds, perennial and annual forbs
- No to minimal activity on most grasses
- Multiple formulations, have different potential to drift
- For non-agricultural settings restricted entry interval is typically after the spray has dried
- Wide variety of use sites for many labels
- Moderate use rates (usually quarts per acre)



Triclopyr



- Chris, one big problem we see with triclopyr products is drift
- There are two main ways a product can drift
 - One is when the product blows away from the target due to wind (physical spray drift)
 - The other is when the product vaporizes (aka volatilizes) off the target plant and onto non-target vegetation
- The different triclopyr formulations have different drift potential through vaporization





6614. Protection of Persons, Animals, and Property.

(a) An applicator prior to and while applying a pesticide shall evaluate the equipment to be used, meteorological conditions, the property to be treated, and surrounding properties to determine the likelihood of harm or damage.

(b) Notwithstanding that substantial drift would be prevented, no pesticide application shall be made or continued when:

(1) There is a reasonable possibility of contamination of the bodies or clothing of persons not involved in the application process;

(2) There is a reasonable possibility of damage to nontarget crops, animals, or other public or private property; or

(3) There is a reasonable possibility of contamination of nontarget public or private property, including the creation of a health hazard, preventing normal use of such property. In determining a health hazard, the amount and toxicity of the pesticide, the type and uses of the property and related factors shall be considered.

- In addition, drift restrictions are on the product labeling, and often in multiple locations

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state

Avoid Injurious Spray Drift

Make applications only when there is little or no hazard from spray drift. Small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants that are near enough to be injured. It is

DRIFT



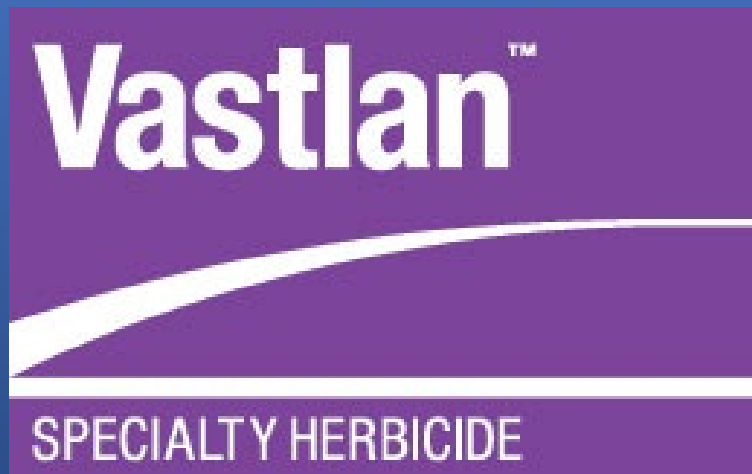
- On top of that, the applicator is responsible for managing and mitigating spray drift

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

3 Formulations of Triclopyr

- There are 3 different types of triclopyr
- Garlon 3A
- Garlon 4 Ultra, Pathfinder II
- Vastlan



Mention of brand names does not imply endorsement of any product, and is used for informational purposes only



Garlon 3A

- Amine formulation
- Water soluble
- Danger signal word, causes irreversible eye damage
- Moderate vaporization rates
- Foliar applications and also aquatic



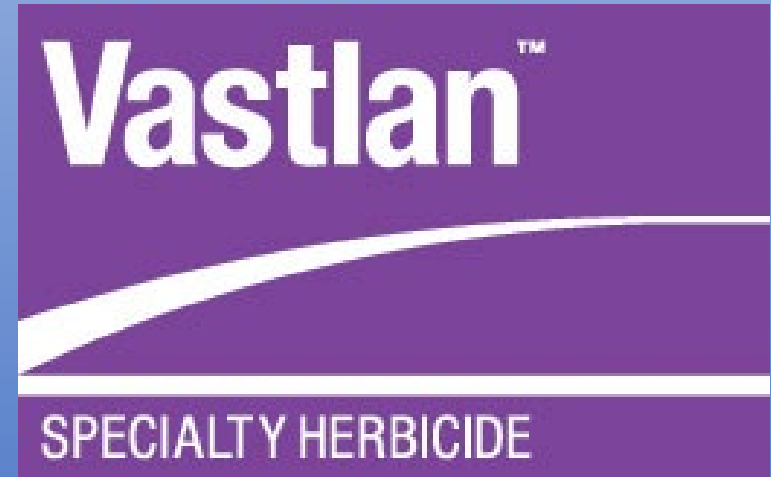
Garlon 4 Ultra

- Ester formulation
- Oil soluble (but can be mixed with water)
- Caution signal word, causes moderate eye irritation, harmful if swallowed
- Higher vaporization rates
- Often used in basal bark, cut stump



