

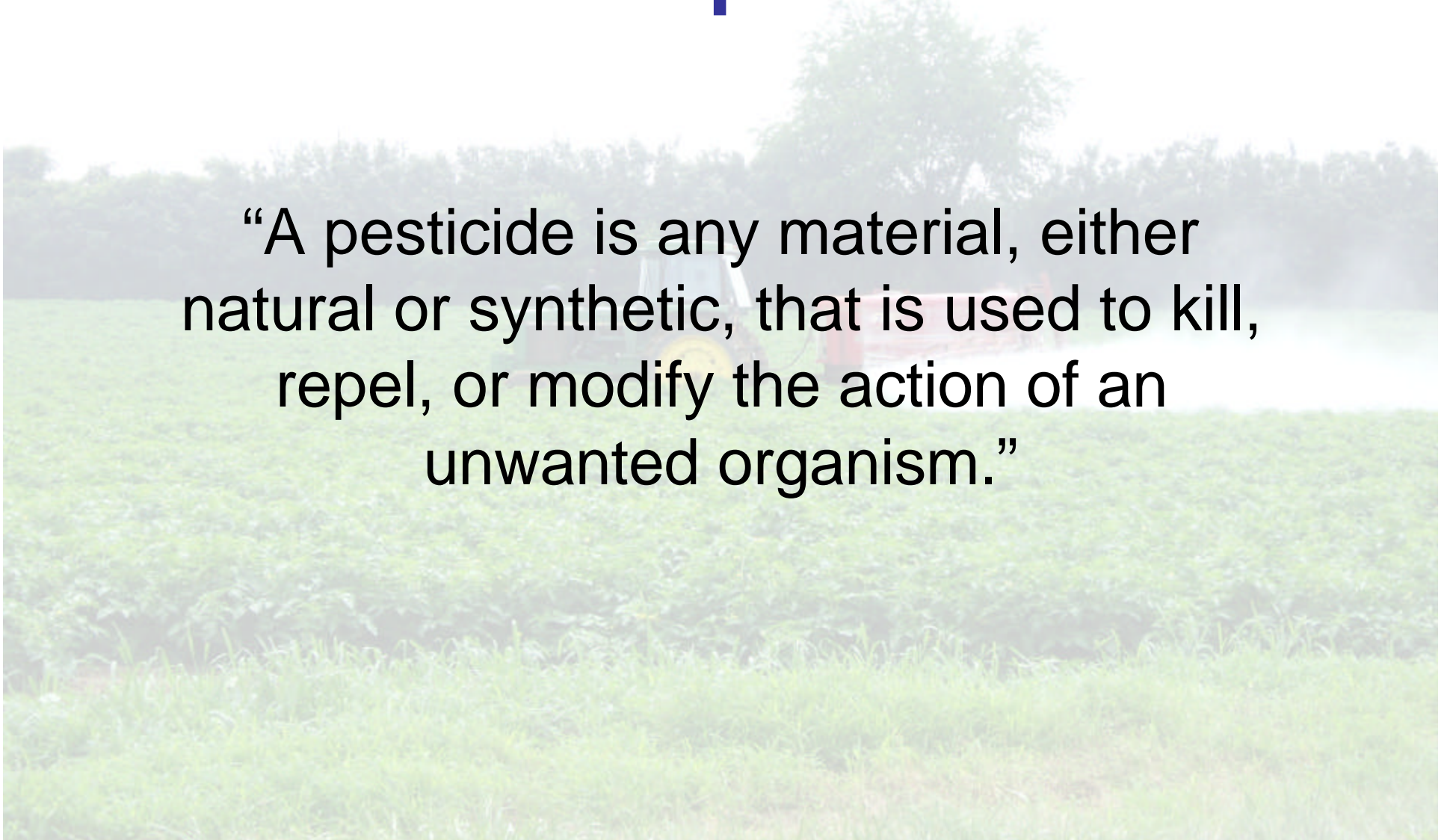
A background image showing a green tractor with a red spray tank moving through a field of green crops, creating a misty spray. The image is slightly faded to allow text to be read.

The Environmental Implications of Pesticides

**A compilation of the works of:
George Hamilton
Rutgers University
Dr. Susan Whitney King
University of Delaware**

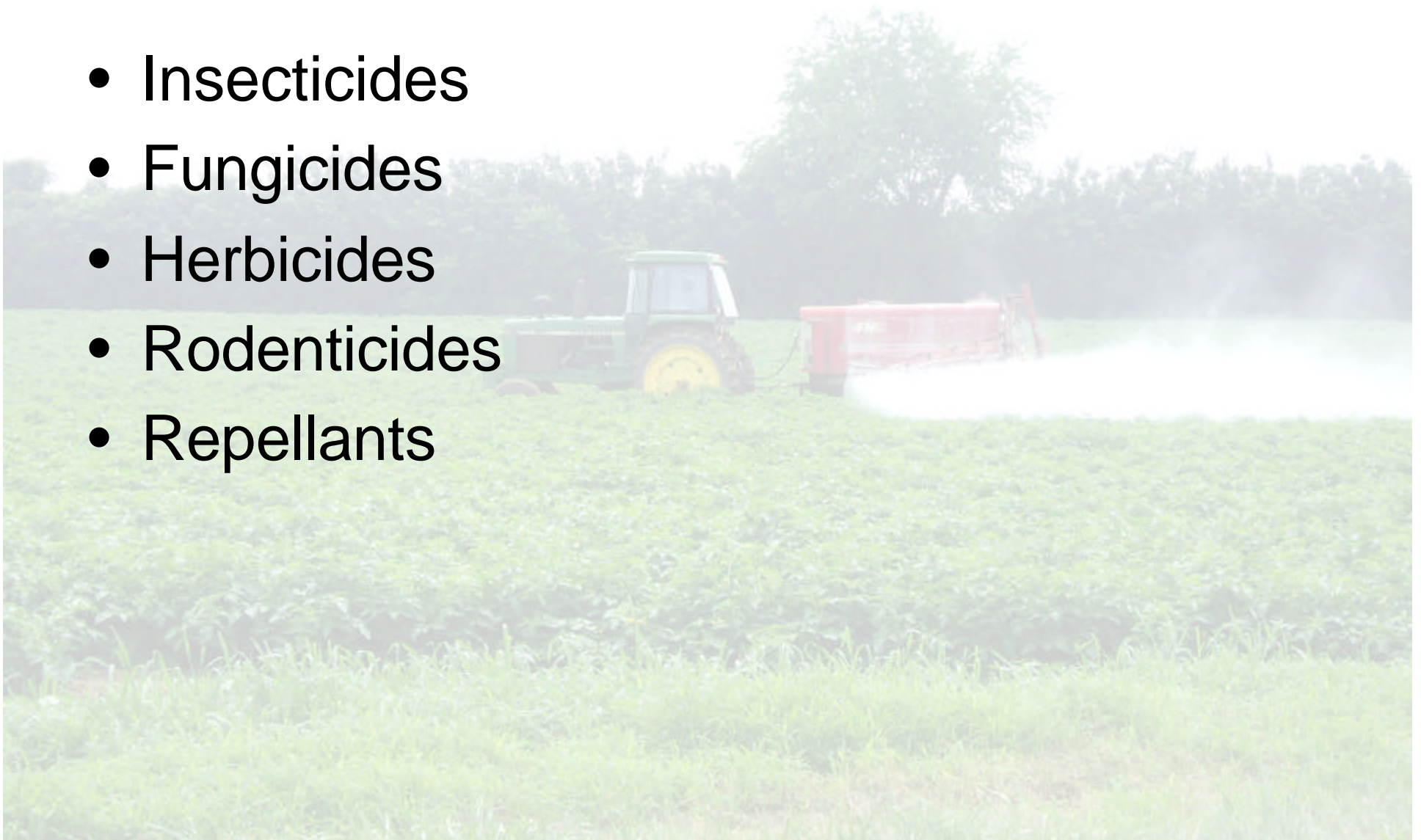
What is a pesticide?

“A pesticide is any material, either natural or synthetic, that is used to kill, repel, or modify the action of an unwanted organism.”



Pesticides

- Insecticides
- Fungicides
- Herbicides
- Rodenticides
- Repellants



Other Materials

- Insect Growth Regulators
- Plant Growth Regulators
- Desiccants
- Household products

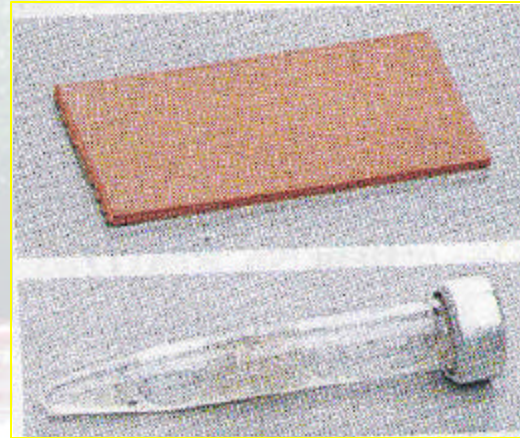


Household Products

- Bactericides
- Sanitizers
- Disinfectants
- Paints and Stains
- Bleach



Pheromones



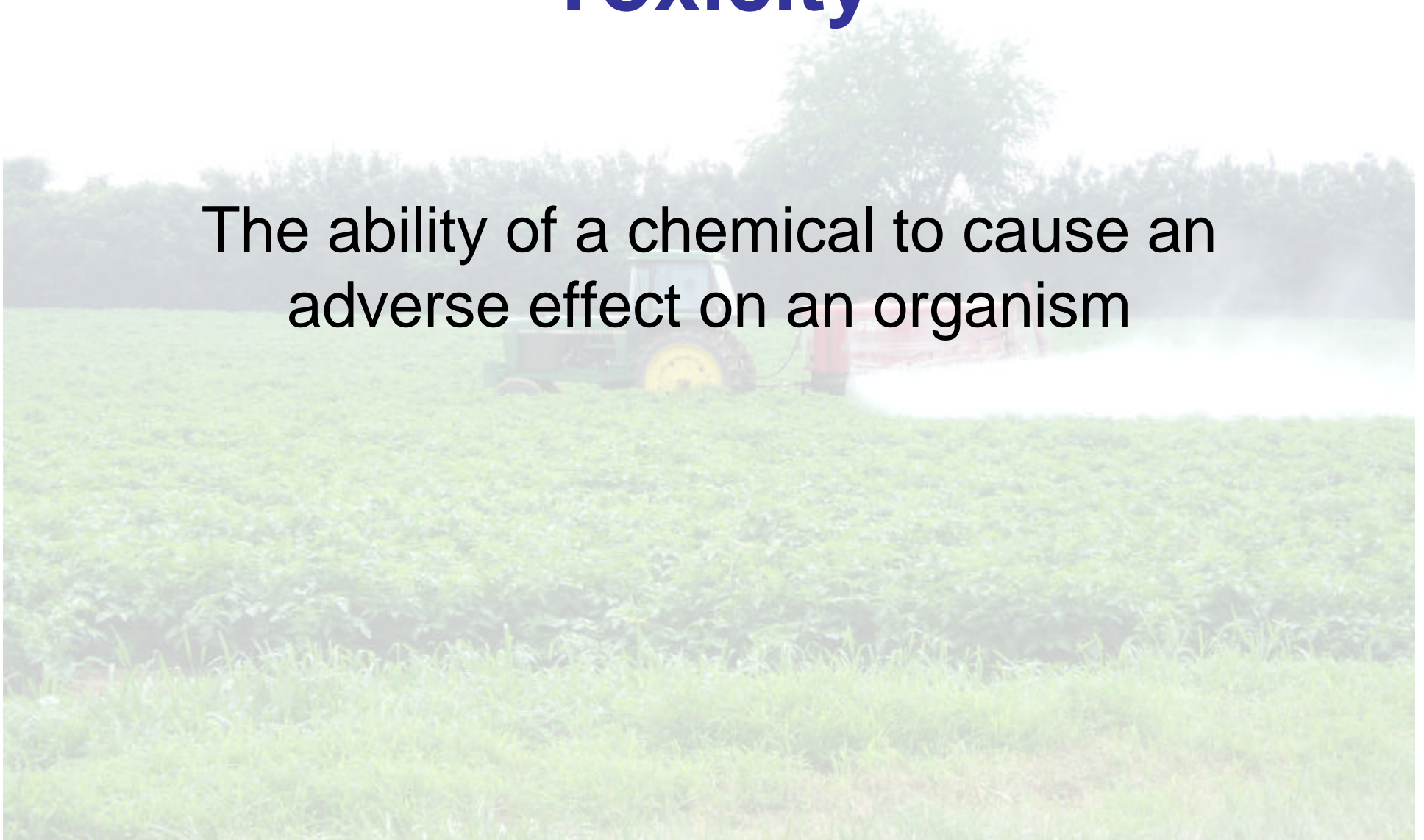
Does Not Include ...

- Fertilizers
- Liming Products
- Exceptions:
 - Weed and Feed Products
 - Combinations with insecticides and fungicides



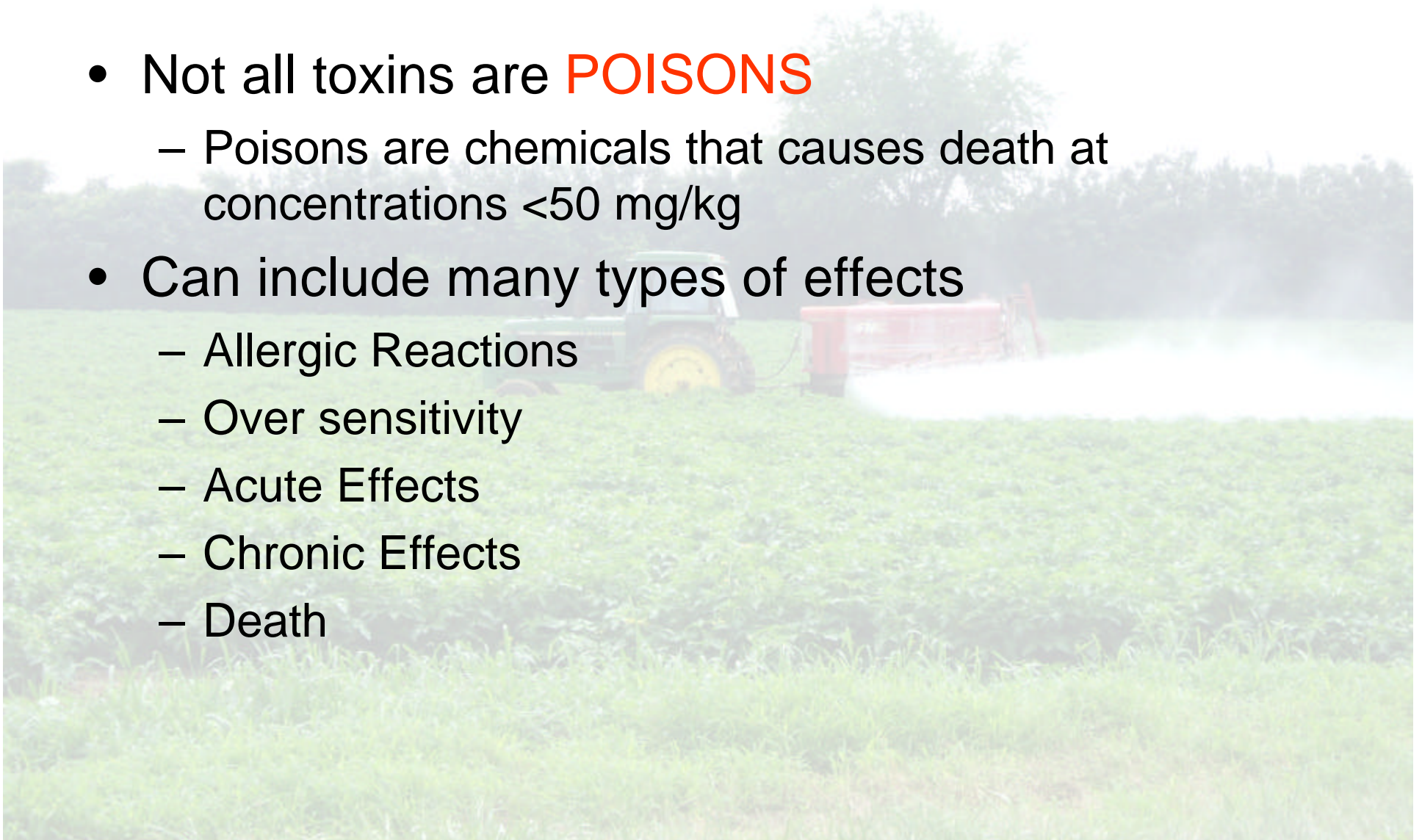
Toxicity

The ability of a chemical to cause an adverse effect on an organism



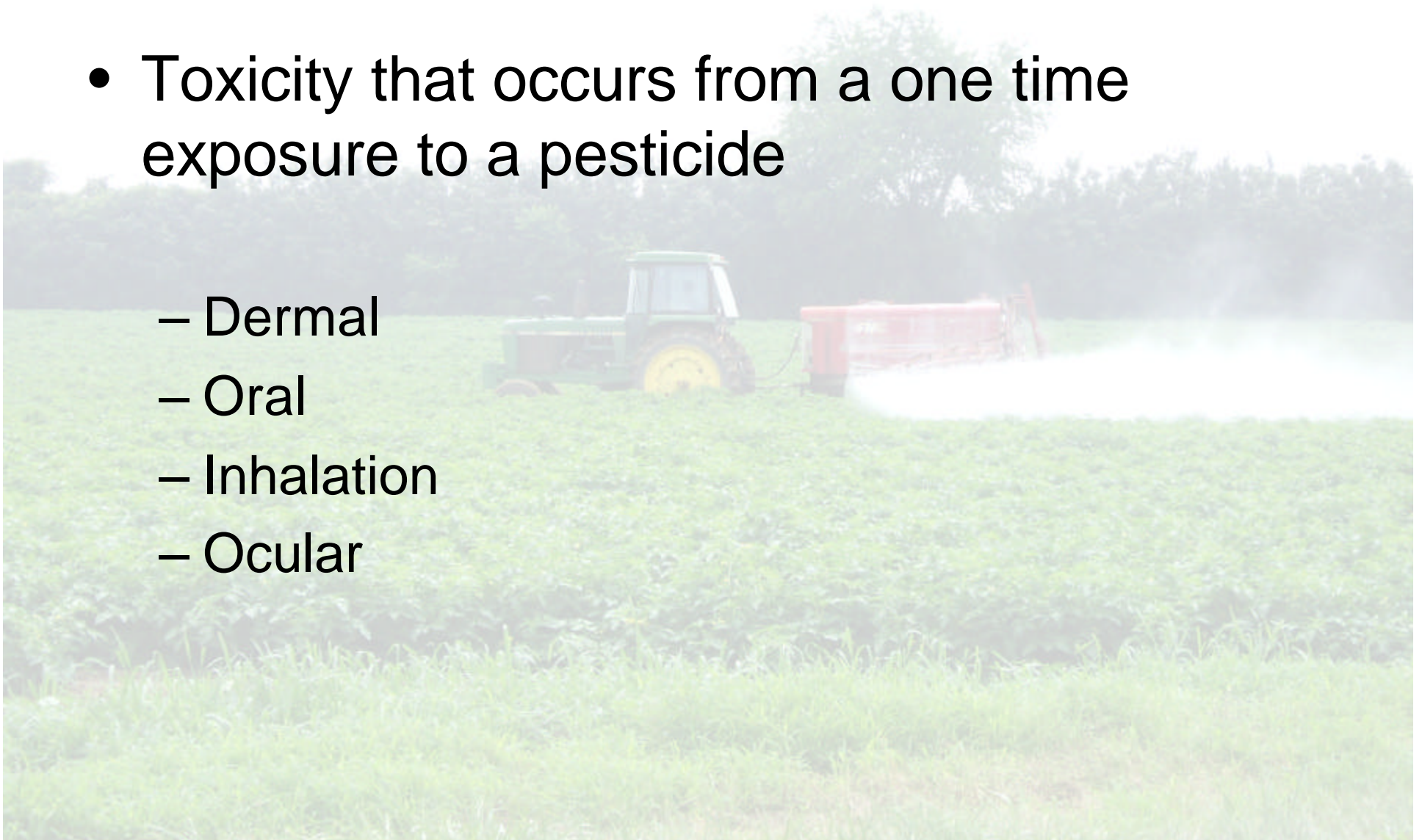
Toxicity

- Not all toxins are **POISONS**
 - Poisons are chemicals that causes death at concentrations <50 mg/kg
- Can include many types of effects
 - Allergic Reactions
 - Over sensitivity
 - Acute Effects
 - Chronic Effects
 - Death



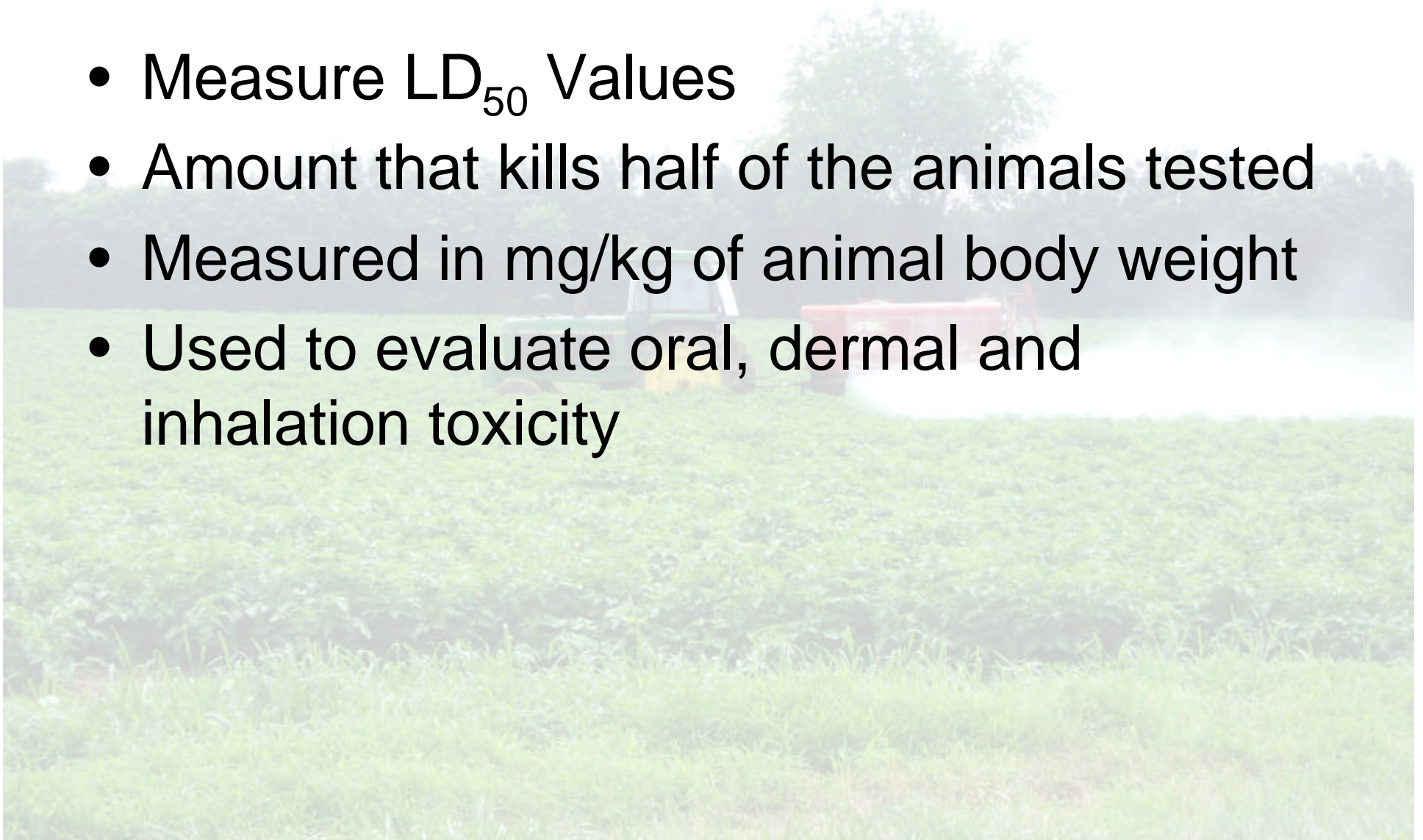
Acute Toxicity

- Toxicity that occurs from a one time exposure to a pesticide
 - Dermal
 - Oral
 - Inhalation
 - Ocular



EPA Testing

- Measure LD₅₀ Values
- Amount that kills half of the animals tested
- Measured in mg/kg of animal body weight
- Used to evaluate oral, dermal and inhalation toxicity

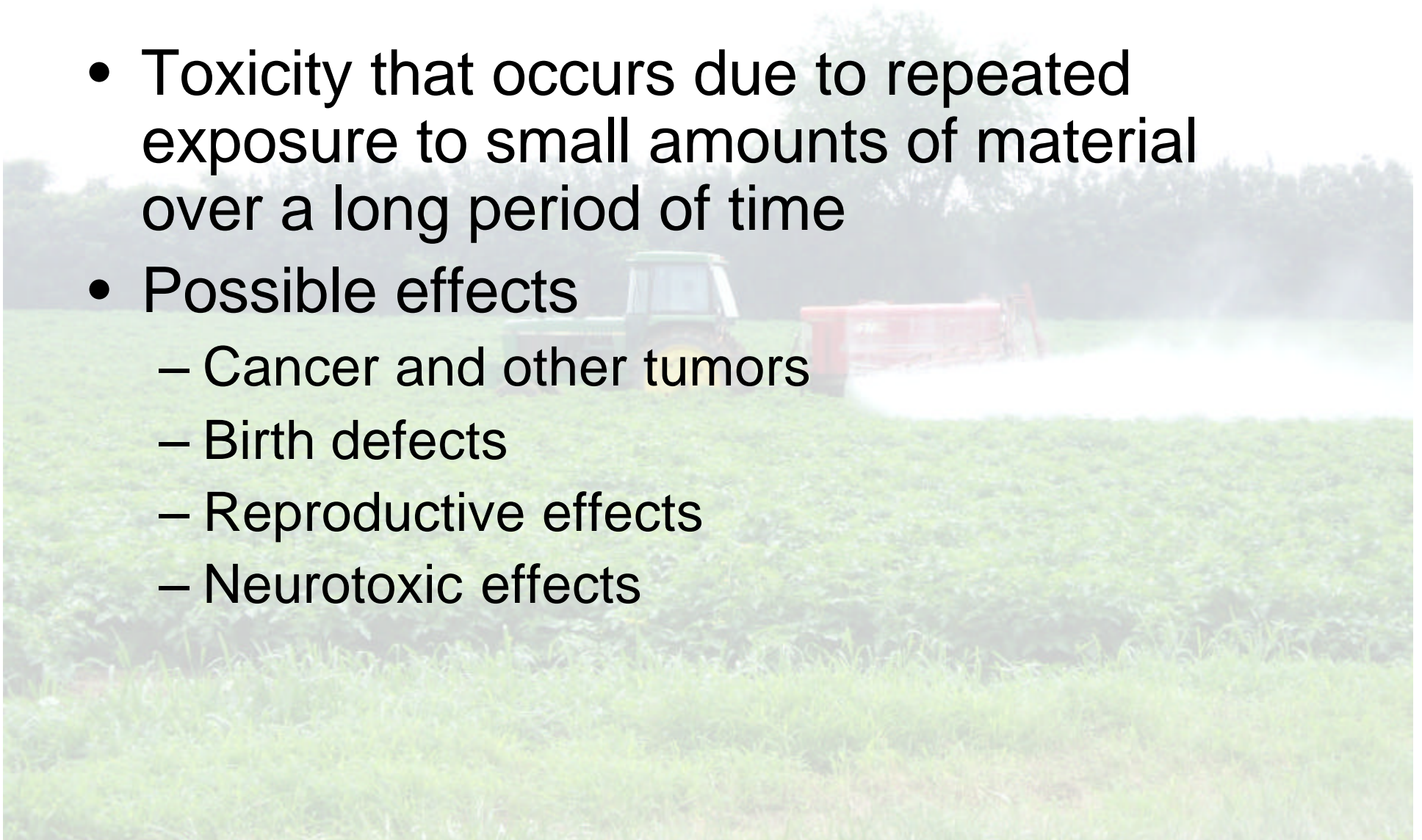


EPA Toxicity Categories

Toxicity Category	Signal Word	Oral mg/kg	Dermal mg/kg	Inhalation ppm
I	Danger	50 to 500	250 to 2,000	<2,000
II	Warning	501 to 5,000	2,001 to 20,000	2,001 to 20,000
III	Caution	>5,000	>20,000	>20,000