Vastlan

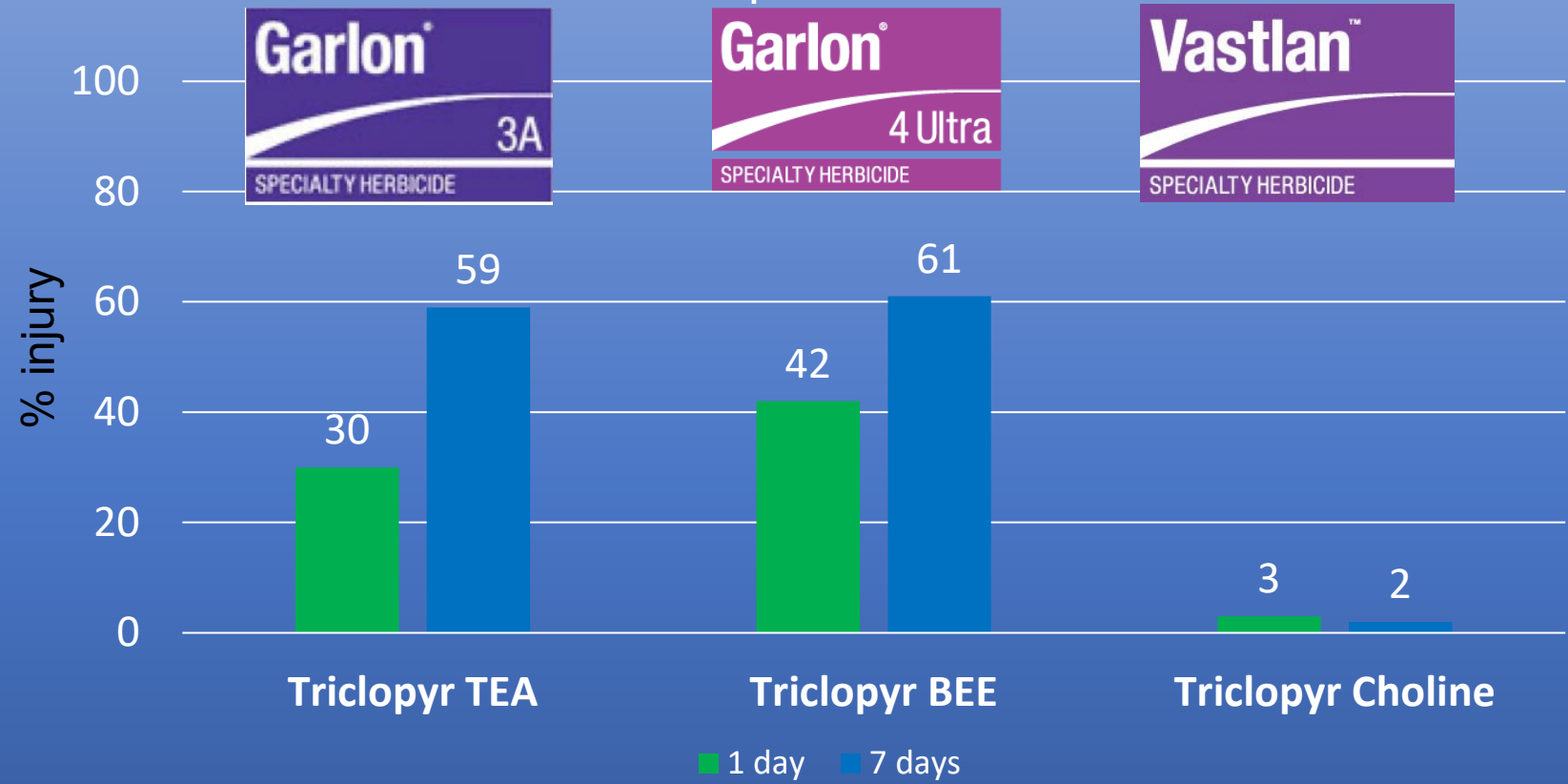
- Choline formulation (“salt” formulation)
- Water soluble
- Warning signal word, causes substantial but temporary eye irritation, may be fatal if swallowed
- Lowest vaporization of these 3 products
- Foliar applications and also aquatic