Chronic Toxicity

- Toxicity that occurs due to repeated exposure to small amounts of material over a long period of time
- Possible effects
 - Cancer and other tumors
 - Birth defects
 - Reproductive effects
 - Neurotoxic effects



Managing Pesticides



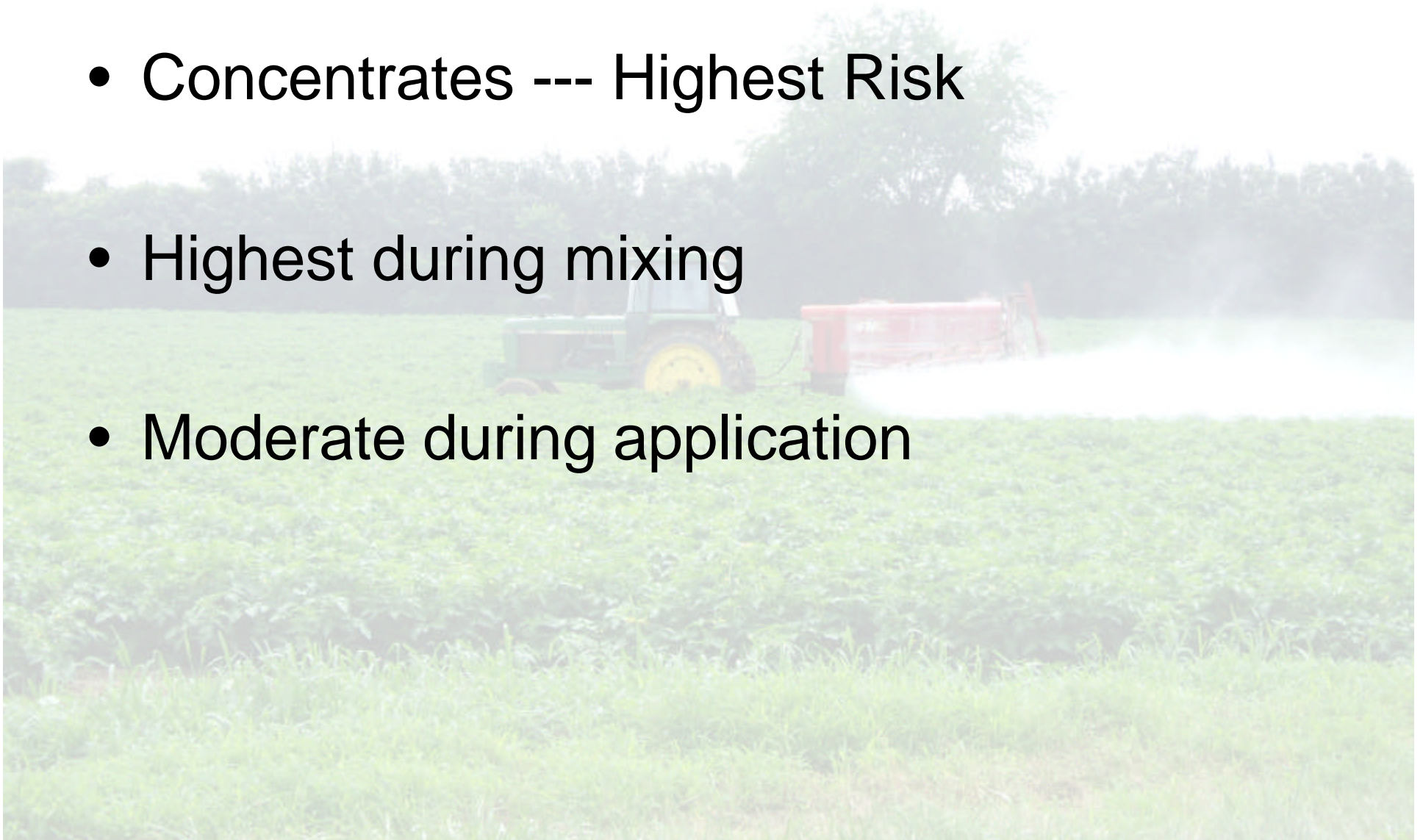
Risk

Risk equals **Toxicity** **X** **Exposure**



Risks to the Applicator

- Concentrates --- Highest Risk
- Highest during mixing
- Moderate during application















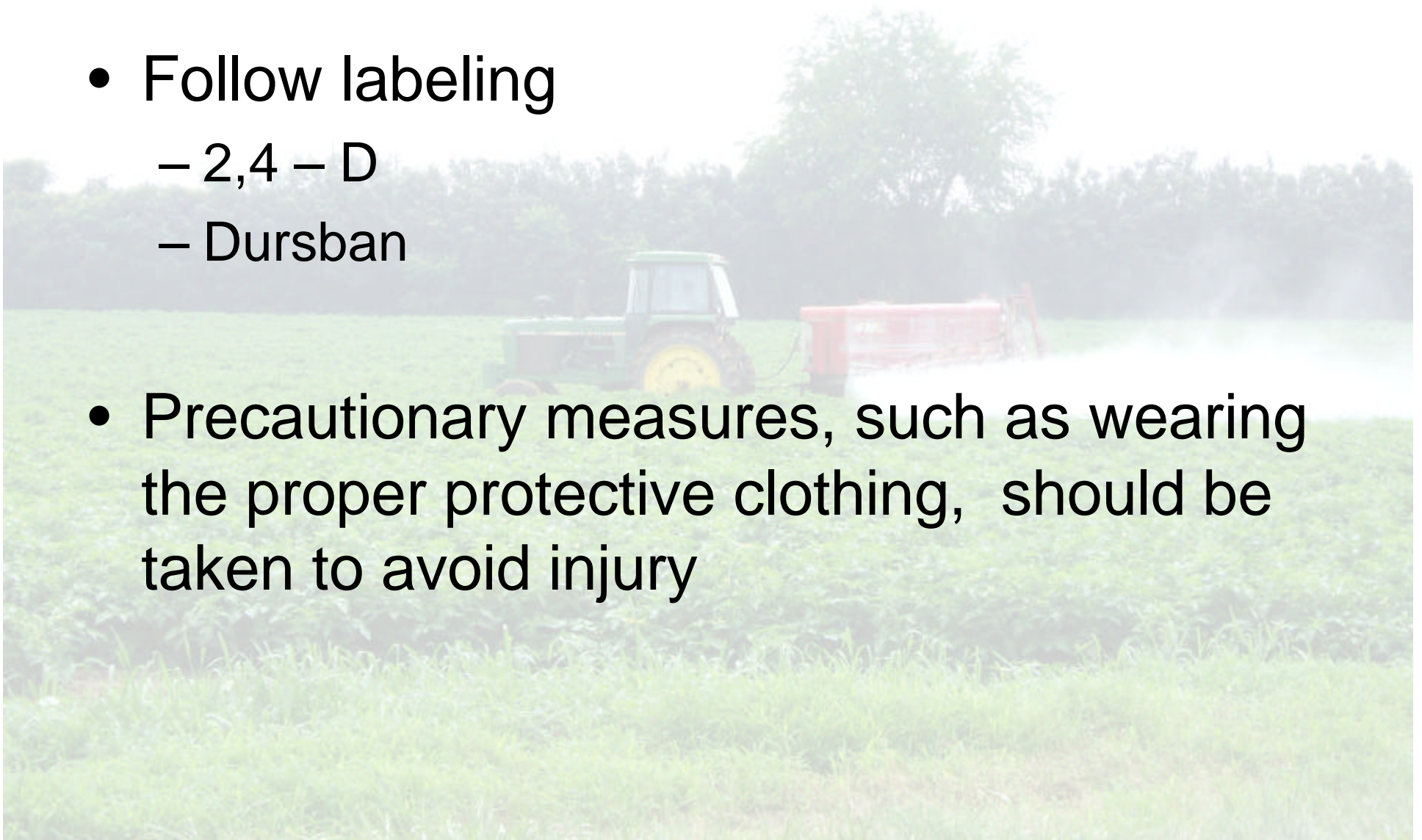
What about during applications?





What to use?

- Follow labeling
 - 2,4 – D
 - Dursban
- Precautionary measures, such as wearing the proper protective clothing, should be taken to avoid injury

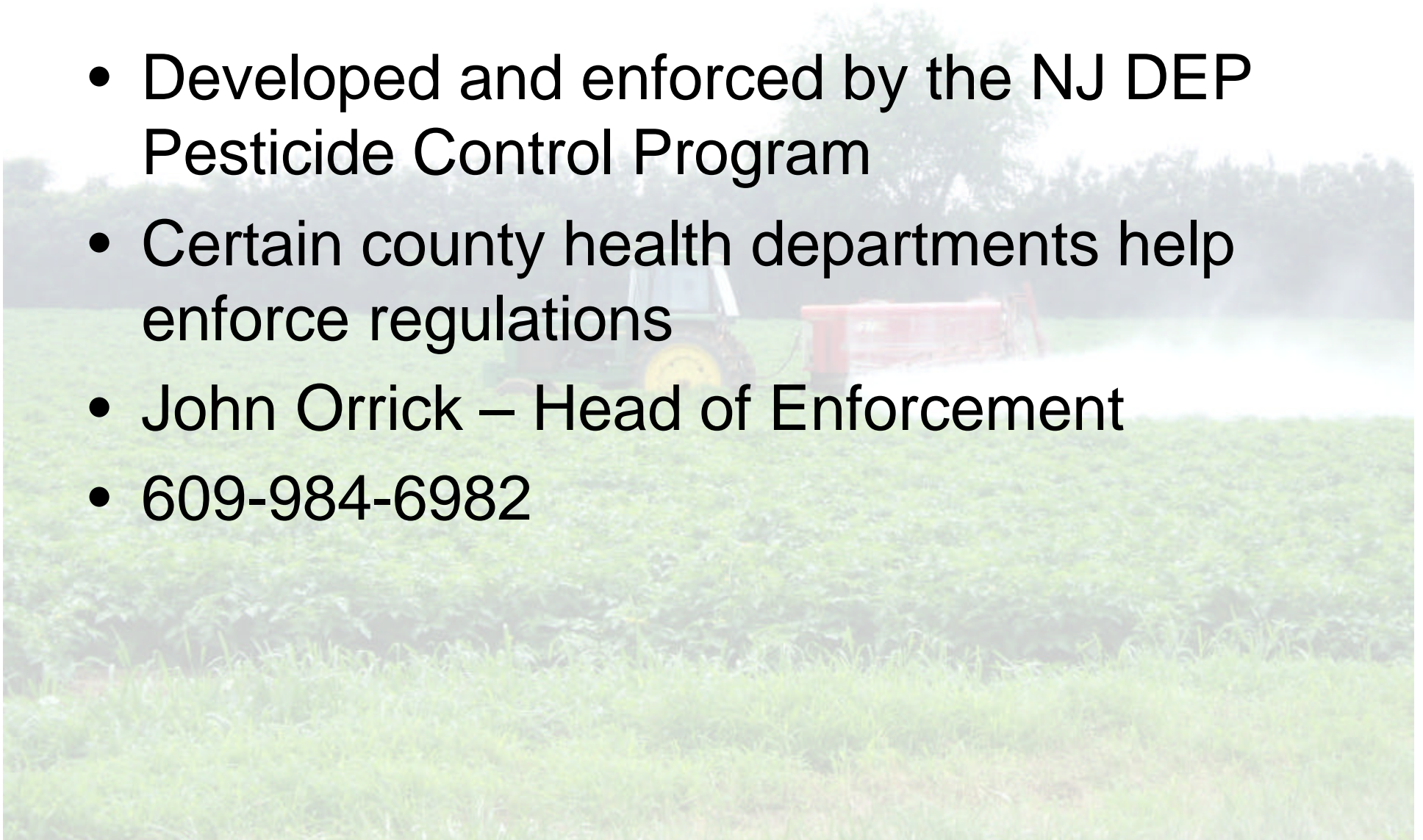


What to Wear and When

Signal Word	Equipment
Caution	Waterproof boots & gloves, long-sleeved shirt & long pants
Warning	Waterproof boots & gloves, chemical suit
Danger	Waterproof boots & gloves, chemical suit, eye protection & respirator

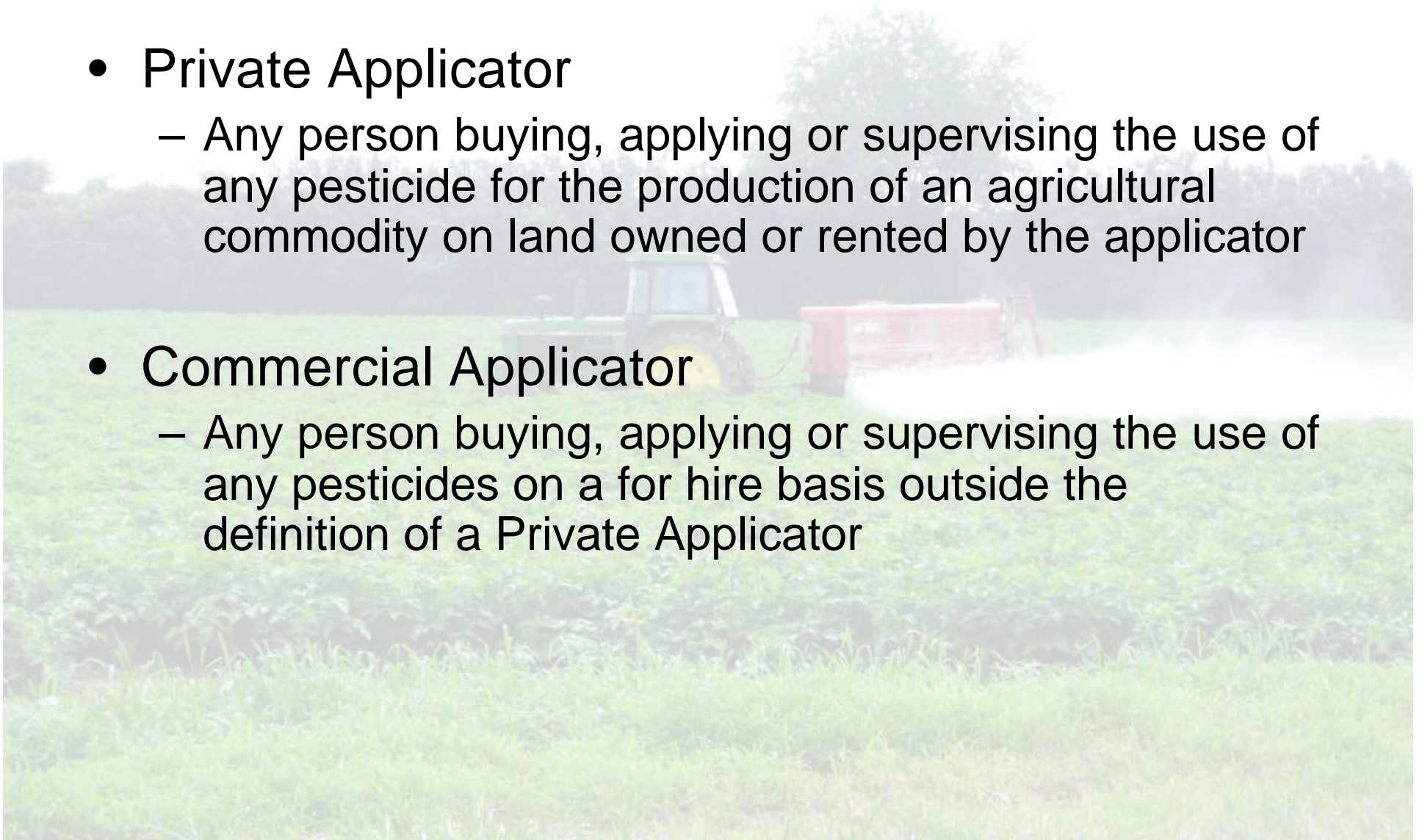
State Regulations

- Developed and enforced by the NJ DEP Pesticide Control Program
- Certain county health departments help enforce regulations
- John Orrick – Head of Enforcement
- 609-984-6982



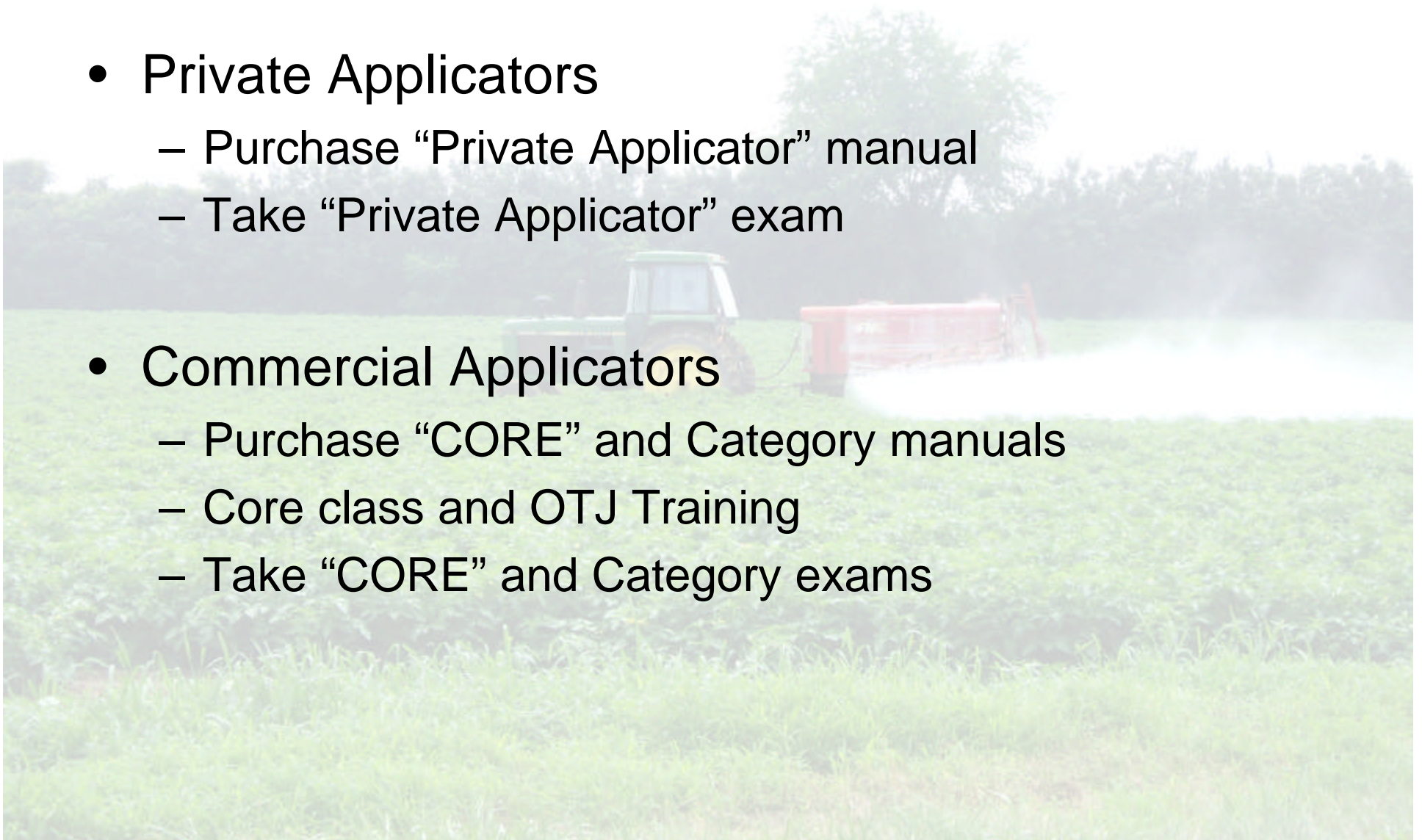
Licensing

- Private Applicator
 - Any person buying, applying or supervising the use of any pesticide for the production of an agricultural commodity on land owned or rented by the applicator
- Commercial Applicator
 - Any person buying, applying or supervising the use of any pesticides on a for hire basis outside the definition of a Private Applicator



Licensing Program

- Private Applicators
 - Purchase “Private Applicator” manual
 - Take “Private Applicator” exam
- Commercial Applicators
 - Purchase “CORE” and Category manuals
 - Core class and OTJ Training
 - Take “CORE” and Category exams



Recertification

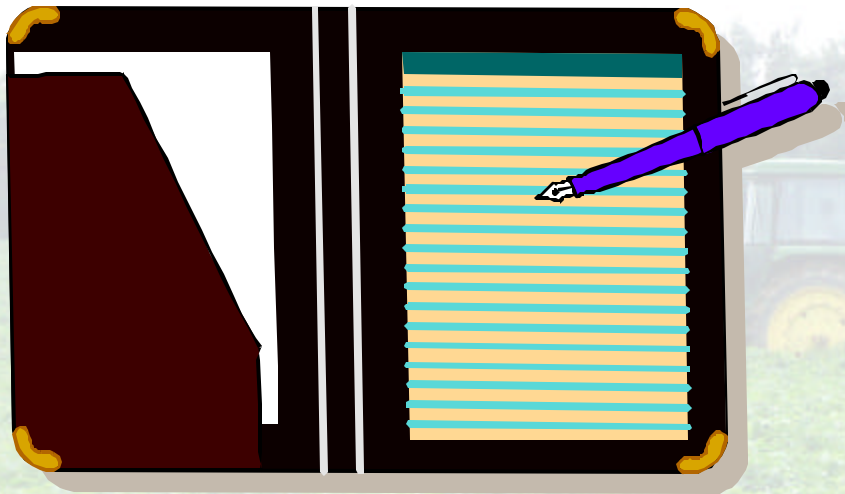
- Private Applicators
 - 8 CORE units
 - 16 Private Category units
- Commercial Applicators
 - 8 CORE units
 - 16 Category units for each category held



Turf and Ornamental Notification Requirements



Consumer Information Sheets



- Name, address & phone number
- Application dates
- PIES, DOH and DEP Phone #'s
- DEP statements
- Safety information

Posting Requirements

- Post prior to application
- All applications including spot treatments
- Removal after 24 hours
- Placement