Greenhouse Volatility Test

C

Symptoms on grapes at 1 and 7 days after exposure to vapor at 104F



Ryegrass plants were sprayed with each formulation, then sensitive plants were placed adjacent and kept in chamber for 24 h at 104F

- * triclopyr BEE (64 fl oz/A of a 4 lb ae/gallon product)
- * triclopyr TEA (86 fl oz.A of a 3 lb ae/gallon product)
- * triclopyr choline (64 fl oz/A of a 4 lb ae/gallon product)

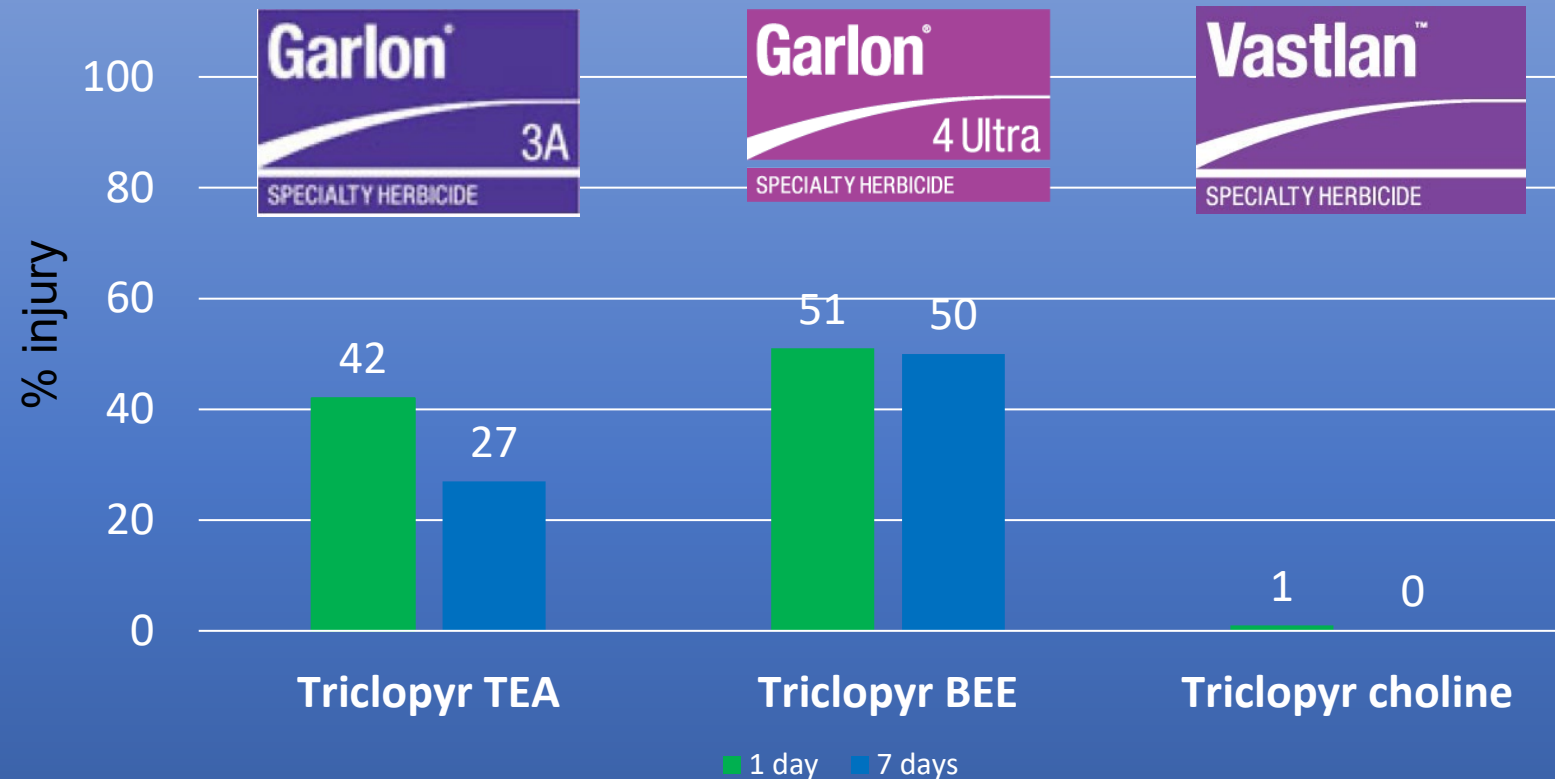
Courtesy of Rick Miller, Corteva



Greenhouse Volatility Test

C

Symptoms on tomatoes at 1 and 7 days after exposure to vapor to 104F



- * triclopyr BEE (64 fl oz/A of a 4 lb ae/gallon product)
- * triclopyr TEA (86 fl oz.A of a 3 lb ae/gallon product)
- * triclopyr choline (64 fl oz/A of a 4 lb ae/gallon product)

Courtesy of Rick Miller, Corteva



Drift Vapor Reduction

- Drift through volatilization can lead to injury on neighboring crops



Holly Spangler

Dicamba 2020: What went wrong in Iowa?

July 8, 2020 7:00 AM

Growing Concern: Thousands of farms across U.S. damaged by 'dicamba drift' that devastates crops

Why dicamba complaints dropped in Illinois

Hydrogen bonds may be key to airborne dicamba

Researchers teased out the chemical interactions at play, and how they affect "dicamba drift."



Drift Vapor Reduction

- When an applicator needs to reduce vaporization/volatilization:
- Read and follow all label directions carefully
- Use a low vapor forming formulation
- Spray during cool season and weather
- Don't spray impermeable surfaces (rock, concrete, etc.)