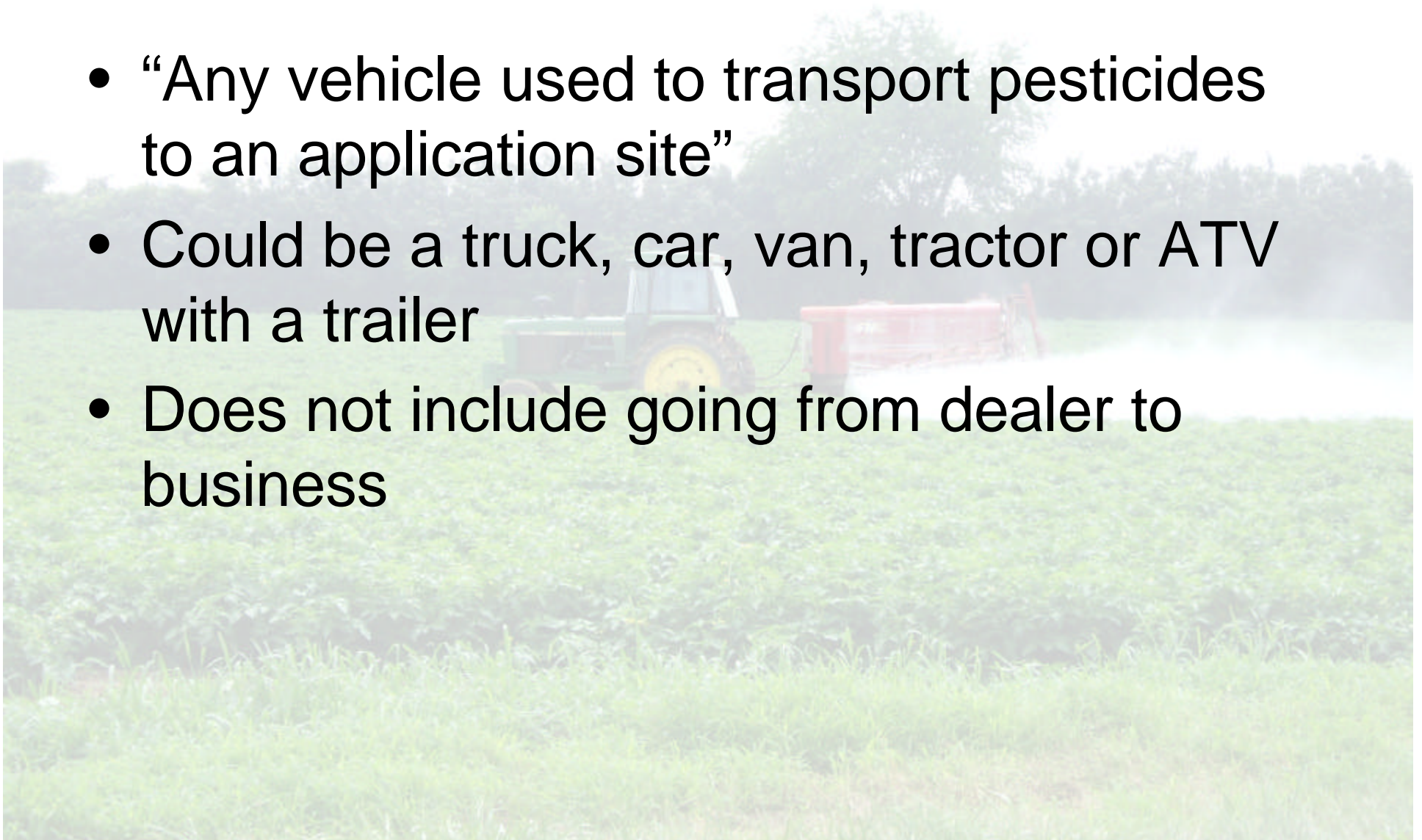


Proper Transport of Pesticides



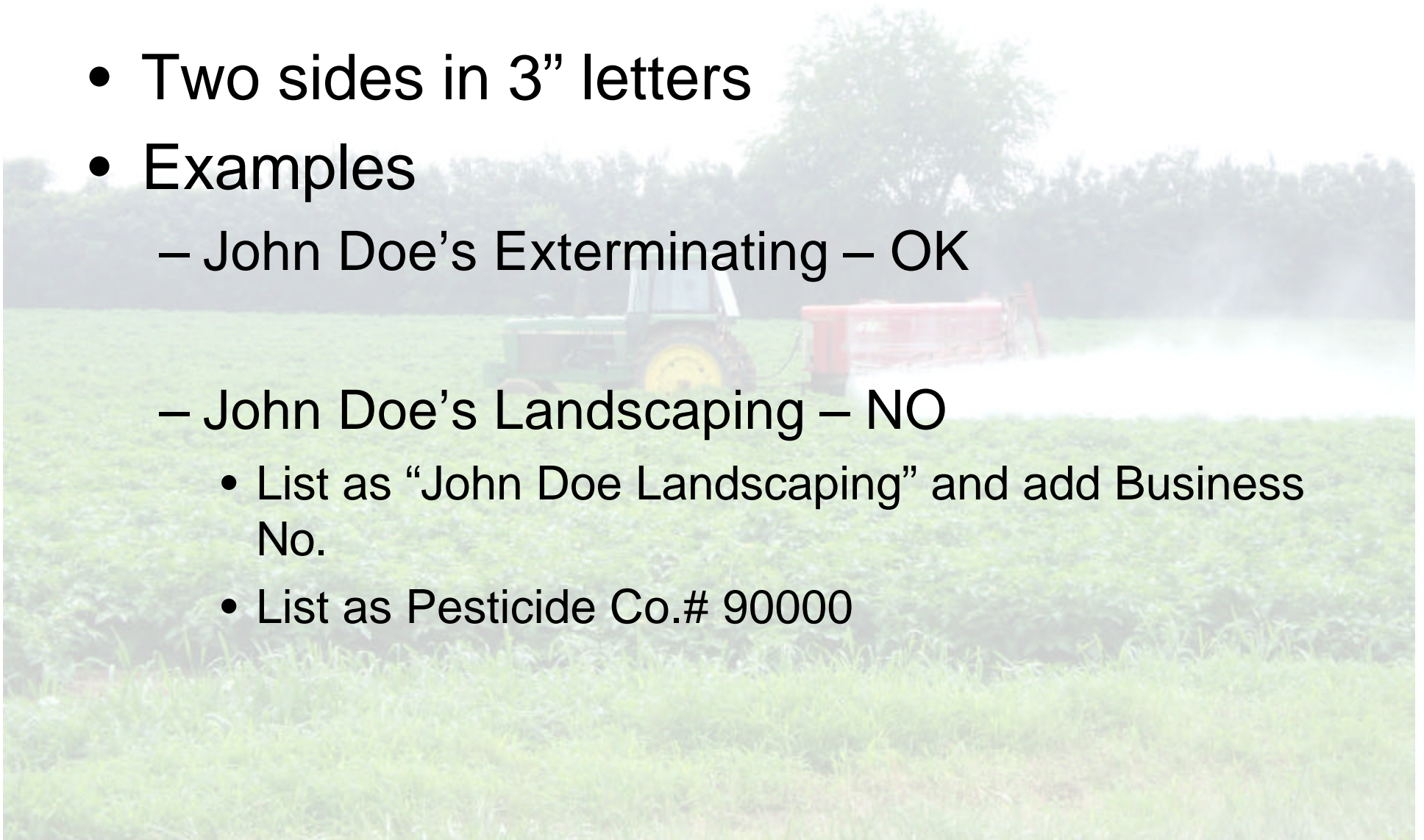
Pesticide Service Vehicle

- “Any vehicle used to transport pesticides to an application site”
- Could be a truck, car, van, tractor or ATV with a trailer
- Does not include going from dealer to business



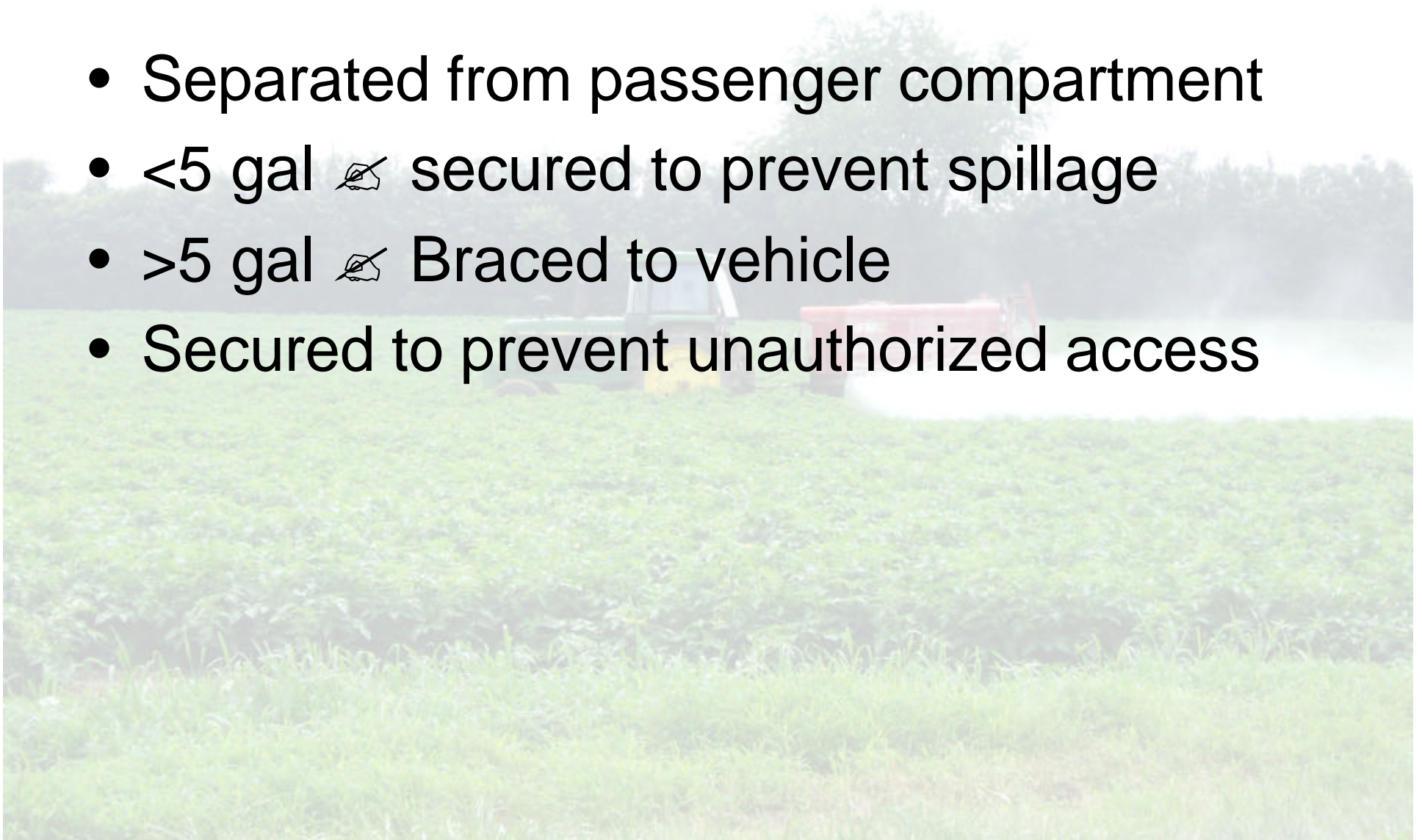
Vehicle Identification

- Two sides in 3" letters
- Examples
 - John Doe's Exterminating – OK
 - John Doe's Landscaping – NO
 - List as "John Doe Landscaping" and add Business No.
 - List as Pesticide Co.# 90000

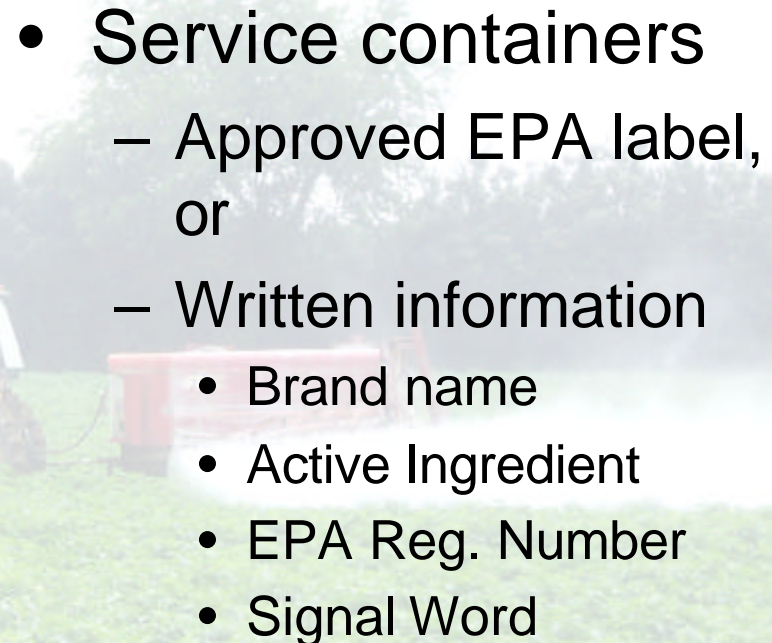


Container Storage

- Separated from passenger compartment
- <5 gal ~~✗~~ secured to prevent spillage
- >5 gal ~~✗~~ Braced to vehicle
- Secured to prevent unauthorized access



[illegible]

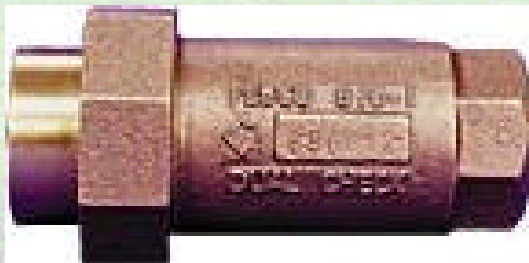
- 
- Service containers
 - Approved EPA label, or
 - Written information
 - Brand name
 - Active Ingredient
 - EPA Reg. Number
 - Signal Word

Application Equipment

- Tank must have a secure lid
- Hand sprayers must be secured when not in use
- Use of Back-flow preventers required



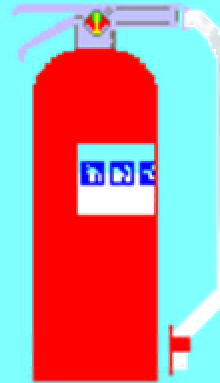
Back-flow Preventers



Safety Equipment



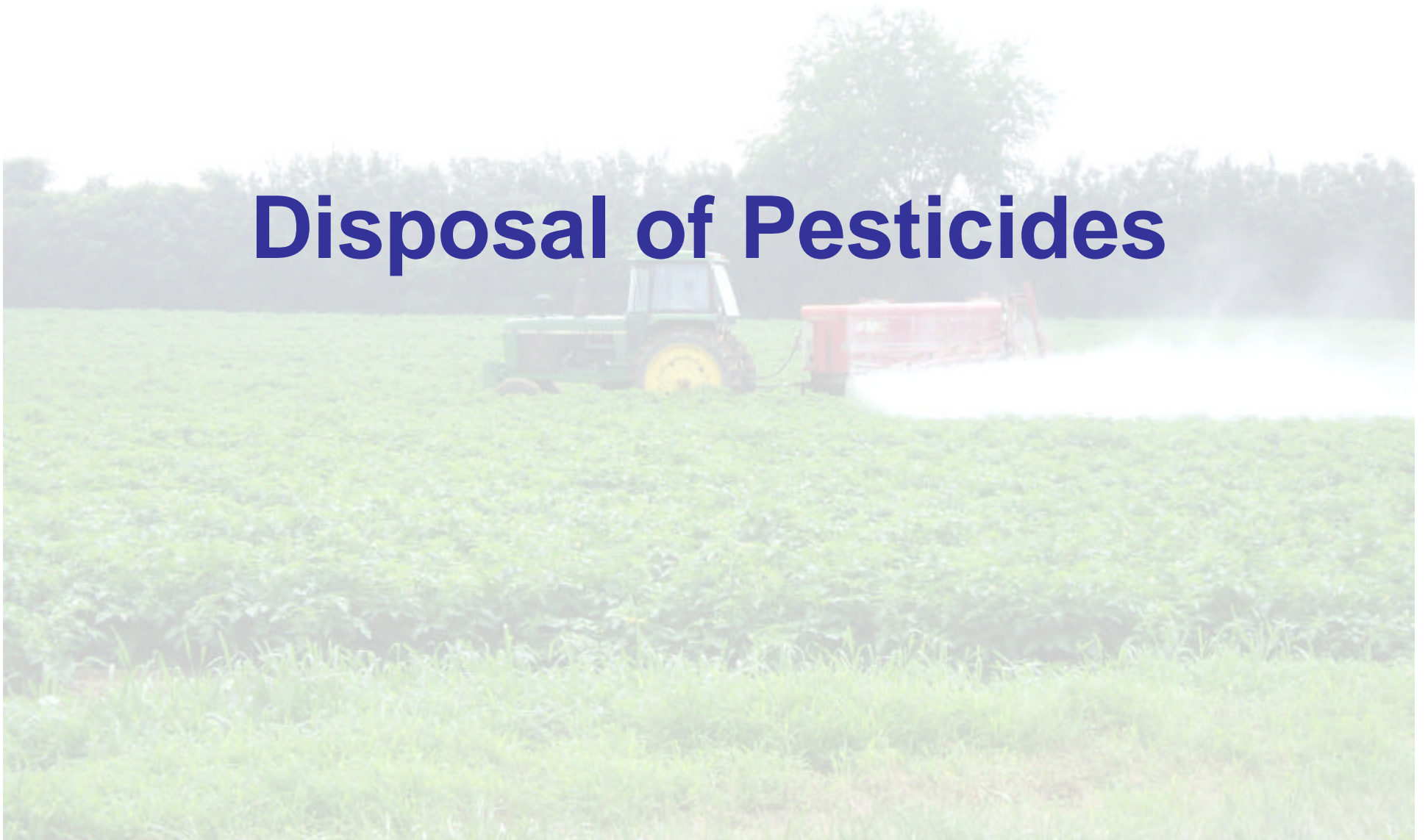
Dry Chemical



Contains
Fine
Powder

Extinguisher

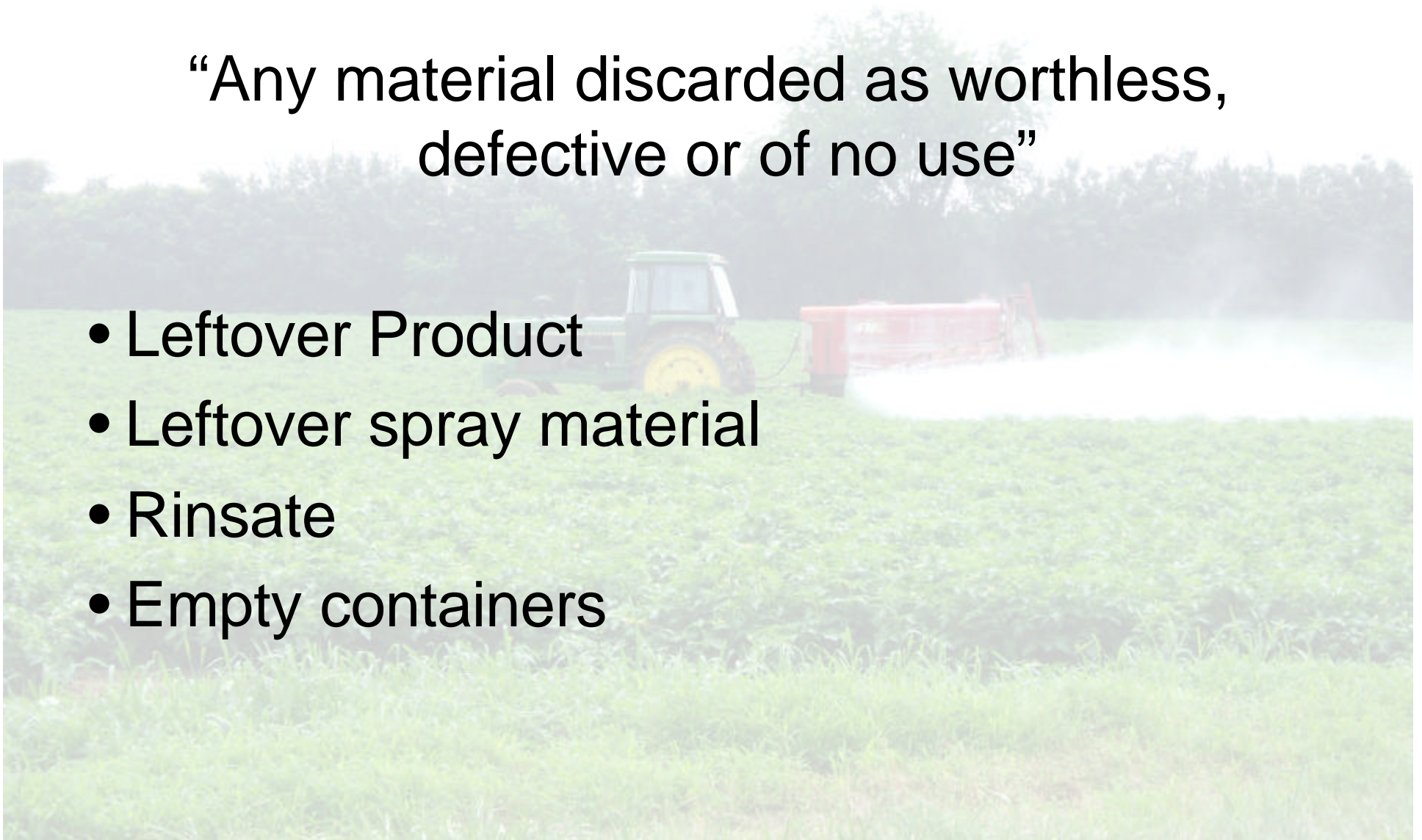
Disposal of Pesticides



What is Waste?

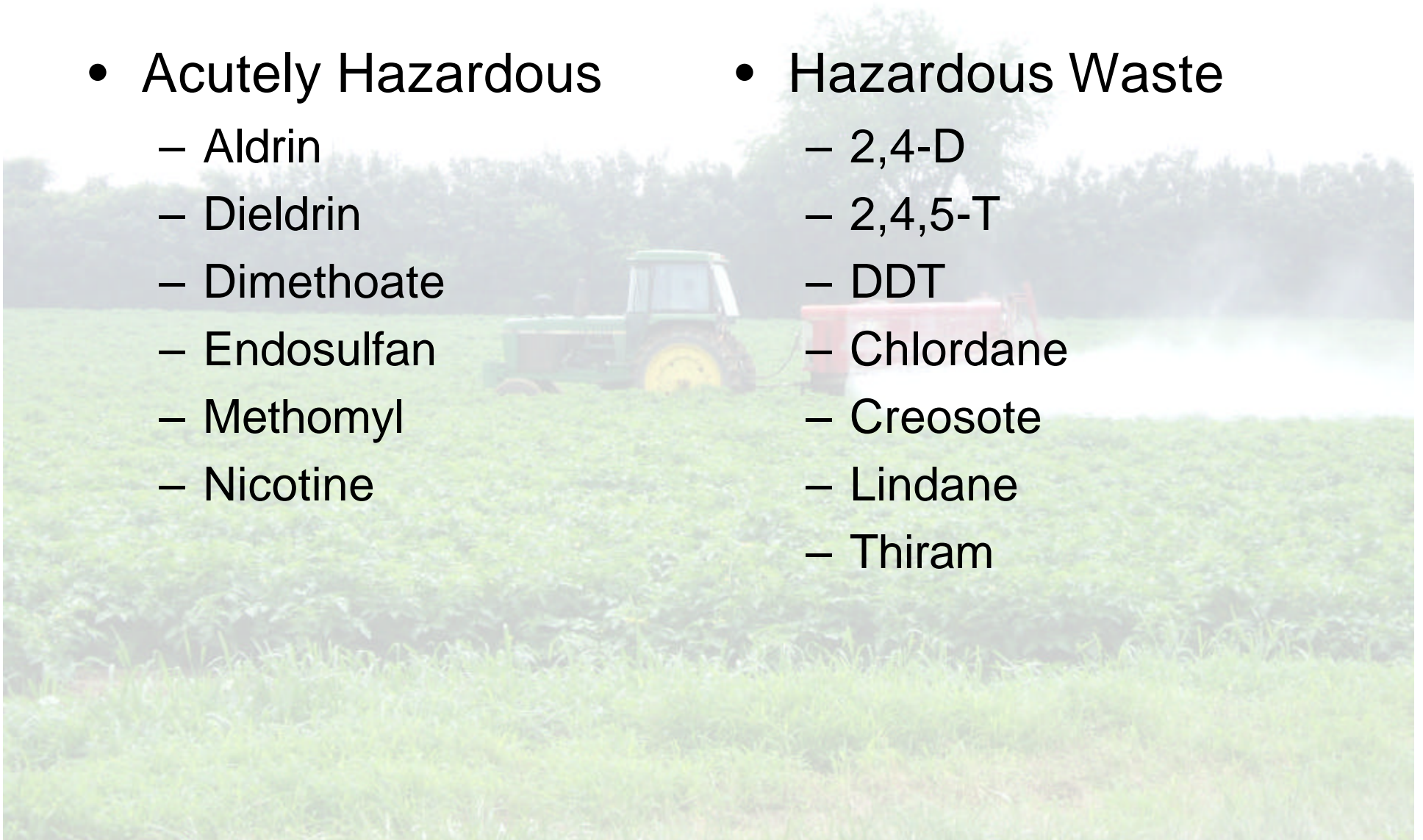
“Any material discarded as worthless, defective or of no use”

- Leftover Product
- Leftover spray material
- Rinsate
- Empty containers



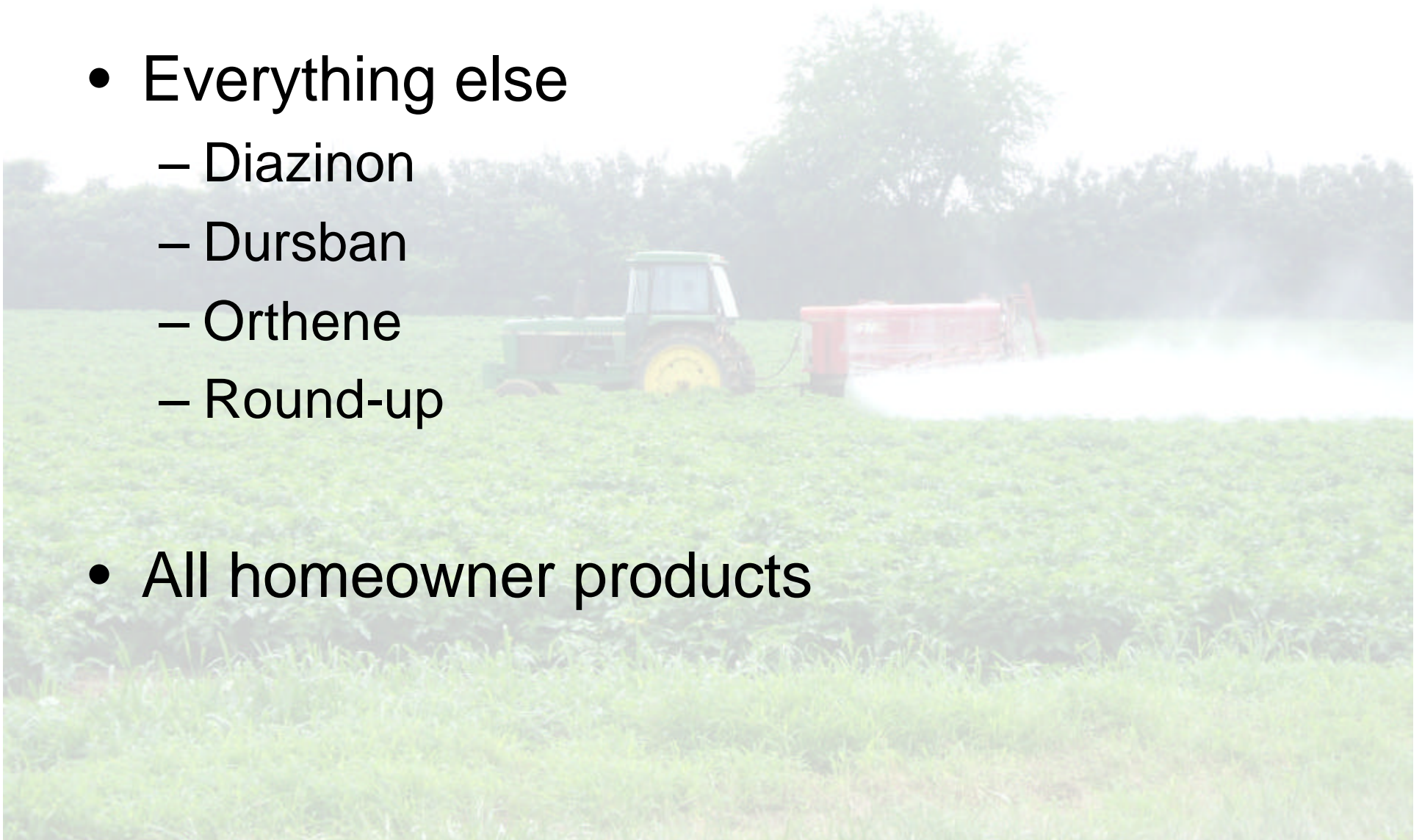
Step One – Is it Hazardous?

- Acutely Hazardous
 - Aldrin
 - Dieldrin
 - Dimethoate
 - Endosulfan
 - Methomyl
 - Nicotine
- Hazardous Waste
 - 2,4-D
 - 2,4,5-T
 - DDT
 - Chlordane
 - Creosote
 - Lindane
 - Thiram



Non-Hazardous Waste

- Everything else
 - Diazinon
 - Dursban
 - Orthene
 - Round-up
- All homeowner products



Step 2 – What is it?