- Use drift reducing adjuvants, use more coarse droplets
- Reduce overspray
- Apply when wind is blowing away from non-target plants (i.e. you are downwind)



Drift Vapor Reduction



Jim Hartman



- Overspray on impermeable surface

Jim Hartman



5 Common Herbicides in Urban and Natural Areas

c

- Aminopryalid and Clopyralid



Aminopyralid and Clopyralid

- Controls variety of broad-leaved plants (aminopyralid is broader spectrum)
- Clopyralid minimal annual grass control, aminopyralid some annual grass control, both can be used to restore perennial grasses
- Both have Caution signal words
- Good on Asters, Fabaceae (pea/bean family), other plant families too
- Soil residual several months to 18 months on sensitive species
- Moderate variety of use sites
- Low use rates (ozs. to ~1 pt. per ac.)



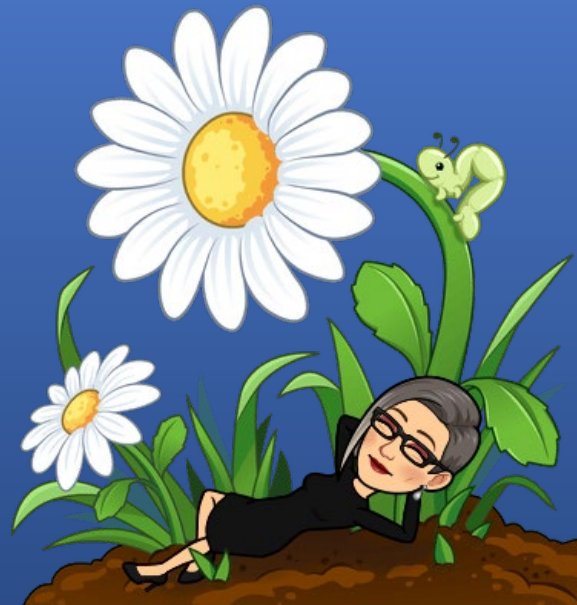
Aminopyralid and Clopyralid

- Chris, one important idea when using these products is to make sure the applicator is using these products on the correct sites, especially when working in the wildland urban interface
- Neither of these two products have the wide variety of sites listed as compared to herbicides like glyphosate



Herbicides are Applied to Sites

- Herbicide labels allow weeds to be treated only at the sites listed on the label
- The weed species does not have to be on the herbicide label



Herbicides are Applied to Sites

- Sites may be listed in several places on the label:
- The first page giving general directions

For control of broadleaf annual and perennial weeds and woody brush species on:

- rangeland and permanent grass pastures, grasses grown for hay, Conservation Reserve Program (CRP) sites,
- forest sites, conifer and tree plantations;
- non-crop areas for example airports, barrow ditches, communication transmission lines, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, manufacturing and storage sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas, and around farm buildings;
- natural areas (open space) for example, campgrounds,

Herbicides are Applied to Sites

- Directions for use or product information



Product Information

Use Transline® herbicide for postemergence control of broadleaf weeds and woody brush species in sites listed on this label such as range, forests, non-crop, and natural areas. Use on these sites may include application to grazed areas. Transline is labeled for control of broadleaf weeds in cottonwood/poplar and eucalyptus tree plantations; in all states except Florida.

Herbicides are Applied to Sites

- Specific use directions



Uses

Christmas Tree Plantations (All States Except Florida)

Use Transline for over the top application to actively growing balsam fir, blue spruce, Douglas-fir, fraser fir, grand fir, lodgepole pine, noble fir, Ponderosa pine, and white pine. In the Pacific Northwest, apply in the first year of transplanting only if some needle curling can be tolerated on first year transplants. Apply to actively growing weeds.

Cottonwood/Poplar and Eucalyptus Tree Plantations (All States Except Florida)

Use Transline for postemergence control of labeled broadleaf weeds in new and established plantings of cottonwood/poplar and eucalyptus tree plantations. Apply as a broadcast foliar spray over trees or as a banded

Non-Crop Areas

All States Except Florida. NOTE: Non-crop uses in California are permitted as long as the maximum use rate for California (2/3 pint per acre per annual growing season) is not exceeded. See section for California below.

Herbicides are Applied to Sites

L

- In directions for specific crop types
- In this case wildlands or nature preserves may not be specifically listed, but might be labeled as a “non-crop” site or as “uncultivated” site



FOR USE in and AROUND ALL FOOD and NON-FOOD CROPS, INCLUDING, but not LIMITED to:

Berries	Blackberries, Blueberries, Boysenberries, Cranberries, Dewberries, Loganberries, Raspberries
Brassicas (Cole)	Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Collards, Kale, Mustard Greens
Bulb Vegetables	Garlic, Leaks, Onions, Shallots

Non-Food Crops:

Turf, Flowers, Bedding and Landscape	Bedding Plants, Flowers and Ornamentals, Turf Grass (Maintenance, Sod or Seed Production)
Trees and Shrubs	Christmas Trees, Forest and Commercial Trees, Landscape Trees, Nursery Trees or Shrubs
Greenhouse and Nurseries	All Crops, Plants
Fallow Land, Forages and Pastures, Uncultivated Land	

Herbicides are Applied to Sites

- In addition, sites not listed on a label cannot be treated
- Even if the specific site is not prohibited on the label



Aminopyralid and Clopyralid

- Milestone has language restricting uses near turf and ornamental plantings, sidewalks, and lawns.

- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.



Aminopyralid and Clopyralid

- Both Milestone and Transline labels do not allow applications around ornamental plantings



- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.

Unless otherwise specified on this label or supplemental labeling for Transline, do not apply this product to any broadleaf crop or ornamental planting or to areas where sensitive plants will be planted during the same growing season. (See Rotation to Broadleaf Crops.)

Aminopyralid and Clopyralid

- However, Transline labels allow applications around farm buildings and non-crop residential areas, Milestone does not all these same uses

Transline

pipelines, railroads, roadsides, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas, and around farm buildings;

Milestone

rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;

How many use sites
are in this picture?



7 Use Sites!

Uncultivated
non-crop
or natural area
or open space

Building

If wet, aquatic or
ephemeral stream

Ornamental
Planting

Hiking trails

Parking Lot

Roadside and
ROW



7 Use Sites!

- Of these 7 use sites Milestone or Transline cannot be applied to all of them
- Both are not aquatic, nor ornamental uses
- Milestone can't be used near building



And Sites Adjacent to the Use Site

- Some herbicides have warnings about how the herbicides might affect plants through root uptake

- Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Do not apply Milestone within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses and leguminous trees such as locusts, redbud, mimosa, and caragana.