- Leftover product
- Containers
- Leftover spray material
- Rinsate



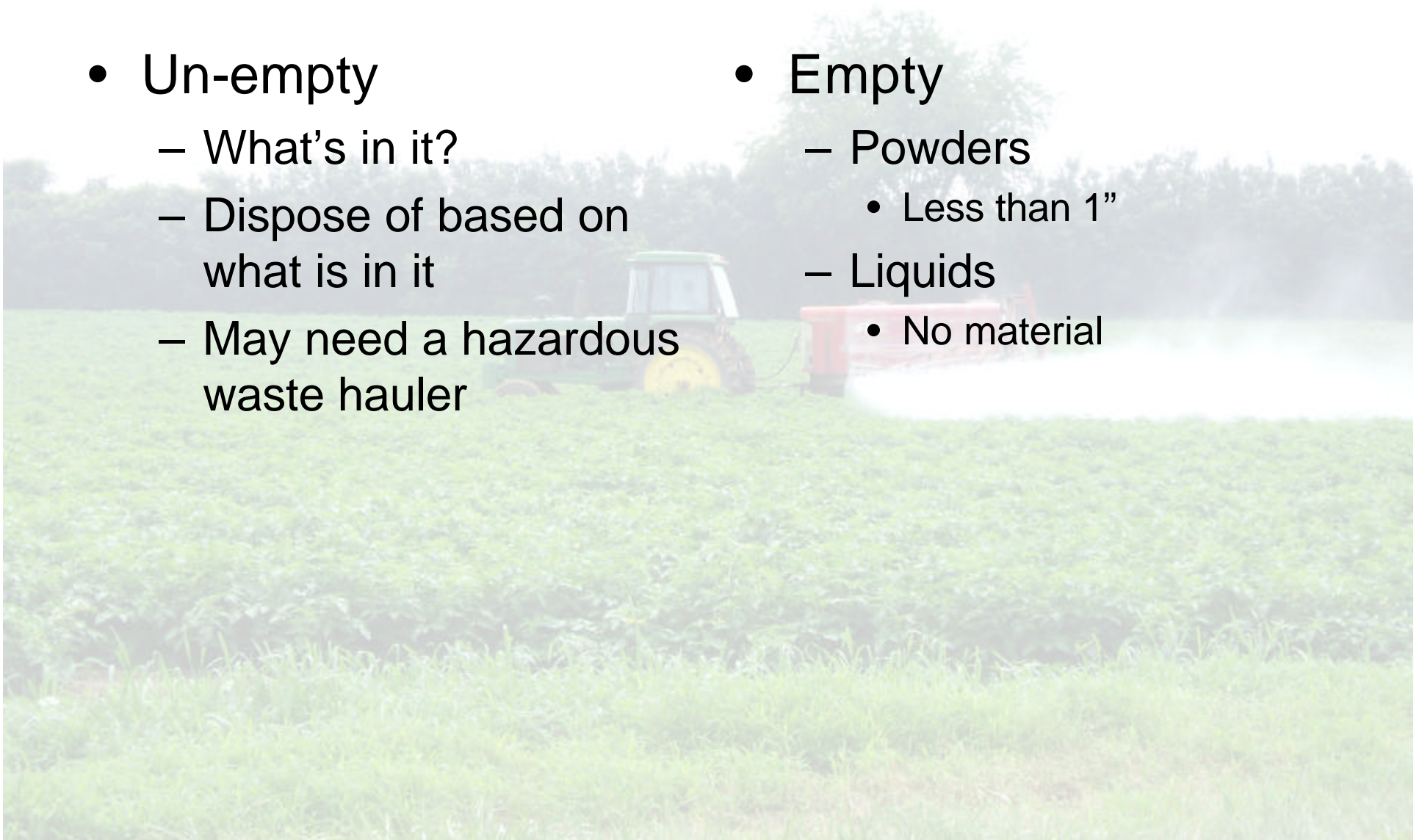
Leftover Product

- No good options
 - Give to someone else free of charge
 - Make up only what you need
 - Apply to a labeled site



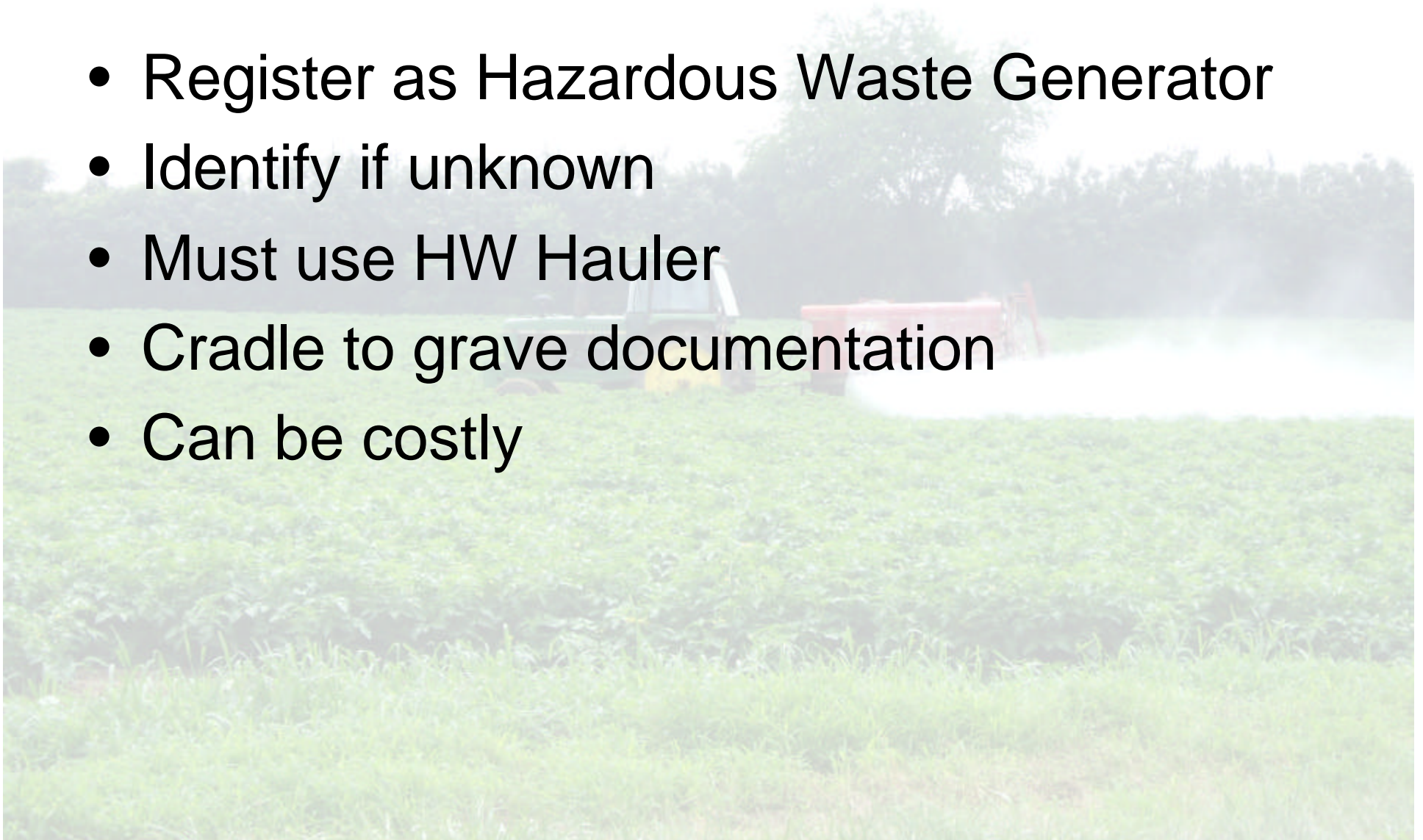
Containers

- Un-empty
 - What's in it?
 - Dispose of based on what is in it
 - May need a hazardous waste hauler
- Empty
 - Powders
 - Less than 1"
 - Liquids
 - No material



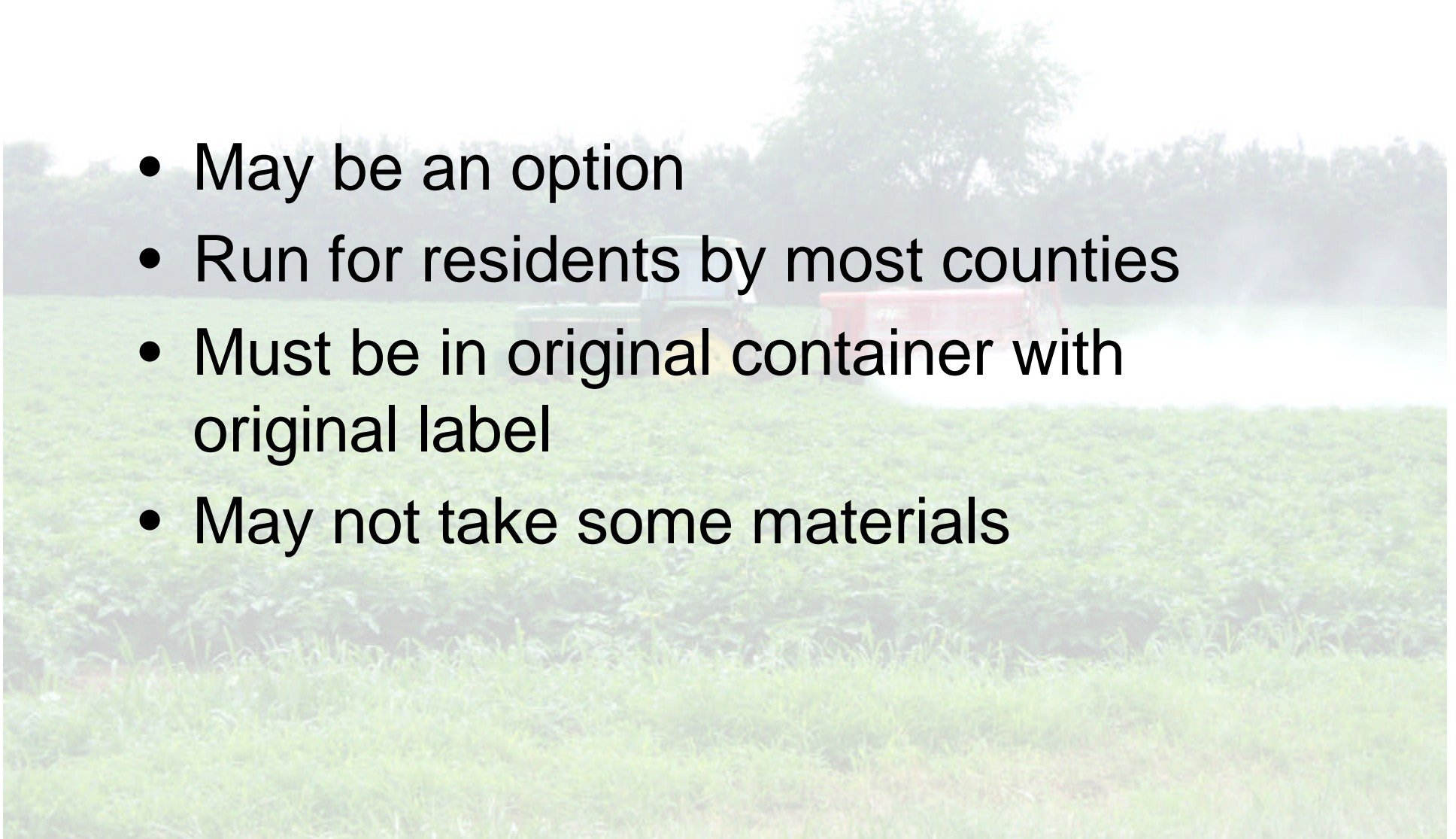
Hazardous Waste Disposal

- Register as Hazardous Waste Generator
- Identify if unknown
- Must use HW Hauler
- Cradle to grave documentation
- Can be costly



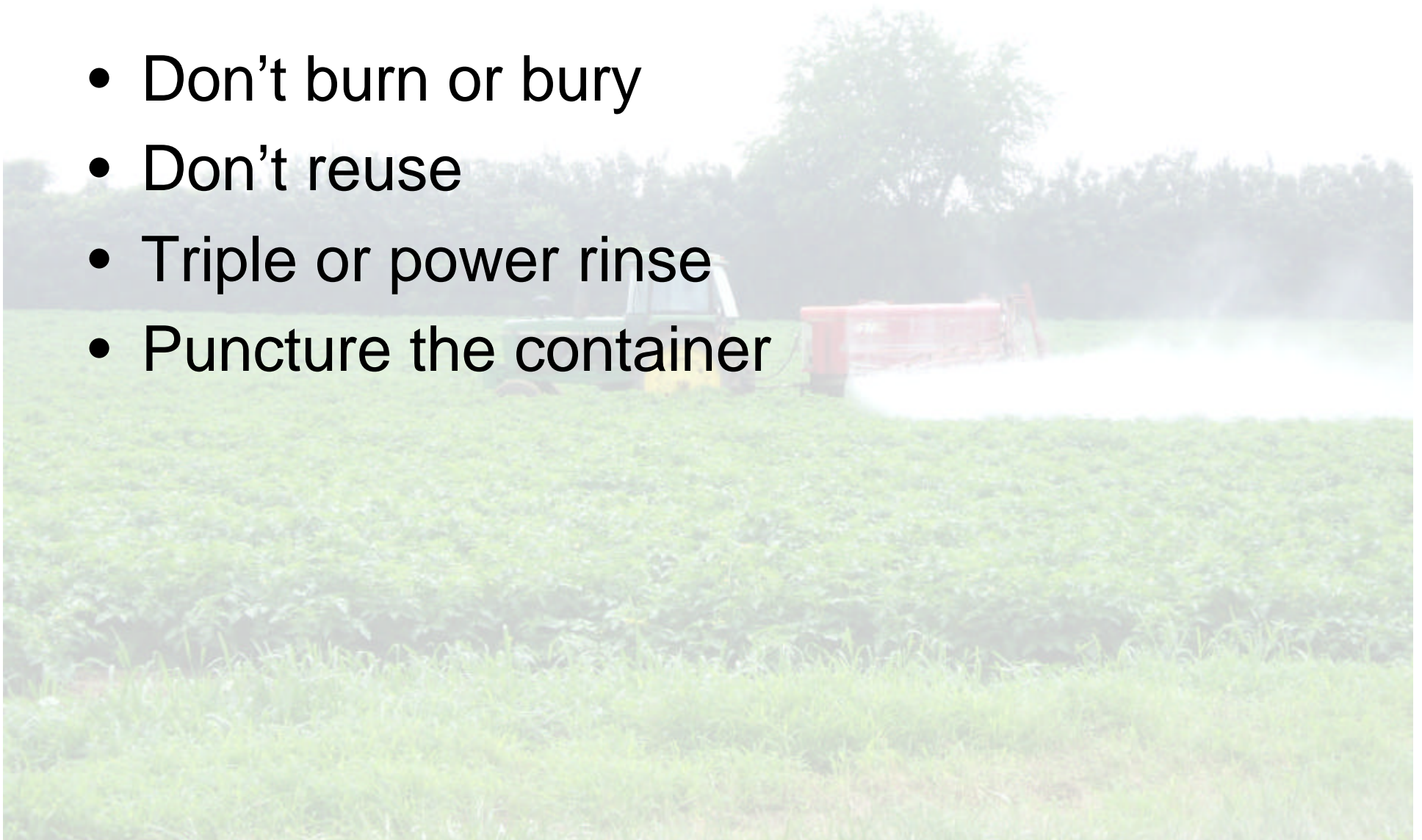
County Hazardous Waste Collection Days

- May be an option
- Run for residents by most counties
- Must be in original container with original label
- May not take some materials