Site Information

- Even though the site may be listed on the label, there might be restrictions on the label that limit uses on specific sites
- For example, some herbicides limit uses on sandy soils

Clopyralid is a chemical which can travel (seep or leach) through soil and under certain conditions contaminate groundwater which may be used for irrigation or drinking purposes. Users are advised not to apply clopyralid where soils have a rapid to very rapid permeability throughout the profile (such as loamy sand to sand) and the water table of an underlying aquifer is shallow, or to soils containing sinkholes over limestone bedrock, severely fractured surfaces, and substrates which would allow direct introduction into an aquifer. Your local agricultural agencies can provide further information on the type of soil in your area and the location of groundwater.

Livestock and Grazing Restrictions

- If livestock are present on the site, or the site is going to be grazed and livestock will consume the treated vegetation, then the label must allow grazing or livestock on the label

 **including grazed areas in and around these sites.**

 **DO NOT GRAZE ANIMALS IN TREATED AREAS OR FEED TREATED PLANTS.**

Wildland and Natural Areas Herbicides

- LeeAnne, I notice that land managers are very busy and in any given day they might work near a road, on a trail, next to a stream, near a house, adjacent to an irrigation ditch, and near a public education building
- The herbicides used must have the site on the label
- If in doubt, call your local Ag. Commissioner
- Or use the Ca DPR site code tool



Site Name

SEARCH

CLEAR

Search for Pesticide Products by Site Code



5 Commonly Used Herbicides in Urban and Natural Areas

- Imazapyr



Imazapyr

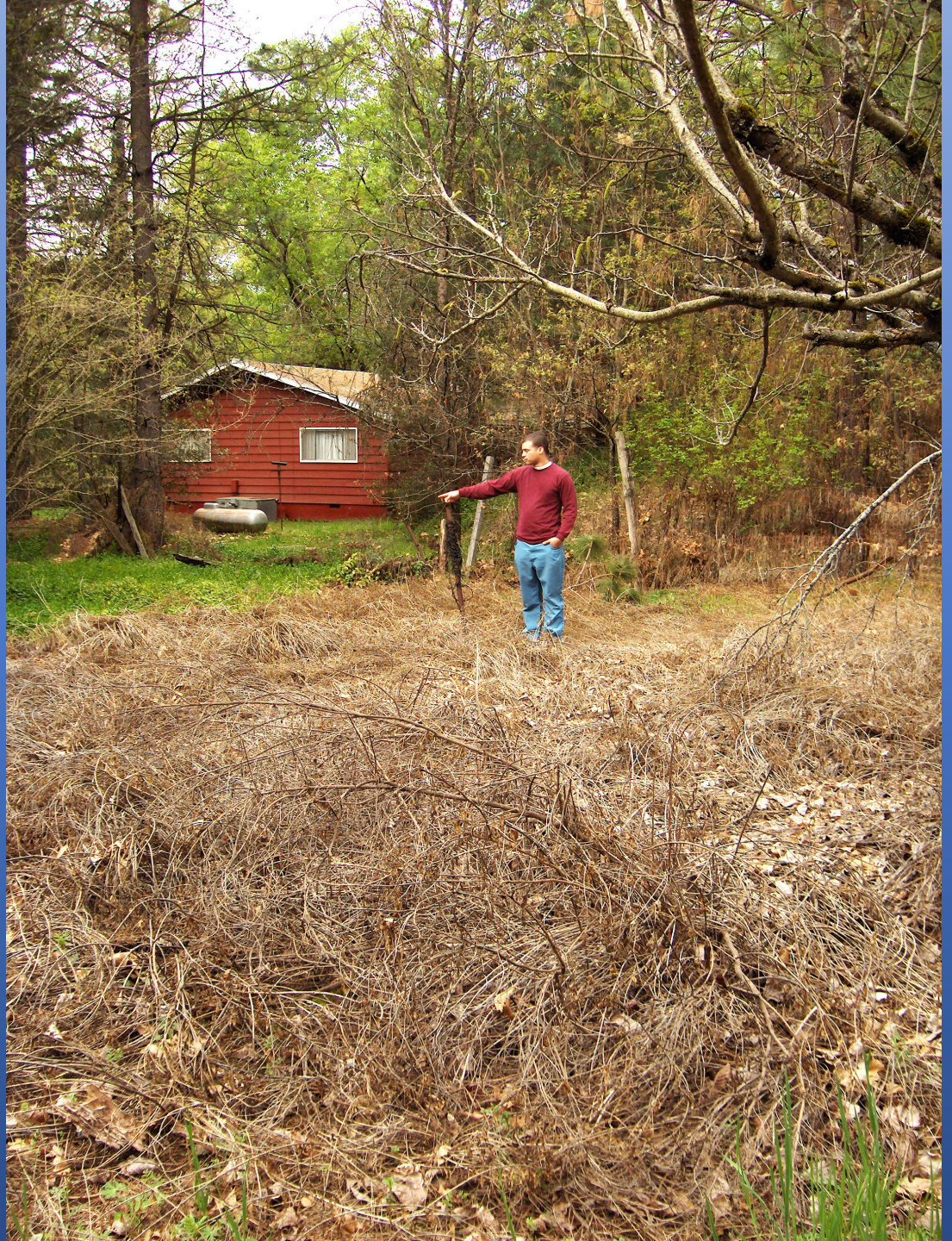
- Broad spectrum controls broadleaves and grasses, annuals, perennials, and woody species
- Moderate to long soil residual
- Caution signal word
- Overspray and root uptake of adjacent plant can cause non-target damage
- Some formulations are aquatic