Empty Containers

- Don't burn or bury
- Don't reuse
- Triple or power rinse
- Puncture the container



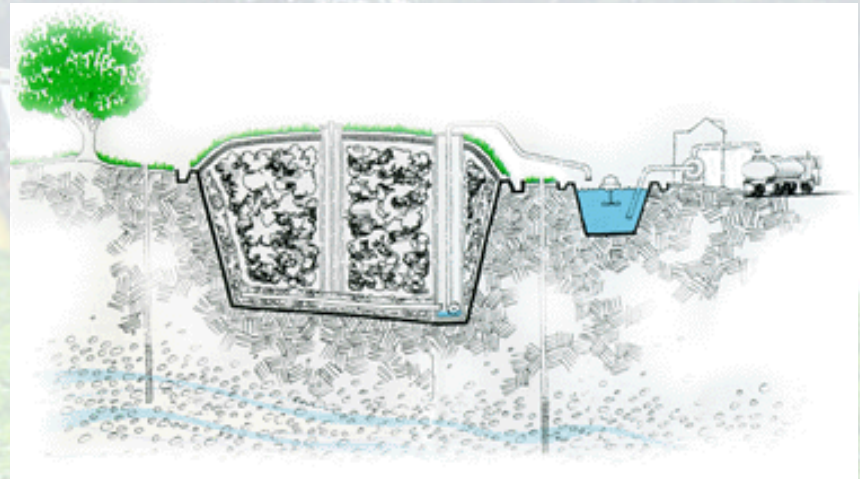
Empty Containers

- Recycling
 - Available in some locations
 - Check with local authorities



Empty Containers

- Type 27 Landfill
 - Special Liner
 - Municipal waste
 - Homeowner waste
- All Counties have access

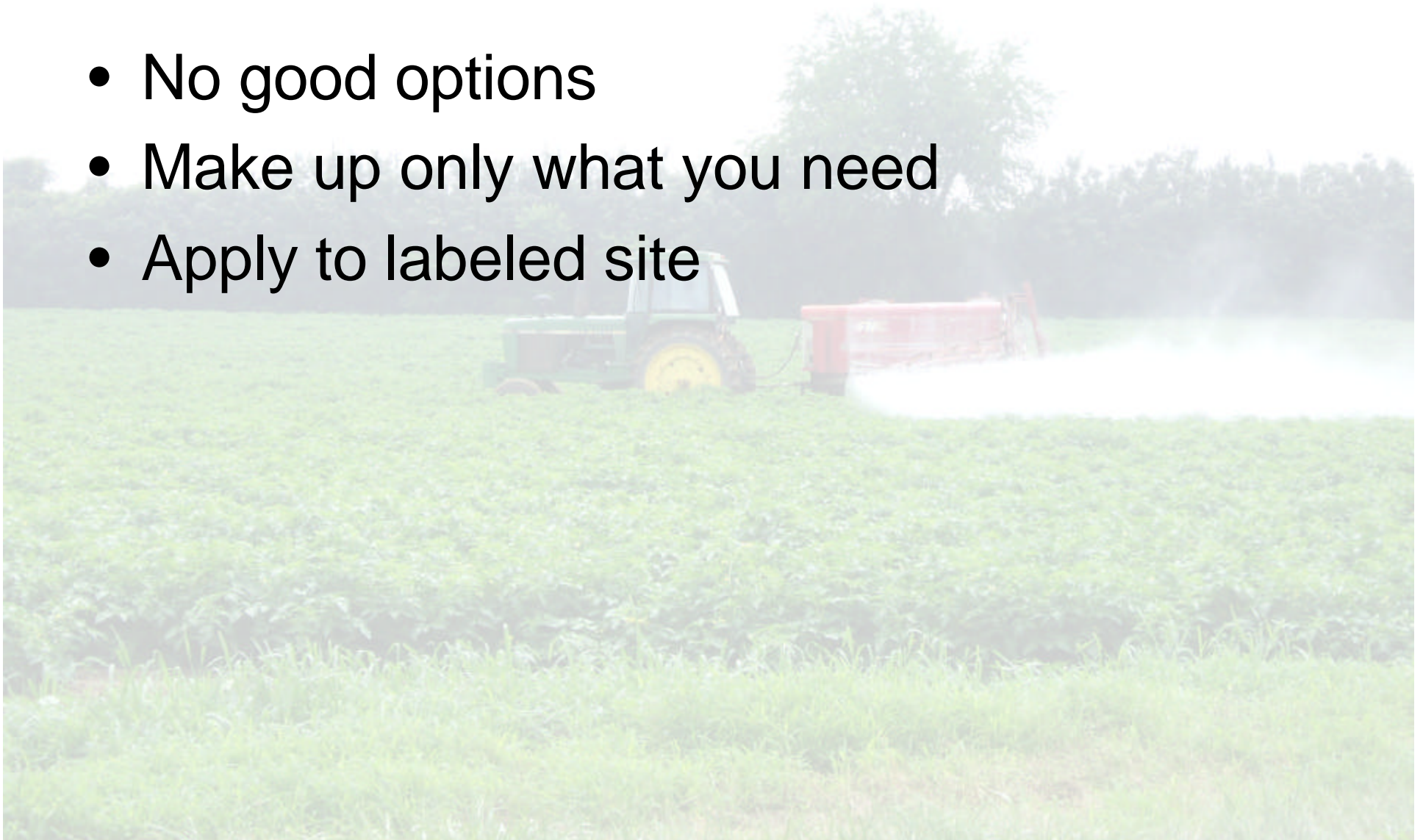


Leftover Spray Material



Leftover Spray Material

- No good options
- Make up only what you need
- Apply to labeled site



Rinsate or Cleanup Water Disposal



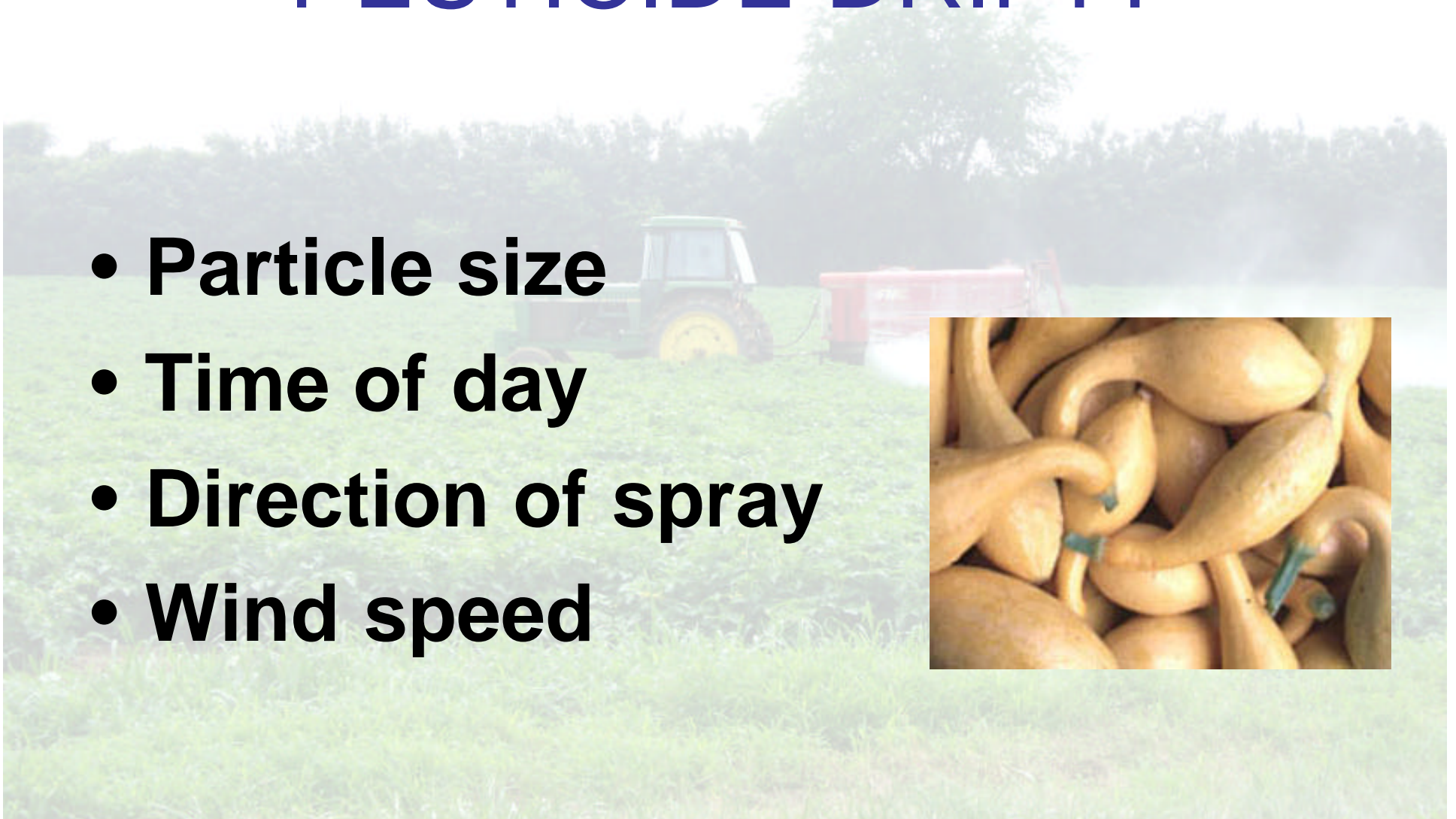
Rinsate or Cleanup Water

- No good options
- Hold for next application
- Apply to labeled site
- Don't use same site all the time



HOW CAN YOU PREVENT PESTICIDE DRIFT?

- **Particle size**
- **Time of day**
- **Direction of spray**
- **Wind speed**



HOW CAN YOU PREVENT WATER CONTAMINATION?

- **Know depth to ground water**
- **Know your Soil type**
- **Avoid bodies of water**
- **Timing of application**



HOW CAN YOU PROTECT Pollinating Insects?

- **Don't allow drift**
- **Time application to avoid pollinating insects on crop**



HOW CAN YOU PROTECT PEOPLE?

- **Don't allow drift**
- **Keep all pesticides out of the reach of children**
- **Follow rules for Worker Safety**



HOW CAN YOU PROTECT THE ENVIRONMENT?



ENVIRONMENTAL HAZARDS

- Do not apply directly to water.
- This product is highly toxic to aquatic invertebrates.
- Do not contaminate water when disposing of equipment washwater.

PROTECT THE ENVIRONMENT READ 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.

PROTECT THE ENVIRONMENT READ THE LABEL



DIRECTIONS FOR USE

Do not apply this product in a way that will contact workers or other persons, either directly or through drift.

PROTECT THE ENVIRONMENT READ THE LABEL



RESTRICTED USE PESTICIDES

Due to groundwater concerns

For retail sale and use only by certified applicators or persons under their supervision. Users must read and follow all precautionary statements to minimize potential of this product to reach groundwater.

PROTECT THE ENVIRONMENT READ THE LABEL



STORAGE

Do not contaminate water, food, or feed by storage or disposal. Store in original container only. Store in a cool, dry place, out of the reach of children, Preferably a locked storage cabinet. Protect from freezing.

PROTECT THE ENVIRONMENT READ THE LABEL



STORAGE

In case of leak or spill, use absorbent materials to contain liquids and dispose as waste.

PROTECT THE ENVIRONMENT

READ THE LABEL



DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or incineration, or if allowed by state and local authorities, by burning.

PROTECT THE ENVIRONMENT READ THE LABEL



GENERAL USE PRECAUTIONS

Do not over-apply Blammo. Over-application may result in crop injury or soil residue.

PROTECT THE ENVIRONMENT READ THE LABEL



MIXING AND LOADING

Precaution: Do not allow the mixture to siphon back into the water source.

PROTECT THE ENVIRONMENT READ THE LABEL



TANK MIXING PRECAUTIONS:

**Do not exceed recommended
application rates.**

PROTECT THE ENVIRONMENT READ THE LABEL



APPLICATION METHODS

Apply Blammo directly to the soil surface in a total spray volume of 20 to 40 gallons per acre (broadcast basis), using any properly calibrated low pressure sprayer.

PROTECT THE ENVIRONMENT READ THE LABEL



CHEMIGATION USE PRECAUTIONS:

Do not connect an irrigation system used for pesticide application to a public water system.

Use a check valve to prevent back flow to the injection pump.

PROTECT THE ENVIRONMENT

Read the label

Know the risks

Handle and apply safely