Imazapyr

- Imazapyr can have a long soil residual (greater than one year) and non-target plants with roots in the application zone can take up the herbicide in their roots
- Calibration can be very effective at preventing overapplication
- Physical drift prevention techniques can help reduce overspray on non-target plants





5 Commonly Used Herbicides in Urban and Natural Areas

- Grass-specific herbicides



Grass Specific Herbicides

- Fluizafop (Fusilade), Clethodim (Envoy), Sethoxydim (Poast)
- Post-emergent control of grasses, most control many annual grasses, some products have less effectiveness on some perennial grasses
- Some products have limited pre-emergent activity
- Labels will specify which non-grasses are tolerant (bulbs, broadleaf perennials and broadleaf annuals)
- May have Caution or Warning signal words



Grass Specific Herbicides



- Chris, one issue with some of these products is they require additional PPE for mixing and loading
- For example, fluazifop (Fusilade) requires mixers and loader to wear a chemical resistant apron

Mixers and Loaders must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or nitrile rubber or Viton or neoprene rubber
- Shoes plus socks
- Protective eyewear
- Chemical-resistant apron when mixing or loading

Chemical Resistant Apron



UC Statewide IPM Program
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Tank being filled with water by a person dressed in full personal protective equipment.
Credit: Cheryl A. Reynolds, UC IPM.

Chemical Resistant Apron

- After mixing and loading the PPE, including the apron, must be washed and cleaned
- Unclean apron cannot be stored with clean PPE nor can dirty PPE be stored in the passenger compartment of a vehicle (6738)

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.



Grass Specific Herbicides

- In addition, some grass specific herbicide labels are not very clear on which non-crop areas are acceptable application sites

Poast compared to Fusilade II



Poast[®]

Herbicide

Nonagricultural Land

- Natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails)

NONCROP AREAS, ROADSIDE, INDUSTRIAL AND OTHER AREAS

Fusilade II Turf and Ornamental Herbicide can be used to control annual and perennial grass weeds in noncrop areas. Noncrop areas include airports, cemeteries, electric transformer stations and sub-stations, pipeline pumping stations, around residential, commercial, public and industrial buildings, storage yards, fence lines, parkways, roadsides, rights-of-way, and similar noncropland areas.

Grass Specific Herbicides

- Some labels may have a general statement that unspecified non-crop areas can be sprayed, which could mean that a general open space site could be treated
- For example, CA DPR lists “uncultivated non-ag areas” as an acceptable site on the Fusilade II label (DPR site code 67000)



Other issues to consider?

- Soil profile
- Water
- Erosion potential
- And....as always what is next door, what's down the hill, what happens if the property owner waters the site
- Always thinking about the possibility of movement

Summary

- Label Instructions, read the label, understand the label, follow the label
- PPE wear appropriate eyewear, coveralls (Warning or Danger), work clothes
- Pesticide transportation and securing pesticides to your vehicle
- Organic herbicides
- 5 Synthetic herbicides
- Drift and vapor drift
- Labels and site uses allowed by labels
- When in doubt, ask the Agricultural Commissioner



- Be a professional, don't imitate looking like one



Questions?

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